

**An Annotated Bibliography of
Youth Gambling and Problem Gambling
& Related Literature in Substance Abuse,
Risk-Taking & Youth Development**

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1.0 Background

Currently, there is a pressing need for a psychometrically sound survey instrument for assessing gambling behaviour and identifying problem gambling in the adolescent population. Research examining the prevalence of problem gambling in the general population shows higher problem gambling rates among youth than adults. While there is general consensus in the literature that it is common for youth to gamble and develop associated problems, there is less agreement regarding the validity of higher problem gambling rates observed among youth (e.g. Ladouceur, 2001; Ladouceur et al., 2000; Stinchfield, 2000).

In the extensive National Research Council (1999) study of pathological gambling in the United States, the study committee noted the problem of accurately assessing the extent of adolescent problem gambling:

The committee estimates that, in a given year, as many as 1.1 million adolescents [in the United States] between the ages of 12 and 18 are pathological gamblers. However, the committee recognizes that adolescent measures of pathological gambling are not always comparable to adult measures, and that different thresholds for adolescent gambling problems may exist. Given various ways in which pathological gambling has been operationalized in prevalence studies among adolescents, this estimate should be viewed with caution. (p.3)

In the July 17, 2002 issue of *The WAGER*, the editors comment on Jacobs' (2000) meta-analysis of 20 studies of adolescent gambling from 1984 to 1999 and conclude that it is unclear whether the United States is still experiencing an upward swing or whether the prevalence of gambling problems among youth has peaked. Furthermore, they state:

Given the preponderance of evidence, perhaps the most careful opinion on this matter was offered by the National Research Council when they concluded that variation in methods, instrumentation, and conceptualization might influence findings, and therefore it is not yet possible to draw confident conclusions about the rate of gambling disorders among youth (p.2).

The findings of the National Research Council, supported by this recent analysis by *The WAGER* editors, suggests that there is a need for "conceptualization" of the adolescent problem gambling construct and for "methods and instrumentation" that will render more valid and reliable estimates of prevalence. As further support for this position, in her assessment of the validity and reliability of the SOGS-RA for measuring problem gambling in a survey of 13,549 students in Atlantic Canada, Poulin (2002) concluded that:

Regarding criterion validity, there is an urgent need to perform the types of enquiry that will allow clarification about how adolescent problem gambling is conceptualized, by adults versus adolescents, by males versus females, and from a clinical versus a public or population health perspective (p.91).

Notwithstanding that a rich repository of adolescent gambling research has been generated over the past decade, these considered conclusions point to a critical need that continues to exist to develop a more valid and reliable instrument to measure the construct of adolescent problem gambling.

1.1 Project Objectives

The purpose of this research project is: to reconceptualize the adolescent problem gambling construct; to operationally define gambling and problem gambling in the adolescent population; and to develop and evaluate a measure that will identify adolescent problem gamblers in the general population. This research project will be undertaken in two phases. Phase I includes reconceptualizing the construct, positing an operational definition, and developing an initial instrument. Phase 2 involves testing the new instrument to determine its reliability and validity in assessing gambling and identifying problem gambling among youth.

The Phase I reconceptualization of the adolescent problem gambling construct--positing an operational definition and developing a corresponding draft instrument--is the most crucial phase of the project. While there has been an increasing amount of research activity in the area of adolescent problem gambling, and notwithstanding that more is being learned as research progresses, this field is very much in its infancy. Moreover, it is critical that research from other fields (e.g., public health, sociology, criminology, education) into adolescent risk-taking behaviour be considered as the conceptual framework is being developed.

The reconceptualization will be directed from two main initiatives: (1) an extensive review of the literature related to problem gambling, substance use, other risk-taking and adolescent development, and (2) an expert panel of renowned gambling researchers, who will be asked to share seminal literature, theories, present conceptualizations of the construct, and other related insights into adolescent behaviour so that a context for this nominal adolescent disorder might be discerned. The researchers will also be asked to: comment on the conceptual framework that is developed; nominate domains, variables, indicators and/or items for inclusion in the instrument(s); and comment on the draft instrument and results from pilot testing.

This report presents a comprehensive list of abstracts that will be consulted as part of the reconceptualization process.

2.0 Methodology

2.1 Sources, Publication Dates, and Types of Documents Searched

References in the bibliography were obtained from two waves of literature searches: one conducted from September to December 2003, the other conducted from December 2003 to January 2004. Both searches were confined to electronic sources that included library catalogues, bibliographic databases, and specialized web site collections (see Table 1). Reference lists of selected articles were also searched in some cases.

Types of documents searched include journal articles, book chapters, policy papers, conference papers, and other reports. With few exceptions, searches were limited to articles published between 1990 and 2004. Some unpublished articles and articles *in press* were also included.

Table 1. *Library catalogues, databases, and specialized web site collections used in searches.*

Library Catalogues	Databases	Web Site Collections
Library of Congress	ASSIA	McGill University Youth Gambling site
University of Alberta	ERIC	Project CORK
University of Toronto	Ingenta	
	LOCATORplus	
	NLM Gateway	
	PsycINFO	
	PubMed / Medline	
	Science Direct	
	Social Science Abstracts	
	Social Sciences Citations Index	
	Social Work Abstracts	
	Sociological Abstracts	
	Web of Knowledge	

2.2 Keywords Searched

The following list contains the keywords used in both the first and second wave of literature searches.¹ Note that because the search strategy varied somewhat between the two waves, some keywords used for assessing the same term may seem redundant (e.g., gam* and gambling). Keywords were searched in abstracts, keywords, descriptors and/or titles of the databases searched.

Addiction

Addiction
Dependency

Behaviour

Behaviour

Conceptualization

Concept
Framework
Model
Models
Theories
Theory

Correlates

Consequences
Correlates
Determinants
Protective factors
Risk factors
Sex

Development

Cognitive
Socialization
Stages

Gambling

Gam*
Gamb*
Gambling

Measurement

Index
Instrument
Instrument development
[Name of specific instrument]
Reliability
Scale
Screening tools
Validity

Risk-Taking

Problem behaviors
Risk behaviour
Risk-taking
Risky behaviour
Sensation seeking

Substance

Alcohol
Cigarettes
Drugs
Smoking
Substance
Substance abuse
Substance misuse
Substance use

Youth

Adolesc*
Adolescent
Child
Child*
Children
Juven*
Student*
Teen
Teen*
Teenager
You*
Young adults
Youth

¹ Specific authors were also searched in some cases.

3.0 Searching the Bibliography

3.1 Overview

The structure of the bibliography resembles a matrix of sorts: Each of the primary content areas (i.e., *Problem Gambling, Substance Use and Abuse, Risk-Taking*) is further subdivided into the secondary content areas of *conceptualization, correlates, and measurement*. The two exceptions are the primary content areas of *Adolescent Development* and *Problem Gambling*: The former is not subdivided into any secondary content areas at all, whereas the latter, in addition to being subdivided into the secondary content areas of *conceptualization, correlates, and measurement*, is subdivided into the secondary content areas of *prevention* and *treatment*. Moreover, as discussed below, some of the *Problem Gambling* secondary content areas are further subdivided into a variety of content *keywords*.

3.2 Meaning of Secondary Content Areas

The secondary content term CONCEPTUALIZATION refers to classifications, definitions, models, and theories of the primary content area in question. Note that because of the paucity of conceptual papers written about youth, particularly in the area of problem gambling, many conceptualization articles are based on adults. CORRELATES refers not only to correlates of the primary content area, but also to its predictors, motivators, consequences, and other descriptive characteristics. MEASUREMENT refers to the use of particular instruments, comparison between instruments, and general measurement issues and problems. For *Problem Gambling*, PREVENTION refers to education programs (e.g., school curriculum, media campaigns, etc.), legislation, and/or policies (e.g., age restrictions, etc.); TREATMENT refers to descriptive articles, evaluation studies, and other articles pertaining to the treatment of problem gambling.

3.3 Searching for Problem Gambling Articles

Searching for *Problem Gambling* articles can either be done at the secondary content level (e.g., CONCEPTUALIZATION) or, for the secondary content levels of CONCEPTUALIZATION, CORRELATES, and MEASUREMENT, at the keyword content level within the secondary content levels (e.g., addiction, cognition, etc). As is the case with standard hyperlink searching, any terms that are underlined may be searched.

CONCEPTUALIZATION

- Problem gambling as a biological, physiological, and/or neurobiological disorder
- Problem gambling as a disorder of:
 - addiction
 - cognition (e.g., biases)
 - compulsion and/or OCD spectrum
 - impulse control
 - psychopathy
 - risk taking
 - self-regulation/self-control
 - sensation-seeking
- Problem gambling as a multi-determined, heterogeneous disorder
- Problem gambling as part of a problem behavior syndrome
- Problem gambling from a public health perspective
- Reviews and overviews

CORRELATES

- Behavioral (e.g., substance use, delinquency, suicide attempts/ideation, gambling preference/frequency/age of onset, prior video gaming, community involvement, quit/treatment attempts, etc.)
- Biological/Physiological (e.g., family history/genetics, neurobiological/anatomical, etc.)
- Cognitive (e.g., biases, knowledge, attitudes, beliefs, values, etc.)
- Demographic (e.g., age, grade level, sex, race, SES, place of residence, living arrangement, etc.)
- Emotional (e.g., mood, anxiety, distress, guilt, excitement, fun)
- Financial (e.g., gain, loss)
- Individual difference and other personality variables (e.g., impulsivity, risk-taking, sensation-seeking, compulsiveness, religiosity, coping style, self-esteem, intelligence, locus of control, hyperactivity, etc.)
- Physical (e.g., health)
- Situational (e.g., time of day/year, stressors, gambling location, available leisure time)
- Social/Interpersonal (e.g., family/peer influences, parental supervision, socialization, perceived social norms, relationships, etc.)
- Structural (e.g., accessibility, media influence)
- Vocational (e.g., school performance, etc.)
- Reviews and Overviews

MEASUREMENT

- ASI (Addiction Severity Index)
- DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, Version Four)
- DSM-IV-J (Diagnostic and Statistical Manual of Mental Disorders, Version Four, Juvenile Criteria)
- DSM-IV-MR-J (Diagnostic and Statistical Manual of Mental Disorders, Version Four, Multiple Response-Juvenile)
- GA (Gamblers Anonymous) 20 Questions
- MAGS (Massachusetts Gambling Screen)
- Measurement comparison
- Measurement issues
- Other measures
- SOGS (South Oaks Gambling Screen)
- SOGS- RA (South Oaks Gambling Screen Revised for Adolescents)
- Reviews and overviews

TREATMENT

PREVENTION

3.4 Searching for Substance Use and Abuse Articles

Searching for Substance Use and Abuse articles can only be done at the secondary content level.

CONCEPTUALIZATION

CORRELATES

MEASUREMENT

3.5 Searching for Risk Taking Articles

Searching for Risk Taking articles can only be done at the secondary content level.

CONCEPTUALIZATION

CORRELATES

MEASUREMENT

3.6 Searching for Youth Development Articles

Searching for Youth Development articles can only be done at the primary content level.

Youth Development

4.0 Problem Gambling

4.1 Conceptualization

Allcock, C. C., & Grace, D. M. (1988). Pathological gamblers are neither impulsive nor sensation-seekers. *Australian and New Zealand Journal of Psychiatry*, 22(3), 307-311.

Keywords: impulse, sensation, individual

Abstract: Ten pathological gamblers, ten alcoholics, ten heroin addicts and twenty five non-patients were compared using Zuckerman's Sensation Seeking Scale (SSS) and Barratt's Impulsivity Scale (BIS). The pathological gamblers did not differ from the non-patient group on either measure. Drug addicts scored significantly higher and alcoholics significantly lower than the pathological gamblers and the non-patient group on the SSS, while drug addicts scored significantly higher than the other groups on the BIS. The difficulties in defining impulsivity are discussed. It is suggested that the classification of pathological gambling as a disorder of impulse control should be reconsidered.

Arseneault, L., Ladouceur, R., & Vitaro, F. (2001). Gambling and psychotropic substance consumption: Prevalence, coexistence and consequences. *Canadian Psychology*, 42(3), 173-184.

Keywords: addiction, impulse control

Abstract: The present article is a critical review of research examining the relationship between pathological gambling and drug/alcohol addiction in adults and adolescents. We present diagnostic criteria and prevalence estimates for each population. In adults, the prevalence of drug or alcohol dependence is five times greater among pathological gamblers in treatment than it is among the general population. Adults with both disorders exhibit greater levels of impulsiveness and disinhibition than individuals with a single diagnosis. The few studies that have investigated the co-morbidity of pathological gambling and drug/alcohol addiction in adolescents yield results similar to those obtained in adults. Pathological gambling is highly correlated with drug, alcohol and cigarette consumption. Moreover, impulsiveness is greater among adolescents with a co-morbid diagnosis. This review suggests the importance for treatment and prevention programs to take into account the possible co-morbidity among these disorders.

Blanco, C., Moreyra, P., Nunes, E. V., Saiz-Ruiz, J., & Ibanez, A. (2001). Pathological gambling: Addiction or compulsion? *Seminars in Clinical Neuropsychiatry*, 6(3), 167-176.

Keywords: addiction, compulsion, multi, review

Abstract: There is considerable debate about the appropriate conceptualization of pathological gambling and its place in psychiatric nosology. The authors examined the existing research on different areas of pathological gambling to find evidence for a particular model of this disorder. There are 2 dominant models of pathological gambling: as a nonpharmacologic addiction and as an obsessive-compulsive spectrum disorder. The data available from different areas seem to converge in suggesting that pathological gambling has characteristics that are similar to those of substance abuse, and less close to those of obsessive-compulsive disorder, although those conceptualizations are not mutually exclusive. An alternative model of pathological gambling is that it constitutes a heterogeneous disorder with some subtypes resembling obsessive-compulsive disorder, and other subtypes being closer to substance abuse disorders. Improved understanding of the conceptualization of this disorder may help improve the quality of the treatments available.

Blaszczynski, A., & Nower, L. (2002). A pathway model of problem and pathological gambling. *Addiction, 97*(5), 487-499.

Keywords: review, multi, impulse

Abstract: At the moment, there is no single conceptual theoretical model of gambling that adequately accounts for the multiple biological, psychological and ecological variables contributing to the development of pathological gambling. Advances in this area are hampered by imprecise definitions of pathological gambling, failure to distinguish between gambling problems and problem gamblers and a tendency to assume that pathological gamblers form one, homogeneous population with similar psychological principles applying equally to all members of the class. The purpose of this paper is to advance a pathways model that integrates the complex array of biological, personality, developmental, cognitive, learning theory and ecological determinants of problem and pathological gambling. It is proposed that three distinct subgroups of gamblers manifesting impaired control over their behaviour can be identified. These groups include (a) behaviourally conditioned problem gamblers, (b) emotionally vulnerable problem gamblers and (c) antisocial, impulsivist problem gamblers. The implications for clinical management are discussed.

Blaszczynski, A., Steel, Z., & McConaghy, N. (1997). Impulsivity in pathological gambling: The antisocial impulsivist. *Addiction, 92*(1), 75-87.

Keywords: impulse, psychopathy

Abstract: The construct of impulsivity has to date remained relatively unexplored in the pathological gambling literature. This is in spite of recent claims suggesting that impulsivity may be an important feature characterizing a subgroup of pathological gamblers who are claimed to suffer from a Multi-Impulse Personality Disorder. The present study examined the potential role of impulsivity using the Eysenck Impulsivity Scale among 115 pathological gamblers. Results indicate that heightened impulsivity is associated with the degree of severity of psychological and behavioural change in pathological gamblers. However, the findings also indicate that impulsivity closely mirrors components contained in Eysenck Personality Questionnaire Psychoticism Scale, the California Personality Inventory Socialization Scale and DSM-III Antisocial Personality Disorder. This is manifest both in terms of high intercorrelations between the measures of psychopathy and impulsivity and in their predictive relationship to the level of psychological distress suggesting a uniform impulsivity/psychopathy construct. Thus, the research supports a model of pathological gambling in which the severity of associated behavioural and psychological disturbance is mediated by a impulsivity/psychopathy construct.

Boyer, M., & Dickerson, M. (2003). Attentional bias and addictive behaviour: Automaticity in a gambling-specific modified Stroop task. *Addiction, 98*(1), 61-70.

Keywords: cognition, addiction

Abstract: AIMS: This study examined the relationship between attention and gambling behaviour by measuring the level of Stroop interference towards gambling-related words in a group of regular poker machine players. DESIGN: A 3 x 2 repeated measures experimental design was employed. The type of word presented (neutral, drug or gambling) was the within-subjects factor and the level of impaired control (high or low) over gambling behaviour was the between-subjects factor. PARTICIPANTS: A sample of poker machine players (n = 60), varying in their frequency of play, were split into two groups based on their level of subjective impaired control over their gambling behaviour (high or low). MEASUREMENTS: A computerized gambling-specific modified version of the Stroop task was used to assess response latencies. The test comprised three word categories: gambling, drug and neutral. The Scale of Gambling Choices (SGC) was used to assess participants' level of impaired control over gambling behaviour. FINDINGS: It was found that the participants who had difficulty in controlling their gambling behaviour (the low control group) took significantly longer to name the colour of the words relating to poker machine gambling, whereas those who had good control over their gambling behaviour (the high control group) did not show any significant differences across the three word categories. CONCLUSIONS: Results support the previous finding that people with a problem behaviour or emotion take longer to colour-name words relating to the area of their concern. The current study extends previous work that has investigated the role of cognitive distortions and biases in the area of addictive behaviour. The current study confirms McCusker & Gettings's findings, but by avoiding the mental disorder conceptualization facilitates theoretical understanding of addictive behaviour. Implications for past models and theories of the Stroop as well as future research directions are discussed.

Cavedini, P., Riboldi, G., Keller, R., D'Annunzi, A., & Bellodi, L. (2002). Frontal lobe dysfunction in pathological gambling patients. *Biological Psychiatry*, *51*(4), 334-341.

Keywords: biological, compulsion, addiction, cognition

Abstract: BACKGROUND: Limited data are available about the validity of the diagnosis of pathological gambling (PG) and about the etiology and the efficacy of different treatment strategies of this disorder; however, similarities in decision-making behavior between PG patients and patients with ventromedial prefrontal cortex lesions suggest a possible implication of these areas in the pathophysiology of this disorder, as in obsessive-compulsive disorder, in which the decision-making impairment is significantly associated with response to serotonin reuptake inhibitor treatment. Nevertheless, several studies have shown that decision-making functioning is also impaired in drug-addicted patients who have shown abnormalities in ventromedial prefrontal cortex during functional neuroimaging studies. METHODS: We assessed the decision-making function mediated by the ventromedial prefrontal cortex in 20 PG patients and 40 healthy control (HC) subjects using the Gambling Task, which simulates real-life decision-making, testing the ability to balance immediate rewards against long-term negative consequence. RESULTS: Significant differences were found in Gambling Task performance between HC subjects and PG patients, who showed a specific decision-making profile across the sequence of the game. The dissimilarity does not appear to depend on the basic cognitive function deficit of the PG group. CONCLUSIONS: These data seem to suggest the existence of a link between PG and other disorders (i.e., obsessive-compulsive disorder and drug addiction), all having diminished ability to evaluate future consequences, which may be explained at least in part by an abnormal functioning of the orbitofrontal cortex.

Chambers, R. A., & Potenza, M. N. (2003). Neurodevelopment, impulsivity, and adolescent gambling. *Journal of Gambling Studies*, *19*(1), 53-84.

Keywords: biological, impulse, review, addiction

Abstract: The prevalence of problem and pathological gambling in adolescence and young adulthood has been found to be two- to fourfold higher than in adulthood. Given that these high rates might predict future increases across all age groups, it is important to explore the causes of the elevated rates of problem and pathological gambling among youths. This article reviews evidence for a neurobiological basis for adolescent vulnerability to problem and pathological gambling behaviors. We propose that a common trait motif of impulsivity might underlie phenomenology of pathological gambling, commonly comorbid psychiatric disorders, and related aspects of adolescent behavior. Recent advances in understanding the brain mechanisms involved in motivation, reward, and decision-making allow a discussion of neural circuitry underlying impulsivity. Emerging data indicate that important neurodevelopmental events during adolescence occur in brain regions associated with motivation and impulsive behavior. We hypothesize that immaturity of frontal cortical and subcortical monoaminergic systems during normal neurodevelopment underlies adolescent impulsivity as a transitional trait-behavior. While these neurodevelopmental processes may confer advantage by promoting a learning drive for optimal adaptation to adult roles, they may also confer an increased vulnerability to addictive behaviors such as problem and pathological gambling. An exploration of the developmental changes in neural circuitry involved in impulse control has significant implications for understanding adolescent behaviors and treating problem and pathological gambling among youths.

Cunningham-Williams, R. M., & Cottler, L. M. (2001). The epidemiology of pathological gambling. *Seminars in Clinical Neuropsychiatry*, *6*(3), 155-166.

Keywords: review

Abstract: Increased attention has been given to the disorder of pathological gambling, especially since the formation of the latest Presidential Commission to study its social and economic impact on the nation. Researchers have experienced difficulty in establishing the prevalence of pathological gambling disorder attributable to several factors, namely: debate and confusion on the best way to define and classify the disorder; assessments of the disorder that are not diagnostic or comprehensive; and, methodological weaknesses in the majority of gambling studies caused primarily by sampling biases. This article summarizes prevalence estimates of pathological gambling disorder in the general population and for subpopulations while addressing the difficulties inherent in their interpretation. Recommendations are offered for future research into this disorder.

DeCaria, C. M., Hollander, E., Grossman, R., Wong, C. M., Mosovich, S. A. & Cherkasky, S. (1996). Diagnosis, neurobiology, and treatment of pathological gambling. *The Journal Of Clinical Psychiatry*, 5(Suppl. 8), 80-84.

Keywords: impulse, compulsion, biological

Abstract: Pathological gambling is a disabling disorder that affects at least 2 1/2 million Americans and their families. Although pathological gambling has been characterized as an impulse control disorder, it has also been associated with compulsivity. Essential features of pathological gambling include constantly recurring gambling behavior that is maladaptive, in that personal, familial, and/or vocational endeavors are disrupted. Affective disorders and substance abuse often co-occur. Incidence of suicidality is extremely high. Despite the fact that this disorder is a widespread public health problem, few controlled studies of causes or treatment have been conducted. Preliminary neurobiological studies implicate serotonergic dysfunction in pathological gamblers. Treatment with serotonin reuptake inhibitors, such as clomipramine and fluvoxamine, may be effective in treating this disorder. Well-defined and controlled clinical trials in large samples of pathological gamblers are needed.

Derevensky, J., & Gupta, R. (2004). Adolescents with gambling problems: A synopsis of our current knowledge. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Keywords: review

Abstract: It's been 25 years since Henry Lesieur's seminal research on understanding compulsive gambling was published. While still in its infancy, the field of gambling research has evolved and greatly added to a better understanding of this complex behavior, its measurement, its social and familial costs, ways of minimizing and preventing gambling problems, and methods of treating individuals with gambling problems. For most adolescents and adults gambling remains a form of entertainment without serious negative consequences. Yet, adolescent pathological gamblers, like their adult counterparts and independent of the negative consequences resulting from their excessive gambling, continue to chase their losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Our current empirical knowledge of youth gambling problems is reviewed and recommendations for future research are provided.

Derevensky, J., & Gupta, R. (Eds.). (2004). *Gambling problems in youth: Theoretical and applied perspectives*. NY: Kluwer Academic/Plenum Publishers.

Keywords: review

Dickerson, M. (2003). Exploring the limits of "responsible gambling." Harm minimisation or consumer protection? *Gambling Research* (Journal of the National Association for Gambling Studies Australia), 15, 29-44.

Keywords: addiction

Abstract: In the context of the rapidly developing international interest in responsible gambling the paper presents a brief description of the different definitions of problem gambling and their related methods of measurement: problem gambling defined as a mental disorder, as a harmful impact and as an addictive behaviour. For each of the conceptual approaches the question was posed, "How can problem gambling (gamblers) be identified from behaviour patterns on the gaming room floor?" It was concluded that although all approaches may enable an observer to refine probability statements about whether A or B is a problem gambler none permit the sure identification of such a person. Current psychological research does not support the responsible gambling objective of excluding the problem gambler from gambling venues but does have significant implications for consumer protection. The argument presented is that loss of control over expenditure of time and money during a session of play/betting is a common and "natural" experience for regular players. This sense of loss of control is likely to be an integral part of the pleasurable experience of gambling. It was concluded that the manner in which continuous gambling products are provided to regular gamblers is in direct conflict with responsible gaming strategies, may fail to satisfy the principle of duty of care and may be an issue best resolved in terms of consumer protection.

Dickerson, M., & Baron, E. (2000). Contemporary issues and future directions for research into pathological gambling. *Addiction, 95*(8), 1145-1159.

Keywords: self-regulation, addiction, multi, review

Abstract: The recent healthy increase in research into all aspects of gambling is noted. The dominant theme accounting for most of this research is the mental disorder model of pathological gambling and measures that have been derived from this conceptualization. It is suggested that an alternative approach focusing on the construct of choice or subjective control over gambling may be a research direction that will ensure that progress is maintained. In this paper a context for the discussion is provided by first identifying briefly fundamental conceptual and methodological issues associated with the mental disorder model. In particular it is argued that the heterogeneity of the diagnosis of pathological gambling makes the research task of assessing truly independent variables extremely difficult. Subsequently an illustrative schema is presented that demonstrates both the potential advantages and some of the complexities associated with the dependent variable of self-control over gambling behaviour. The main advantages are argued to be (a) the focus of research is narrowed to one potential cause of harmful impacts rather than the great diversity of impacts themselves, (b) prospective studies of regular gamblers in real gambling venues may be a key source of insight into the development of pathological gambling and (c) it promotes the development of theoretical links with the mainstream of the discipline of psychology. Despite the conceptual difficulties that may be associated with the variable of self-control, it is suggested that these may be overcome because contemporary research into the addictive behaviours has demonstrated considerable success in the definition and measurement of control and related themes such as craving, restraint and temptation.

DiClemente, C. C., Story, M., & Murray, K. (2000). On a roll: The process of initiation and cessation of problem gambling among adolescents. *Journal of Gambling Studies, 16*(2-3), 289-313.

Keywords: addiction, review

Abstract: As gambling becomes more accessible and acceptable in society, problems associated with gambling and gaming have begun to affect ever increasing numbers of adolescents. Although restricted from most forms of gambling by law, many adolescents are finding a path into problem gambling. Some are becoming compulsive gamblers early in their gambling career, facing a future filled with consequences and problems. Understanding the pathway or process by which these adolescents become engaged in gambling behavior and how they can extricate themselves from this addictive behavior can enhance the efficiency and effectiveness of our interventions. This article offers a perspective on the initiation and cessation of compulsive gambling using the basic elements of the process of intentional behavior change outlined in the Stages of Change from the Transtheoretical Model. The process of initiation of a problematic behavior is similar to the process of modification or cessation of a problematic behavior in terms of these stages of change. With adolescents it is important to distinguish between the process of initiation, which has implications for prevention of gambling problems, and the process of cessation, which often necessitates the assistance of treatment. Creating interventions that parallel the process of change offers the potential for personalizing and potentiating efforts to reduce the prevalence and consequences associated with compulsive or pathological and problem gambling. Application of this model to gambling behavior offers a heuristic that is intriguing and requires substantiation through rigorous research.

Eisen, S. A., Slutske, W. S., Lyons, M. J., Lassman, J., Xian, H., Toomey, R., Chantarujikapong, S., & Tsuang, M. T. (2001). The genetics of pathological gambling. *Seminars in Clinical Neuropsychiatry*, 6(3), 195-204.

Keywords: review, biological, psychopathy

Abstract: Problem and pathological gambling (PG) occurs in about 5% of Americans. Gambling is associated with substantial psychosocial and psychiatric health problems, and the increasing ease of access to gambling may increase its future prevalence. Therefore, it is important to gain greater insight into the causes of PG. Family studies of PG are consistent with a substantial familial impact on vulnerability to PG. However, family studies cannot distinguish genetic from family environmental influences. By contrast, the study of twin pairs permits the genetic and environmental influences on PG to be estimated. The study of gambling behavior among 3,359 twin pair members of the Vietnam Era Twin Registry suggests that: (1) inherited factors explain a substantial proportion of the variance in the report of symptoms of gambling; (2) there is a single continuum of genetic vulnerability that underlies gambling problems of varying severities; and, (3) the co-occurrence of PG with conduct disorder, antisocial personality disorder, and alcohol abuse/dependence is partially explained by genes that influence both PG and these other psychiatric disorders. Neurophysiological correlates of gambling problems and genetically based differences in neurotransmitter systems may provide biological mechanisms that explain the genetic basis for a predisposition to PG.

Evans, R. I. (2003). Some theoretical models and constructs generic to substance abuse prevention programs for adolescents: Possible relevance and limitations for problem gambling. *Journal of Gambling Studies*, 19(3), 287-302.

Keywords: addiction, syndrome

Abstract: For the past several years the author and his colleagues have explored the area of how social psychological constructs and theoretical models can be applied to the prevention of health threatening behaviors in adolescents. In examining the need for the development of gambling prevention programs for adolescents, it might be of value to consider the application of such constructs and theoretical models as a foundation to the development of prevention programs in this emerging problem behavior among adolescents. In order to provide perspective to the reader, the present paper reviews the history of various psychosocial models and constructs generic to programs directed at prevention of substance abuse in adolescents. A brief history of some of these models, possibly most applicable to gambling prevention programs, are presented. Social inoculation, reasoned action, planned behavior, and problem behavior theory, are among those discussed. Some deficits of these models, are also articulated. How such models may have relevance to developing programs for prevention of problem gambling in adolescents is also discussed. However, the inherent differences between gambling and more directly health threatening behaviors such as substance abuse must, of course, be seriously considered in utilizing such models. Most current gambling prevention programs have seldom been guided by theoretical models. Developers of gambling prevention programs should consider theoretical foundations, particularly since such foundations not only provide a guide for programs, but may become critical tools in evaluating their effectiveness.

Griffiths, M. D. (1989). Gambling in children and adolescents. *Journal of Gambling Behavior*, 5(1), 66-83.

Keywords: review

Abstract: The topic of adolescent gambling is attracting growing interest, but there has still been little controlled or systematic research into the area, and much of what has been written would best be described as 'armchair theorizing'. The literature concerning pre-adult gambling behavior falls into three general categories: (a) direct and indirect studies concerning adolescent gambling; (b) studies of the economic socialization of children, and (c) consideration of gambling as play and games as precursors to gambling. This paper presents an overview of the literature examining each of these three categories. Special emphasis is placed upon the playing of fruit machines, as it is this activity which is currently regarded as the biggest problem concerning young gamblers, particularly in the U.K. Recommendations for future research are discussed, particularly for work using a functional/behavioural analysis model to determine the variables which influence how adolescents 'learn' to gamble.

Gupta, R., & Derevensky, J. (1998). An empirical examination of Jacobs' General Theory of Addictions: Do adolescent gamblers fit the theory? *Journal of Gambling Studies*, 14(1), 17-49.

Keywords: addiction

Abstract: The present study examines 817 adolescent High School students' gambling behavior. Participants completed the DSM-IV-J, a gambling screen examining severity of gambling problems along with the High School Personality Questionnaire (HSPQ), the Reynolds Adolescent Depression Scale (RADS) and a questionnaire devised by the authors inquiring about gambling behavior, substance abuse, alcohol consumption, and cigarette smoking. The study seeks to test the Jacobs' (1986) General Theory of Addictions, using problem and pathological adolescent gamblers as the prototype to test the model. The results obtained through path analysis and logistic regression suggest that Jacobs' theory is a plausible and likely explanation for the development of a gambling addiction amongst adolescents. The clinical implications are addressed.

Jacobs, D. F. (1986). A General Theory of Addiction: A new theoretical model. *Journal of Gambling Behavior*, 2(1), 15-31.

Keywords: addiction

Abstract: Proposes a general theory of addictions, using the compulsive gambler as the prototype. In the present author's view, addiction encompasses persistent, out-of-control behavioral patterns involving substances such as food, alcohol, other licit and illicit drugs, and activities such as gambling. Addiction is defined as a dependent state acquired over time to relieve stress. In the addictive personality syndrome model presented, 2 interrelated sets of factors predispose persons to addictions: an abnormal physiological resting state and childhood experiences producing a deep sense of inadequacy. All addictions are hypothesized to follow a similar 3-stage course: discovery, resistance to change, and exhaustion. The theory suggests it is possible to identify high-risk youth and prevent the development of addictions.

Korn, D., Gibbins, R., & Azmier, J. (2003). Framing public policy towards a public health paradigm for gambling. *Journal of Gambling Studies*, 19(2), 235-256.

Keywords: public health, review

Abstract: This paper examines the public policy value of looking at gambling from a public health perspective. The manner in which social issues are framed will either expand or curtail public policy debates. The existing and traditional frames for gambling (e.g. gambling as a matter of individual freedom, gambling as a form of recreation) fail to consider research on the social and economic impacts of gambling. Because a public health frame offers a broad viewpoint of society, it encompasses a number of social and economic impacts not considered in traditional frames. However, the existing gambling frames enjoy varying degrees of cultural, economic, and political support and, as a result, creating a higher profile for a public health framework will encounter a number of barriers. Research can play a decisive role in overcoming these barriers, as it has in a number of related fields (e.g., tobacco use, addiction and product liability, the epidemiology of AIDS). The paper concludes that research that identifies and quantifies the public health factors of gambling will substantially contribute to a public shift toward a public health frame.

Korn, D. A., & Shaffer, J. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies*, 15(4), 289-365.

Keywords: public health

Abstract: Associated with the increase of gambling in North America, there has been an increase in the prevalence of problem and pathological gambling among the general adult population, as well as a sustained high level of gambling-related problems among youth. The authors encourage the adoption of a public health perspective towards gambling. More specifically, the authors' discussion has 4 primary objectives: (1) create awareness among health professionals about gambling, its rapid expansion and its relationship with the health care system; (2) place gambling within a public health framework by examining it from several perspectives, including population health, human ecology and addictive behaviors; (3) outline the major public health issues about how gambling can affect individuals, families and communities; and (4) propose an agenda for strengthening policy, prevention and treatment practices through greater public health involvement, using the framework of The Ottawa Charter for Health Promotion as a guide. By understanding gambling and its potential impacts on the public's health, policy makers and health practitioners can minimize gambling's negative impacts and appreciate its potential benefits.

Langewisch, M., & Frisch, R. (2001). Classification of pathological gambling as an impulse control disorder. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 3.

Keywords: impulse, addiction

Abstract: The purpose of this paper is to examine the appropriateness of the current classification of pathological gambling as an Impulse Control Disorder. Controversy over the current categorization is as heated as it has ever been with more research suggesting that gambling is in fact not strictly an impulse-driven behaviour. Research also shows that pathological gambling is similar in presentation and treatment outcome to other addictive behaviours such as alcohol and substance abuse. Given such findings, it is arguable that pathological gambling needs to be re-examined in terms of where it fits into a psychiatric classification system.

Lesieur, H. R. (2003). Adolescent gambling research: The next wave. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 228-255). Reno, NV, US: University of Nevada Press.

Keywords: review

Abstract: (From the chapter) This chapter reviews the literature on teen gambling and examines the data lacunae existing in the field. It also makes suggestions for the direction of future research. Surveys of teen gambling (including rates of gambling, expenditure, and gambling problems) are discussed in light of allegations of epidemic teen gambling, as well as teen betting-ring hysteria. This chapter emphasizes studies of problem gambling, the range of gambling problems, definitional issues, and related problems; it reviews research on prevention and treatment of problem gambling among teens and outlines areas of need research as well as a more inclusive multifactorial model of inquiry.

Nower, L., & Blaszczynski, A. (2003, October). *A pathways approach to treating youth gamblers*. Paper presented at the European Association for the Study of Gambling conference, Barcelona, Spain.

Keywords: Multi

Abstract: The Pathways Model of pathological gambling (Blaszczynski, 1998; Blaszczynski & Nower, 2002) is the first conceptual theoretical model of gambling to incorporate the multiple biological, psychological, and ecological variables that contribute to the development of pathological gambling and to refute the assumption that pathological gamblers form one homogenous population with similar psychological principles. The model, as applied to the treatment of youth problem gamblers, proposes that individuals follow different pathways leading to three distinct groups of problem gamblers: (a) behaviorally-conditioned problem gamblers, (b) emotionally vulnerable problem gamblers, and (c) anti-social impulsivist problem gamblers. These pathways are characteristically identifiable in childhood or adolescence and have significant implications for treatment approaches for youth gamblers. The clinical treatment strategies for youth in each pathway are discussed.

Peele, S. (2001). Is gambling an addiction like drug and alcohol addiction? *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 3.

Keywords: addiction, compulsion

Abstract: As compulsive gambling and problem gamblers attract continued and increasing attention--due to state reliance on gambling for revenues and government and private marketing of the gambling experience--conceptions of compulsive, or addictive, gambling have evolved. The disease model of alcoholism and drug addiction, which predominates in the U.S. and North America, has generally been widely adopted for purposes of understanding and addressing gambling problems. However, this model fails to explain the most fundamental aspects of compulsive drinking and drug taking, so it can hardly do better with gambling. For example, people regularly outgrow addictions — often without ever labeling themselves as addicts. Indeed, gambling provides a vivid and comprehensible example of an experiential model of addiction. Elements of an addiction model that gambling helps to elucidate are the cycle of excitement and escape followed by loss and depression, reliance on magical thinking, failure to value or practice functional problem solving, and manipulative orientation towards others.

Potenza, M. N. (2001). The neurobiology of pathological gambling. *Seminars in Clinical Neuropsychiatry*, 6(3), 217-226.

Keywords: review, biological, addiction

Abstract: Despite relatively high prevalence rates and significant morbidity and mortality associated with pathological gambling (PG), our understanding of the neurobiological basis of PG lags in comparison to that for other psychiatric illnesses of comparable magnitude. An improved understanding of the neurobiology of PG would facilitate targeted investigations into more effective treatments. Emerging data suggest shared neurobiological features determine in part pathological gambling and substance use disorders. These findings both challenge current conceptualizations of addictions and provide a substantial basis of knowledge on which to design investigations into the understanding and treatment of pathological gambling. The findings that substance use disorders and the behavioral "addiction" of PG share common causative features raise the question as to what extent other compulsive disorders (e.g., compulsive shopping, compulsive sexual behaviors, compulsive computer use) might be biologically related.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002). Gambling: An addictive behavior with health and primary care implications. *Journal of General Internal Medicine* 17(9), 721-732.

Keywords: addiction, review

Abstract: Over the past several decades, and particularly during the last 10 to 15 years, there has been a rapid increase in the accessibility of legalized gambling in the United States and other parts of the world. Few studies have systematically explored the relationships between patterns of gambling and health status. Existing data support the notion that some gambling behaviors, particularly problem and pathological gambling, are associated with nongambling health problems. The purpose of this article is to provide a perspective on the relationship between gambling behaviors and substance use disorders, review the data regarding health associations and screening and treatment options for problem and pathological gambling, and suggest a role for generalist physicians in assessing problem and pathological gambling. A rationale for conceptualization of pathological gambling as an addictive disorder and a model proposing stress as a possible mediating factor in the relationship between gambling and health status are presented. More research is needed to investigate directly the biological and health correlates associated with specific types of gambling behaviors and to define the role for generalist physicians in the prevention and treatment of problem and pathological gambling.

Raylu, N., & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22(7), 1009-1061.

Keywords: review

Abstract: Due to recent changes of gambling laws, accessibility to gambling has become more widespread and thus, there has also been an increase in the prevalence of pathological gambling (PG). The wide range of social, economic, and psychological problems associated with PG are well known. There is a need for better understanding of PG and this review attempts to do so. Literature searches using the Medline and PsycINFO databases were used. Critical examining of the literature showed that familial/genetic, sociological, and individual factors (e.g., an individual's personality, biochemistry, psychological states, and cognitions) are implicated in the development and maintenance of PG, yet at present, the evidences are not solid. Similarly, there have been a lot of theories for PG but again, none of them are solid enough to provide a clear understanding of PG. Recent psychological-based theories seem to provide some solid ground for further research. We highlight four areas for future consideration for research. (1) Most studies have generalized findings from one form of gambling to another. It is suggested that it is now not tenable to consider gambling as a single phenomenon that can explain all forms of gambling. (2) Almost all of the studies in the gambling literature are Western-based and the results are often generalized to other ethnic and cultural groups. There is now an urgent need to close this gap. (3) Future studies need to address methodological problems in the current gambling/PG literature. (4) Almost all of the gambling literature has focused on the issue of why people start gambling. It is suggested that looking at variables as to why people stop gambling in a single episode may be a more fruitful area of research than why people start gambling. This is because what motivates one to continue gambling, despite losses in a session and across sessions, is a characteristic that distinguishes nonproblem gamblers from problem gamblers and pathological gamblers (PGs).

Rosenthal, R. J. (1992). Pathological Gambling. *Psychiatric Annals*, 22(2), 72-78.

Keywords: addiction

Abstract: Pathological gambling is very similar in definition and symptoms to substance dependence. This article discusses the evolution of the DSM-IV criteria for diagnosing pathological gamblers. Various studies of pathological gamblers in treatment reveal that approximately 50 percent have histories of alcohol or drug abuse. In males, the disorder typically begins in adolescence. Females typically start gambling later in life, are more apt to be depressed, and gamble as a means of escaping the depression. It is not unusual for male gamblers to have a history of 20 to 30 years when they seek treatment, compared with three years for females.

Rossen, F. (2001). *Youth gambling: A critical review of the public health literature*. Centre for Gambling Studies, University of Auckland. Available at: <http://www.gamblingstudies.co.nz/content/CompleteReview.pdf>

Keywords: review

Rossol, J. (2001). The medicalization of deviance as an interactive achievement: The construction of compulsive gambling. *Symbolic Interaction*, 24(3), 315-341.

Keywords: biological, compulsion, impulse

Abstract: This article joins two lines of research from distinct areas in sociology to illuminate the mechanisms through which the meaning of "compulsive gambling" and what it means to be "a compulsive gambler" are cooperatively constructed in interaction at meetings of the fellowship group Gamblers Anonymous (GA). Combining Conrad's work on the medicalization of deviance with a social psychological focus on support group interaction, I demonstrate how individuals' experiences and identities come to be imbued with a medical vocabulary through the homogenization of the initial diversity among members. This analysis contributes to conceptualizations of the medicalization of deviance as well as to interactionist interests in the social construction of reality.

Shaffer, H. J. (1999). Strange bedfellows: A critical view of pathological gambling and addiction. *Addiction*, 94(10), 1445-1448.

Keywords: addiction, impulse, review

Abstract: In this editorial, Shaffer explores whether pathological gambling is an addiction in the same sense as substance abuse. The difficulty, he believes, lies more in our understanding of addiction than in our understanding of gambling. This lack of understanding stems from the inability to distinguish between an impulse that cannot be controlled and a habit that simply isn't controlled. An addiction, Shaffer argues, is the "consequence of overwhelming and uncontrollable impulses, compromised biobehavioral regulatory mechanisms, or a combination of both." The importance of understanding whether a problem gambler truly suffers from an addiction or is the victim of intemperate but controllable behavior lies in the possibility that each may benefit from a different treatment regimen.

Shaffer, H. J., Hall, M., Vander Bilt, J., & Vagge, L. (2003). Introduction: Youth and gambling: Creating a legacy of risk. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 1-24). Reno, NV, US: University of Nevada Press.

Keywords: review

Abstract: (From the chapter) Presents an overview of the book that explores the nature of adolescents' involvement in gambling by examining issues related to youth-gambling research, treatment, education, economics, and policy. The chapter begins by defining the concepts of gambling, pathological gambling, and estimating the prevalence of youth gambling problems. The author discusses the psychosocial consequences of excessive gambling, the psychological elements of pathological gambling, and gambling as an object of addiction. Also discussed are conceptual problems with measuring pathological gambling, prospects for gambling prevention and education programs.

Shaffer, H. J., & Kidman, R. (2003). Shifting perspectives on gambling and addiction. *Journal of Gambling Studies*, 19(1), 1-6.

Keywords: addiction, multi, biological

Abstract: This brief discussion addresses the need for less stringent and restrictive perspectives on addiction in general and pathological gambling in particular. It is suggested that there is a need for clinical constructs of behavioral addictions that address the biological, psychological and social aspects of the disorder.

Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health, 23*, 171-212

Keywords: public health, review, structural

Abstract: This article reviews the prevalence of gambling and related mental disorders from a public health perspective. It traces the expansion of gambling in North America and the psychological, economic, and social consequences for the public's health, and then considers both the costs and benefits of gambling and the history of gambling prevalence research. A public health approach is applied to understanding the epidemiology of gambling-related problems. International prevalence rates are provided and the prevalence of mental disorders that often are comorbid with gambling problems is reviewed. Analysis includes an examination of groups vulnerable to gambling-related disorders and the methodological and conceptual matters that might influence epidemiological research and prevalence rates related to gambling. The major public health problems associated with gambling are considered and recommendations made for public health policy, practice, and research.

Skinner, H. A., Biscope, S., Murray, M., & Korn, D. (2004). Dares to addiction: Youth definitions and perspectives on gambling. *Canadian Journal of Public Health, 95*(4), 264-267.

Keywords: review

Abstract: Background: Over the past decade there has been a rapid growth of gambling in Canada, and internationally. Although youth are a potentially vulnerable group, little is known about what they understand and if they are being affected by the recent increase. Methods: This study examined how youth view gambling using an inductive qualitative research design and analysis based on grounded theory principles. Twelve focus groups were conducted comprising 103 participants (15 year old median age) with diverse representation of Ontario youth. Focus group questions were designed to capture youth's experiences and opinions about gambling. Results: Youth participants defined a spectrum of gambling from a dare and friendly betting to legalized forms of gambling (lotteries, casinos) and addiction. Their opinions varied according to age and gambling type. For example, daring and friendly betting were identified as positive activities used by younger adolescents to relieve boredom and establish social relationships. Gambling was separate from daring because of its association with money. Many participants had minimal awareness of the potential negative impact of gambling. Information technology (Internet) was seen as an attractive medium for playing games and gambling where no money is involved. Conclusion: Lack of awareness of gambling among youth and its consequences underscores the need for public education. The diverse range of gambling behaviour and age dependent access to money need careful consideration in defining youth gambling "problems" and in designing public health interventions.

Spinella, M. (2003). Evolutionary mismatch, neural reward circuits, and pathological gambling. *International Journal of Neuroscience, 113*(4), 503-512.

Keywords: self-regulation, biological, sensation

Abstract: Evolutionary mismatch theory has been applied to disorders of self-regulation such as maladaptive eating patterns and drug abuse. Modern gambling represents a refinement of the elements of risk and chance, which draw upon the faculties of judgment and novelty-seeking. A set of neuroanatomical structures, including prefrontal-subcortical systems and associated limbic structures, have been implicated in the processing of reward and punishment, including gambling-related situations. Neurobiological systems guiding choice and behavior have evolved to maximize chances for survival under hunter-gatherer conditions, and modern gambling represents an abrupt departure from these circumstances, sometimes resulting in pathological gambling.

Spunt, B. (2002). Pathological gambling and substance misuse. *Substance Use & Misuse, 37*(8-10), 1299-1304.

Keywords: addiction, impulse, review

Abstract: This paper first discusses the ways in which pathological gambling (a disorder of impulse control) and substance misuse are similar. It then examines research focusing on substance misuse among pathological gamblers, and research on pathological gambling among substance misusers, focusing on a study examining gambling among 462 methadone patients from New York City. That study found that 21% of the sample were probable pathological gamblers, while an additional 9% were problem gamblers (i.e., they had some problem related to their gambling). The treatment implications of these findings and future research directions are also discussed.

The WAGER. (2002). Problem behavior syndrome: A prospective look at gambling risk factors in adolescence. *The WAGER*, 7(17).

Keywords: syndrome

Vander Bilt, J., & Franklin, J. (2003). Gambling in a familial context. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 120-125). Reno, NV, US: University of Nevada Press.

Keywords: addiction, impulse, biological

Abstract: (From the chapter) The authors state that the proliferation of gambling during the 1980s and 1990s and the increased prevalence of adult gambling behavior have resulted in a generation of children growing up in households and families where gambling is increasingly common. The extant research reports that children of pathological gamblers are more likely than children of nonpathological gamblers to develop gambling problems themselves. Moderate gambling or compulsive gambling, like substance abuse, is more than an individual problem and must be viewed in the context of family and social systems. The authors examine the consequences of gambling on youth residing in gambling households, specifically family violence. Family related items in gambling screening instruments, violence and pathological gambling as impulse disorders, the relationship among violence, pathological gambling and substance abuse, are examined. Treatment issues discussed include family therapy for children of compulsive gamblers, and treatment services for adolescent compulsive gamblers, as well as treatment of the family system, and education issues.

Vitaro, F., Arseneault, L., & Tremblay, R. E. (1997). Dispositional predictors of problem gambling in male adolescents. *American Journal of Psychiatry*, 154(12), 1769-1770.

Keywords: impulse

Abstract: Objective: This study investigated the possible relationship between impulsivity in early adolescence and gambler status in late adolescence. Method: Impulsivity measures consisting of self-reports and teacher ratings were gathered from 754 boys in early adolescence, and their gambling status in late adolescence was assessed with a self-report measure. Results: On both measures of impulsivity, nongamblers had the lowest scores, recreational gamblers had the next higher scores, low problem gamblers had still higher scores, and high problem gamblers had the highest scores. Conclusions: These findings support the DSM-IV classification of problem gambling as a deficit in impulse control.

Vitaro, F., Arseneault, L., & Tremblay, R. E. (1999). Impulsivity predicts problem gambling in low SES adolescent males. *Addiction*, 94 (4), 565-575.

Keywords: impulse

Abstract: Aims: This study investigated whether impulsivity measured in 12-14-year-olds could predict problem gambling in late adolescence, above and beyond other personality factors such as aggressiveness and anxiety. Design. A prospective-longitudinal design was used, thus overcoming limitations of past studies which used concurrent or retrospective designs. Participants and measurements: The sample included 154 boys living in economically deprived neighborhoods. Impulsivity measures comprised self-reports, teacher ratings and laboratory tasks, and were administered during early adolescence. Gambling behavior was assessed at age 17 using a self-report measure. Early gambling behavior and socio-demographic information were also collected for control purposes. Findings: Results revealed that a self-report measure of impulsiveness and a card-sorting task significantly predicted problem gambling, even after controlling for socio-demographic variables, early gambling behavior and other personality variables such as aggressiveness and anxiety. Moreover, the predictive link held across all levels of aggressiveness and anxiety. Both impulsivity measures seemed to tap an inability to foresee negative consequences and an inability to stop responding despite unfavorable contingencies. Conclusion: These findings suggest that disinhibited individuals with response modulation deficits are at risk for problem gambling, thus supporting the DSM-IV classification of pathological gambling as an impulse central deficit.

Vitaro, F., Brendgen, M., Ladouceur, R., & Tremblay, R. E. (2001). Gambling, delinquency, and drug use during adolescence: Mutual influences and common risk factors. *Journal of Gambling Studies*, 17(3), 171-190.

Keywords: impulse, syndrome

Abstract: The purpose of this study was threefold: (1) to assess the possible mutual influence between gambling, substance use, and delinquency over a two-year period during mid adolescence, (2) to test whether variables that are usually predictive of delinquency and substance use also predict gambling, and (3) to test whether the links between the three problem behaviors could be, at least partially, accounted for by common antecedent factors (impulsivity, parental supervision, and deviant friends) assessed during early adolescence. Seven hundred and seventeen boys participated in the study. Impulsivity, parental supervision, and friends' deviancy were collected when participants were 13 and 14 years of age. Gambling, substance use, and delinquency were collected through self-reports at ages 16 and 17 years. Results showed no influence or modest influence of problem behaviors on each other from age 16 to age 17 years, once current links and auto-correlations were accounted for. Conversely, the cross-sectional links between the three problem behaviors at each age were moderately high. Impulsivity, low parental supervision, and deviant friends were predictively related to each problem. Finally, a significant, although modest, portion of the covariance between the three problem behaviors was accounted for by these three predictors. The present findings contradict previous findings about the influence of gambling on other problem behaviors and support the notion of a "general problem behavior syndrome" fed by generic risk factors.

Vitaro, F., Ferland, F., Jacques, C., & Ladouceur, R. (1998). Gambling, substance use, and impulsivity during adolescence. *Psychology of Addictive Behaviors*, 12(3), 185-194.

Keywords: impulse

Abstract: This study tested whether problem gambling and substance use in adolescents are related and whether they could have a common link with impulsivity. A community sample of 765 adolescents participated. Gambling and substance use were assessed when adolescents were 17 yrs old. Impulsivity and impulsivity-related behaviors were assessed when adolescents were 12, 13, and 14 yrs old. Groups of gamblers and groups of substance users were formed. A comorbid group was also formed. Results indicated that problem gamblers were more at risk of also being problem substance users and vice versa than nonproblem participants. In addition, comorbid participants were more impulsive than problem gamblers only or problem substance users only. These findings are discussed in light of the possibility that problem gambling and substance use develop simultaneously during adolescence and share a common impulse-control deficits origin.

Winters, K. C., & Anderson, N. (2000). Gambling involvement and drug use among adolescents. *Journal of Gambling Studies*, 16(2-3), 175-198.

Keywords: syndrome, addiction

Abstract: The literature on youth gambling often notes the relationship of gambling involvement to drug use. The extent of this association and its importance toward advancing knowledge about the origins and course of adolescent gambling are discussed. The authors contend that (a) adolescent gambling, like drug use, may be a normal part of adolescence from a statistical perspective, (b) claims that the prevalence rate of problem/pathological gambling is comparable or higher than the rate of substance use disorders are not supportable at this time given the weaker methodological studies in the gambling area, (c) while research suggests that similar risk factors may be important determinants for both behavior domains, prospective studies of adolescent development are needed to further clarify which factors are unique and common to adolescent gambling, and (d) greater documentation of the harm associated with adolescent gambling is a major barrier to garnering more prevention and treatment resources for this issue.

Winters, K. C., Stinchfield, R., Botzet, A., & Anderson, N. (2002). A prospective study of youth gambling behaviors. *Psychology of Addictive Behaviors, 16*(1), 3-9.

Keywords: syndrome

Abstract: Little is known about the course and outcomes of adolescent gambling. This prospective study describes findings from a 3-wave (Time 1 [T1], Time 2 [T2], and Time 3 [T3]) assessment of gambling behaviors among youth (gambling and regular gambling (weekly or daily) were observed across T1, T2, and T3. The rate of at-risk gambling significantly increased at T3 (young adulthood), whereas the rate of problem gambling remained stable over time. Several adolescent risk factors were associated with either T3 at-risk or problem gambling, many of which are risk factors for adolescent substance abuse. Findings suggest that important to the origins of young adult gambling problems are risk factors associated with the problem behavior syndrome of adolescence.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993). Patterns and characteristics of adolescent gambling. *Journal of Gambling Studies, 9*(4), 371-386.

Keywords: syndrome

Abstract: Surveyed 702 adolescents (aged 15-18 yrs) regarding their gambling experiences and psychosocial risk status. Gambling was reported by most of the Ss, with 8.7% classified as problem gamblers. Correlates of problem gambling included school difficulties, regular drug use, delinquency, parental gambling, and being male. Adolescent gambling is conceptualized as a normal experience of youth, yet those in the problem gambling group may be particularly vulnerable to future gambling problems.

4.2 Correlates

Abbott, M., Palmisano, B., & Dickerson, M. (1995). Video game playing, dependency and delinquency: A question of methodology? *Journal of Gambling Studies. Special Issue: Slot Machine Gambling*, 11(3), 287-301.

Keywords: financial, behavioral

Abstract: Conducted a methodological challenge to S. Fisher's (1992) study of adolescent fruit machine gamblers, using young video game players. 183 11-16 yr old video game players (152 males; 31 females) were recruited from 4 amusement arcades to answer a computerized questionnaire. Use of an analysis similar to Fisher confirmed results for adolescent fruit machine users. However, a separation of key variables and the use of a multiple regression analysis showed that of money spent, time spent and impaired choice, only the 1st was a significant predictor of delinquency. Results suggest that delinquents have more disposable income to spend on their leisure activities. Video game playing and possibly fruit machine gambling appear to be independently associated with delinquency; in video game playing this association is not mediated by dependency.

Adebayo, B. (1998). Gambling behavior of students in grades seven and eight in Alberta, Canada. *Journal of School Health*, 68(1), 7-11.

Keywords: behavioral, demographic

Abstract: This article reports results from a survey of gambling activities of seventh and eighth grade students in northeastern Alberta, Canada. Results confirmed that gambling practices are common among young adolescents. During the 12 months preceding the survey, virtually all respondents (98%) had gambled. Playing scratch tickets was the gambling activity most often played by young adolescents, followed by bingo. Boys were more likely than girls to engage in all forms of gambling activities. Sports betting and wagering on games of skill dimension were mostly male domains, whereas games of chance were female pursuits. Survey implications for public health officials are discussed.

Adlaf, E. M., & Ialomiteanu, A. (2000). Prevalence of problem gambling in adolescents: Findings from the 1999 Ontario Student Drug Use Survey. *Canadian Journal of Psychiatry*, 45(8), 752-755.

Keywords: demographic

Abstract: Objectives: To describe the prevalence of gambling disorders in adolescent students in Ontario. Method: Data were based on a random survey of 2,371 Ontario students in grades 7 to 13 using the South Oaks Gambling Screen revised for adolescents (SOGS- RA). Results: In total, 5.8% of students met the criteria for past-year problem gambling, and an additional 7.5% met the criteria for at-risk gambling. Gambling disorders were significantly higher among male students than female, but did not differ significantly by age or region. Conclusion: The prevalence of gambling disorders among adolescents warrants thorough investigation and ongoing monitoring.

Allcock, C. C., & Grace, D. M. (1988). Pathological gamblers are neither impulsive nor sensation-seekers. *Aust N Z J Psychiatry*, 22(3), 307-311.

Keywords: individual

Abstract: Ten pathological gamblers, ten alcoholics, ten heroin addicts and twenty five non-patients were compared using Zuckerman's Sensation Seeking Scale (SSS) and Barratt's Impulsivity Scale (BIS). The pathological gamblers did not differ from the non-patient group on either measure. Drug addicts scored significantly higher and alcoholics significantly lower than the pathological gamblers and the non-patient group on the SSS, while drug addicts scored significantly higher than the other groups on the BIS. The difficulties in defining impulsivity are discussed. It is suggested that the classification of pathological gambling as a disorder of impulse control should be reconsidered.

Arbinaga, F. (2000). Descriptive study of pathological gambling in underage students: Sociodemographic characteristics, use of drugs, and depression. *Adicciones*, 12(4), 493-505.

Keywords: demographic, behavioral, emotional, vocational

Abstract: Studied the relation of sociodemographic variables, drug consumption, psychological symptoms, and pathological gambling in 130 school-aged children and adolescents (aged 8-17 yrs) in Spain. Data on sociodemographic variables, drug use, clinical and psychological symptoms, and gambling behavior were obtained by semi-structured group interview. The South Oaks Gambling Screen (H. Lesieur and S. Blume, 1987), the Children's Depression Inventory, and a questionnaire on gambling behavior were used. The data were evaluated according to age, sex, parental income, grade level, school satisfaction, drug use type and frequency, depression levels, suicidal thoughts, and diagnosis of problem or pathological gambling. The results indicate that problem gambling behavior occurs in 11.5 percent and pathological gambling behavior in 5.4 percent of Ss, that 71.5 percent of pathological gamblers show slight to severe depression, and that 42.9 percent of pathological gamblers have thought about suicide. Implications for developing intervention and prevention programs are discussed.

Arbinaga-Ibarzabal, F. (1996). Gambling behavior and use of drugs in an adolescent student sample in Huelva city. *Analisis y Modificacion De Conducta*, 22(85), 577-601.

Keywords: demographic, behavioral, cognitive, structural

Abstract: Studied the gambling behavior and the level and types of drug use among adolescent and young adult students in Huelva, Spain. Human Ss: 146 male and female Spanish adolescents and adults (aged 13-26 yrs) (secondary school and university students). The Mental Disorders-III-Revised (DSM-III-R) was used. A questionnaire on demographic variables, education, drug use, gambling, and gambling motivation was administered. Ss' perceptions of drug accessibility and perceptions of drug risks were correlated with their level and type of drug use. (English Abstract)

Arcuri, A. F., Lester, D., & Smith, F. O. (1985). Shaping adolescent gambling behavior. *Adolescence*, 20(80), 935-938.

Keywords: behavioral

Abstract: A survey was conducted to explore the incidence of casino gambling by adolescents. It was found that 64% of the students at one Atlantic City high school had gambled at the casinos. The dangers of shaping compulsive gambling behavior through societal acceptance of legalized gambling are discussed.

Arseneault, L., Ladouceur, R., & Vitaro, F. (2001). Gambling and psychotropic substance consumption: Prevalence, coexistence and consequences. *Canadian Psychology*, 42(3), 173-184.

Keywords: behavioral, individual

Abstract: The present article is a critical review of research examining the relationship between pathological gambling and drug/alcohol addiction in adults and adolescents. We present diagnostic criteria and prevalence estimates for each population. In adults, the prevalence of drug or alcohol dependence is five time greater among pathological gamblers in treatment than it is among the general population. Adults with both disorders exhibit greater levels of impulsiveness and disinhibition than individuals with a single diagnosis. The few studies that have investigated the co-morbidity of pathological gambling and drug/alcohol addiction in adolescents yield results similar to those obtained in adults. Pathological gambling is highly correlated with drug, alcohol and cigarette consumption. Moreover, impulsiveness is greater among adolescents with a co-morbid diagnosis. This review suggests the importance for treatment and prevention programs to take into account the possible co-morbidity among these disorders.

Barnes, G. M., Welte, J. W., Hoffman, J. H., & Dintcheff, B. A. (1999). Gambling and alcohol use among youth: Influences of demographic, socialization, and individual factors. *Addictive Behaviors, 24*(6), 749-767.

Keywords: behavioral, demographic, individual, social

Abstract: Gambling and alcohol use are both prevalent among youth and these behaviors may have common predictors within four domains: sociodemographic, individual, psychological, socialization (parental and peer), and other problem behavior. Data were from two household samples of youth in the Buffalo, NY area. Both studies included the same measures of alcohol consumption and gambling frequency, and comparable measures of variables in the four domains. Multivariate analyses of variance revealed that impulsivity, moral disengagement, and delinquency (adolescent or peer delinquency) predicted alcohol consumption and gambling in both studies, even after controlling for demographic factors. Parental monitoring, cigarette use, and illicit drug use predicted alcohol consumption in both studies, but did not predict gambling once the demographic and individual factors were taken into account.

Barnes, G. M., Welte, J. W., Hoffman, J. H., & Dintcheff, B. A. (2002). Effects of alcohol misuse on gambling Patterns in Youth. *Journal of Studies on Alcohol, 63*(6), 767-775.

Keywords: behavioral, demographic, social, individual

Abstract: Objective: Gambling and alcohol misuse are prevalent among youth and may be part of a common problem behavior syndrome. It was hypothesized that alcohol misuse would predict a pattern of increased youth gambling or a pattern of stable high gambling after controlling for key sociodemographic, socialization and individual factors. Method: Data were analyzed from two longitudinal studies of youth living in a western New York metropolitan area. Respondents' gambling at two times over the course of 12-18 months was classified into one of five gambling pattern groups, representing flat-low, increasing, flat-medium, flat-high and decreasing levels of gambling. Results: Alcohol misuse among males predicted increasing gambling over time or a pattern of stability of high rates of gambling even after controlling for socioeconomic status, race, age, impulsivity and parental monitoring in the family study. Higher parental monitoring and lower alcohol misuse were significant in predicting a decreasing pattern of gambling among males in the male delinquency study. For females in the family study, alcohol misuse predicted an increasing pattern of gambling only when other factors such as high impulsivity or low parental monitoring were present. Conclusions: An understanding of adolescent gambling must take into account a variety of demographic, socialization and individual factors, as well as the co-occurrence of alcohol misuse.

Becona, E. (1997). Pathological gambling in Spanish children and adolescents: An emerging problem. *Psychological Reports, 81*(1), 275-287.

Keywords: behavioral, demographic

Abstract: Several studies have shown a high prevalence of pathological gamblers among adults in Spain (between 1.5% and 1.7% of the population 18 years and older). In other countries the prevalence of pathological gambling in children and adolescents has been higher than in adults. Here some results of the first studies conducted in Spain concerning the prevalence of pathological gambling in school children and adolescents (11-16 years) are presented for two cities located in different northern regions of Spain, A Coruna (Galicia) and Gijon (Asturias), with representative samples of school children. The prevalence was 2.2% (n=1,200) and 1.6% (n= 2,185), respectively, for the use of slot machines, using the 1993 DSM- IVJ Questionnaire of Fisher, and 2.4% in the first city with the South Oaks Gambling Screen-Revised Adolescent for all types of gambling. The analyses suggest there is an emerging problem among children and adolescents in Spain, perhaps leading to an increased number of pathological gamblers as adults.

Becona, E., & Gestal, C. (1996). The pathological gambling in Spanish children. *Psicothema, 8*(1), 13-23.

Keywords: demographic, financial, social, biological

Abstract: Studied the prevalence of pathological gambling behavior in Spanish secondary school students. Human Ss: 1,200 normal male and female Spanish school-age children and adolescents (aged 11-16 yrs) (secondary school students). Information on sociodemographic variables and gambling behavior was obtained by questionnaire. The results were evaluated according to sex, age, grade in school, money spent in gambling, gambling behavior of parents, frequency of gambling, and percent of occasional or pathological gamblers, and differences between occasional and pathological gamblers. Test used: The DSM-IVJ Pathological Gambling Questionnaire (S. Fisher, 1993). Statistical tests were used. (English abstract)

Becona, E., & Miguez, M. C. (2001). Problem gambling and risky gambling in adolescents: Its relation with tobacco and alcohol consumption. *Adicciones, 13*(3), 279-288.

Keywords: demographic, behavioral

Abstract: Studied the relationship of gambling and drug and alcohol consumption in 2,790 male and female secondary school students in Galicia, Spain. Data on sociodemographic variables, gambling, and drug and alcohol consumption were obtained by questionnaire. The Spanish version of the revised South Oaks Gambling Scale (K. C. Winters et al, 1993; E. Becona, 1997) was used. The results were evaluated according to age, gender, degree of risky gambling behavior, cigarette consumption per day, alcohol consumption per wk, and type of alcohol consumed. An ANOVA and other statistical tests were used. The results indicate that 5.6 percent of Ss are problem gamblers and 8.2 percent are gamblers at risk. The results also show a clear relation between tobacco and alcohol consumption and gambling risk: Overall, 23.4 percent of Ss smoke daily, but 30.43 percent of at-risk gamblers smoke daily and 56.5 percent of problem gamblers smoke daily. Similar results were found for weekly alcohol consumption. The results indicate a relation of age, male gender, tobacco and alcohol consumption, and problem gambling. Implications for intervention and prevention are discussed.

Becona-Iglesias, E., Miguez-Varela, M., & Vazquez-Gonzalez, F. L. (2001). Problem gambling in secondary school students. *Psicothema, 13*(4), 551-556.

Keywords: behavioral, demographic, financial, social, vocational

Abstract: Studied the prevalence of problem gambling in a representative sample of 2,790 male and female secondary school students aged 14-21 yrs in the region of Galicia, Spain. A Spanish-language version of the South Oaks Gambling Screen for adolescents and young adults (K. C. Winters et al, 1993) was used to assess problem gambling and at-risk gambling behavior. The results indicate that 86.1% of Ss did not gamble, 8.2% of Ss were at-risk gamblers, and 5.6% of Ss were problem gamblers. Gamblers were mainly male. Significant differences were found among groups in the amount of money spent on gambling, perception of parental gambling, school drop-out rate, and parent-child relationship. The prevalence of problem gambling was found to decrease with age.

Bellringer, P. (1992). Gambling: Two sides of the coin. *Youth Clubs, 67*, 22-24.

Keywords: behavioral

Abstract: The Director of the UK Forum on Young People and Gambling shows that gambling is an established part of the scene in this country. For most people, it is a harmless form of entertainment, but for some--including some young people--it can become a destructive 'hidden addiction'.

Bentall, R. P., Fisher, D., Kelly, V., Bromley, E., & Hawksworth, K. (1989). The use of arcade gambling machines: Demographic characteristics of users and patterns of use. *British Journal of Addiction, 84*(5), 555-562.

Keywords: demographic, behavioral, financial, cognitive

Abstract: Despite public concern that young people may become addicted to gambling machines, little empirical data exists on the use of such machines. In the present study, machine users were selected from seven arcades in the Liverpool area and interviewed about their machine using behaviour. Users were of all age groups and came from all occupational classes, although a sizeable minority were young males. Multivariate analysis revealed a cluster of variables, including frequency of visiting arcades, time spent on each visit, amount spent, and overspending, which seemed to indicate habitual machine use. However, there was no clear dividing line between controlled and excessive machine use. Moreover, habitual machine use was not significantly related to length of history of use or perceived luck.

Blaszczynski, A., Steel, Z., & McConaghy, N. (1997). Impulsivity in pathological gambling: The antisocial impulsivist. *Addiction*, *92*(1), 75-87.

Keywords: individual, emotional, behavioral

Abstract: The construct of impulsivity has to date remained relatively unexplored in the pathological gambling literature. This is in spite of recent claims suggesting that impulsivity may be an important feature characterizing a subgroup of pathological gamblers who are claimed to suffer from a Multi-Impulse Personality Disorder. The present study examined the potential role of impulsivity using the Eysenck Impulsivity Scale among 115 pathological gamblers. Results indicate that heightened impulsivity is associated with the degree of severity of psychological and behavioural change in pathological gamblers. However, the findings also indicate that impulsivity closely mirrors components contained in Eysenck Personality Questionnaire Psychoticism Scale, the California Personality Inventory Socialization Scale and DSM-III Antisocial Personality Disorder. This is manifest both in terms of high intercorrelations between the measures of psychopathy and impulsivity and in their predictive relationship to the level of psychological distress suggesting a uniform impulsivity/psychopathy construct. Thus, the research supports a model of pathological gambling in which the severity of associated behavioural and psychological disturbance is mediated by a impulsivity/ psychopathy construct.

Boyer, M., & Dickerson, M. (2003). Attentional bias and addictive behaviour: Automaticity in a gambling-specific modified Stroop task. *Addiction*, *98*(1), 61-70.

Keywords: cognitive

Abstract: AIMS: This study examined the relationship between attention and gambling behaviour by measuring the level of Stroop interference towards gambling-related words in a group of regular poker machine players. DESIGN: A 3 x 2 repeated measures experimental design was employed. The type of word presented (neutral, drug or gambling) was the within-subjects factor and the level of impaired control (high or low) over gambling behaviour was the between-subjects factor. PARTICIPANTS: A sample of poker machine players (n = 60), varying in their frequency of play, were split into two groups based on their level of subjective impaired control over their gambling behaviour (high or low). MEASUREMENTS: A computerized gambling-specific modified version of the Stroop task was used to assess response latencies. The test comprised three word categories: gambling, drug and neutral. The Scale of Gambling Choices (SGC) was used to assess participants' level of impaired control over gambling behaviour. FINDINGS: It was found that the participants who had difficulty in controlling their gambling behaviour (the low control group) took significantly longer to name the colour of the words relating to poker machine gambling, whereas those who had good control over their gambling behaviour (the high control group) did not show any significant differences across the three word categories. CONCLUSIONS: Results support the previous finding that people with a problem behaviour or emotion take longer to colour-name words relating to the area of their concern. The current study extends previous work that has investigated the role of cognitive distortions and biases in the area of addictive behaviour. The current study confirms McCusker & Gettings's findings, but by avoiding the mental disorder conceptualization facilitates theoretical understanding of addictive behaviour. Implications for past models and theories of the Stroop as well as future research directions are discussed.

Buchta, R. M. (1995). Gambling among adolescents. *Clinical Pediatrics*, *34*(7), 346-348.

Keywords: demographic, social, behavioral, biological

Abstract: Gambling onset during adolescence has been the subject of recent articles in the lay press. This study reports on the incidence of gambling in adolescents. There were 97 males (48.7%) and 102 females (51.3%) between the ages of 12 and 18 years. The mean age of the gamblers was 15.12 +/- 1.83 (SEM), and of the nongamblers 14.36 +/- 1.78. Eighty-three percent of the males and 61% of the females reported gambling. Forty-four percent of those who gambled, but only 26% of the nongamblers, reported having at least one parent who gambled. Our study confirms the high incidence of gambling by teenagers. Of concern is the potential link between gambling and other risk-taking or addictive behaviors. Perhaps we should include gambling as part of our anticipatory guidance for adolescents.

Bun, C. J. E., Stolwijk, A. M., & Raat, H. (1994). The relationship between the behavior, the opinion, and the attitude of parents and the behavior of adolescents in drinking, smoking, and gambling. *Tijdschrift Voor Alcohol*, 78-87.

Keywords: behavioral, social, biological

Abstract: Studied the relationship between the drinking, smoking, and gambling behavior of Dutch adolescents and the drinking, smoking, and gambling behavior of their parents including their parents' opinions about the harmfulness of these activities. Also assessed was the influence of parental opinions about their children's drinking, smoking, and gambling behavior. Ss were 1,564 secondary school students and their parents. The adolescent Ss completed questionnaires about their behavior. The adult Ss completed questionnaires about their behavior and opinions. The results were statistically analyzed. (English abstract)

Carroll, D., & Huxley, J. A. A. (1994). Cognitive, dispositional, and psychophysiological correlates of dependent slot machine gambling in young people. *Journal of Applied Social Psychology*, 24(12), 1070-1083.

Keywords: individual

Abstract: Examined dependency in young slot machine players. Cognitive bias was measured in Study 1 in terms of locus of control and in Study 2 as the discrepancy between actual and predicted winnings from a given stake. Personal disposition was assessed via the Eysenck Personality Questionnaire (EPQ). Arousal was indexed by BP at rest and before, during, and after play. In Study 1, with 26 dependent (DGs) and 41 nondependent gamblers (NGs; average age for all Ss 17.3 yrs), DGs were revealed as more internal than their NG counterparts, and were more likely to attribute winning to skill. DGs indicated they played to alleviate boredom; NGs played for fun. In Study 2, with 14 DGs and 18 NGs (mean age 17.8 yrs), DG estimates of returns exceeded what they actually recouped. Slot machine play was associated with an increase in BP, and while Ss did not differ in terms of the magnitude of the rise, there was a trend for DGs to show lower basal levels of cardiovascular activity.

Carroll, D., & Huxley, J. A. A. (1994). Young people and fruit machine gambling. In C. R. Legg & D. A. Booth (Eds.), *Appetite: Neural and behavioural bases. European brain & behaviour society publications series, 1: Appetite: Neural and behavioural bases.* (pp. 285-304). London: Oxford University Press.

Keywords: behavioral

Abstract: (from the chapter) [discusses] one particular manifestation of problem gambling: young people and fruit machines /// research into adolescent fruit machine gambling / surveys of young people and fruit machines / additional correlates of fruit machine gambling / aetiology of pathological fruit machine gambling / explanations of pathological gambling.

Cavedini, P., Riboldi, G., Keller, R., D'Annunzi, A., & Bellodi, L. (2002). Frontal lobe dysfunction in pathological gambling patients. *Biological Psychiatry*, 51(4), 334-341.

Keywords: cognitive

Abstract: BACKGROUND: Limited data are available about the validity of the diagnosis of pathological gambling (PG) and about the etiology and the efficacy of different treatment strategies of this disorder; however, similarities in decision-making behavior between PG patients and patients with ventromedial prefrontal cortex lesions suggest a possible implication of these areas in the pathophysiology of this disorder, as in obsessive-compulsive disorder, in which the decision-making impairment is significantly associated with response to serotonin reuptake inhibitor treatment. Nevertheless, several studies have shown that decision-making functioning is also impaired in drug-addicted patients who have shown abnormalities in ventromedial prefrontal cortex during functional neuroimaging studies. METHODS: We assessed the decision-making function mediated by the ventromedial prefrontal cortex in 20 PG patients and 40 healthy control (HC) subjects using the Gambling Task, which simulates real-life decision-making, testing the ability to balance immediate rewards against long-term negative consequence. RESULTS: Significant differences were found in Gambling Task performance between HC subjects and PG patients, who showed a specific decision-making profile across the sequence of the game. The dissimilarity does not appear to depend on the basic cognitive function deficit of the PG group. CONCLUSIONS: These data seem to suggest the existence of a link between PG and other disorders (i.e., obsessive-compulsive disorder and drug addiction) all having diminished ability to evaluate future consequences, which may be explained at least in part by an abnormal functioning of the orbitofrontal cortex.

Chevalier, S., & Deguire, A. É. (2003). *Gambling: Portrait of the situation in 2002*. Montreal: Institut de la statistique du Québec.

Available at: http://www.stat.gouv.qc.ca/publications/sante/pdf/fascicule_jeux_an.pdf

Keywords: behavioral

Clarke, D., & Rossen, F. (2000). Adolescent gambling and problem gambling: A New Zealand Study. *New Zealand Journal of Psychology, 29*(1), 10-16.

Keywords: behavioral, financial

Abstract: The prevalence of gambling and problem gambling among adolescents in New Zealand has not been adequately investigated. Prospective studies of current underage gambling may be unreliable, because respondents may fear self-incrimination. In this retrospective study, a nonrepresentative sample of 68 first year psychology students, between the ages of 15 and 24 years, completed a questionnaire which asked them to recall their gambling activities before the age of 20 years, and which included the South Oaks Gambling Screen (SOGS). In adolescence, the entire sample had gambled for money at least once, and 18% regularly. Participants who played housie (bingo), gambled in casinos, or bought Lotto tickets, had the highest spending rates. 13% of the sample was classified as problem gamblers and 5% probable pathological gamblers in adolescence. Activities associated with pathological gambling included scratch tickets, gaming machines and housie. Regular gambling significantly predicted problem gambling scores. The results were compared with findings from a national sample and adolescent samples overseas.

Cote, M. A., Vitaro, F., & Ladouceur, R. (2003). Attitudes, knowledge and behavior of Quebec parents in regard to games of chance and gambling youth. *Canadian Psychology, 44*(2), 152-161.

Keywords: social

Abstract: The present study assessed the attitudes, knowledge, and behaviours of parents regarding youth gambling. The randomized sample consisted of 597 parents of children aged 5 to 17 years. The telephone survey was conducted by a professional survey firm. Results indicate that most parents are cognizant about problem gambling among youths. Findings further indicate that parents have accurate and realistic attitudes toward youth gambling. Interestingly, these findings suggest that parents tend to overestimate the prevalence of problem gambling among youths, and underestimate the probability that their own child has gambled and that he/she may have a gambling problem. The majority of parents approve the implementation of prevention programs in schools and many would be interested in participating in such activities if they were offered to adults. This study underscores the pertinence of informing parents about youth gambling and highlights their openness towards and preferences regarding prevention interventions.

Crites, T. W. (2003). What are my chances? Using probability and number sense to educate teens about the mathematical risks of gambling. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 63-83). Reno, NV, US: University of Nevada Press.

Keywords: cognitive

Abstract: (From the chapter) This chapter examines how incorporating a discussion of various games of chance into a classroom unit on probability can build students' number sense while increasing their knowledge on the likelihood of random events. Specifically, this chapter looks at the mathematics of some of the most popular and easily analyzed games: lotteries, keno, roulette, and craps. Some of the fallacies and misconceptions associated with gaming are also presented. Finally, some suggestions on how to incorporate these ideas into the classroom are discussed.

Cunningham-Williams, R. M., & Cottler, L. M. (2001). The epidemiology of pathological gambling. *Seminars in Clinical Neuropsychiatry, 6*(3), 155-166.

Keywords: review

Abstract: Increased attention has been given to the disorder of pathological gambling, especially since the formation of the latest Presidential Commission to study its social and economic impact on the nation. Researchers have experienced difficulty in establishing the prevalence of pathological gambling disorder attributable to several factors, namely: debate and confusion on the best way to define and classify the disorder; assessments of the disorder that are not diagnostic or comprehensive; and, methodological weaknesses in the majority of gambling studies caused primarily by sampling biases. This article summarizes prevalence estimates of pathological gambling disorder in the general population and for subpopulations while addressing the difficulties inherent in their interpretation. Recommendations are offered for future research into this disorder.

Darbyshire, P., Oster, C., & Carrig, H. (2001). Children of parent(s) who have a gambling problem: A review of the literature and commentary on research approaches. *Health & Social Care Community, 9*(4), 185-193.

Keywords: structural, social, biological

Abstract: Problem gambling is becoming an increasingly widespread and damaging social and health problem. As opportunities for gambling become more accessible, especially through lotteries and electronic gaming machines, it is likely that more people will develop serious gambling problems. Given the worldwide increasing spending on gambling activities and the increasing number of problem gamblers, it is unfortunate but likely that the children who grow up in problem gambling families will become an important area of concern for child health and social workers. Considerable research has been undertaken into problem gambling and the adult problem gambler, but within the gambling and child health literature there is almost no recognition of the experiences of children who live in problem-gambling families. Drawing on the findings of the landmark Productivity Commission Report, this review explores the marked increase in gambling and its social effects, especially from the Australian perspective. The damaging social effects of problem gambling on families and children are reviewed and the comparative invisibility of children and young people in such research is discussed. The pervasive influence of developmentalism is critiqued and highlighted in relation to the exclusion of children's perspectives from our research understandings. The review concludes by proposing that adoption of some of the emerging 'new paradigm' approaches to childhood and children's experiences could markedly enhance our understandings of the lives and experiences of this significant group of children and young people.

DeCaria, C. M., Hollander, E., Grossman, R., Wong, C. M., Mosovich, S. A., & Cherkasky, S. (1996). Diagnosis, neurobiology, and treatment of pathological gambling. *The Journal Of Clinical Psychiatry, 5*(Suppl. 8), 80-84.

Keywords: emotional, behavioral, social, vocational

Abstract: Pathological gambling is a disabling disorder that affects at least 2 1/2 million Americans and their families. Although pathological gambling has been characterized as an impulse control disorder, it has also been associated with compulsivity. Essential features of pathological gambling include constantly recurring gambling behavior that is maladaptive, in that personal, familial, and/or vocational endeavors are disrupted. Affective disorders and substance abuse often co-occur. Incidence of suicidality is extremely high. Despite the fact that this disorder is a widespread public health problem, few controlled studies of causes or treatment have been conducted. Preliminary neurobiological studies implicate serotonergic dysfunction in pathological gamblers. Treatment with serotonin reuptake inhibitors, such as clomipramine and fluvoxamine, may be effective in treating this disorder. Well-defined and controlled clinical trials in large samples of pathological gamblers are needed.

Delfabbro, P., & Thrutt, L. (2003). The social determinants of youth gambling in South Australian adolescents. *Journal of Adolescence, 26*(3), 313-330.

Keywords: social, structural, demographic, cognitive, biological, review

Abstract: Recent Australian studies (Moore, S. M., and Ohtsuka, K.(1997). *Journal of Gambling Studies, 13*, 207-236) have revealed a strong youth interest in gambling in Australia, as reflected in current participation levels, future intentions, and attitudes. Implicit in much of this attitudinal research is that youth gambling is strongly influenced by the familial, social and cultural norms to which young people are exposed. In this paper, we investigate the hypothesis that gambling can be understood in terms of variations in economic socialization; namely, the way in which children learn about money, risk, and saving. A school survey of 505 adolescents (aged 15-17 years) showed that over 60% of adolescents were gambling annually and that 3.5% scored in the problematic range on the DSM-IV-J (Fisher, S. E.(1999). *Addiction Research, 7*, 509-538). More frequent gambling was associated with parental and peer gambling and pro-gambling attitudes, but unrelated to adolescents attitudes towards economic concepts. Nevertheless, in partial support of the hypotheses, adolescents whose parents taught them about keeping to a budget, saving money, and maintaining their finances were less likely to express an interest in future gambling.

Derevensky, J., & Gupta, R. (1996, October). *Familial and social influences associated with children's early gambling behavior*. Paper presented at the Interprovincial Conference on Problem Gambling, Winnipeg, Canada.

Keywords: biological, social

Derevneksy, J., & Gupta, R. (2000). Youth gambling: A clinical and research perspective. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 2.

Keywords: behavioral, biological, cognitive, social

Abstract: This paper provides an overview of the current state of knowledge of youth gambling problems. The goals and contributions of the McGill University Youth Gambling Research & Treatment Clinic are highlighted. The authors integrate their clinical and research program findings within the context of the necessity of identifying risk factors associated with problem gambling amongst adolescents. Specific recommendations are made as well as a call for collaborative effort between the public, industry, legislators, clinicians and researchers to help resolve this growing problem.

Derevensky, J., & Gupta, R. (2004). Adolescents with gambling problems: A synopsis of our current knowledge. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Keywords: review, behavioral, cognitive, social

Abstract: It's been 25 years since Henry Lesieur's seminal research on understanding compulsive gambling was published. While still in its infancy, the field of gambling research has evolved and greatly added to a better understanding of this complex behavior, its measurement, its social and familial costs, ways of minimizing and preventing gambling problems, and methods of treating individuals with gambling problems. For most adolescents and adults, gambling remains a form of entertainment without serious negative consequences. Yet, adolescent pathological gamblers, like their adult counterparts and independent of the negative consequences resulting from their excessive gambling, continue to chase their losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Our current empirical knowledge of youth gambling problems is reviewed and recommendations for future research are provided.

Derevensky, J., & Gupta, R. (Eds.). (2004). *Gambling problems in youth: Theoretical and applied perspectives*. NY: Kluwer Academic/Plenum Publishers.

Keywords: behavioral, biological, cognitive, social

Derevensky, J., Gupta, R., & Della Cioppa, G. (1996). A developmental perspective of gambling behavior in children and adolescents. *Journal of Gambling Studies*, 12(1), 49-66.

Keywords: demographic, financial, cognitive

Abstract: Examined developmental differences in children's blackjack gambling behavior. 104 students (51 males; 53 females) from Grades 4, 6, and 8 completed a questionnaire examining their gambling behavior in general and individually played a computerized blackjack game with the following data being recorded: percentage of accuracy, amounts of money bet, gross winnings, percentage of wins, number of hands played, and end balance. Findings reveal few developmental differences in prevalence and frequency of gambling behavior and performance on a blackjack task. Males wagered greater amounts of money and had larger gross winnings than females on the blackjack task. Furthermore, males were more likely to view gambling as involving both large amounts of skill and luck, thus suggesting an illusion of control for gambling activities. Results are discussed from a cognitive developmental perspective.

Dickson, L. M., Derevensky, J., & Gupta, R. (2002). The prevention of gambling problems in youth: A conceptual framework. *Journal of Gambling Studies*, 18(2), 97-159.

Keywords: behavioral, cognitive, social

Abstract: Despite increased awareness of the need to begin educating young children about the potential dangers of gambling, empirical knowledge of the prevention of adolescent problem gambling and its translation into science-based prevention initiatives is scarce. This paper poses the question of whether or not the common elements of tobacco, alcohol, and illicit drug abuse prevention programs can be applied to gambling prevention. Common risk and protective factors across addictions, including gambling, appear to point to the need to develop a general model of primary, secondary, and tertiary prevention. The authors present the need for science-based prevention initiatives and describe a general adolescent risk-taking model as a basis for science-based prevention of adolescent problem gambling and other risk behaviors.

Eadington, W. R. (2003). Economic, social, and policy observations on youth gambling. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 190-198). Reno, NV, US: University of Nevada Press.

Keywords: cognitive

Abstract: (From the chapter) This chapter notes the author's observations on the economic, social and policy issues of youth gambling. Underage gambling is discussed from the perspective of youthful omnipotence, fantasy and reality; gambling and youth development; values and attitudes of youths. Public policy questions are discussed,

Eisen, S. A., Slutske, W. S., Lyons, M. J., Lassman, J., Xian, H., Toomey, R., et al. (2001). The genetics of pathological gambling. *Seminars in Clinical Neuropsychiatry*, 6(3), 195-204.

Keywords: review, biological, structural, emotional, behavioral, social

Abstract: Problem and pathological gambling (PG) occurs in about 5% of Americans. Gambling is associated with substantial psychosocial and psychiatric health problems, and the increasing ease of access to gambling may increase its future prevalence. Therefore, it is important to gain greater insight into the causes of PG. Family studies of PG are consistent with a substantial familial impact on vulnerability to PG. However, family studies cannot distinguish genetic from family environmental influences. By contrast, the study of twin pairs permits the genetic and environmental influences on PG to be estimated. The study of gambling behavior among 3,359 twin pair members of the Vietnam Era Twin Registry suggests that: (1) inherited factors explain a substantial proportion of the variance in the report of symptoms of gambling; (2) there is a single continuum of genetic vulnerability that underlies gambling problems of varying severities; and, (3) the co-occurrence of PG with conduct disorder, antisocial personality disorder, and alcohol abuse/dependence is partially explained by genes that influence both PG and these other psychiatric disorders. Neurophysiological correlates of gambling problems and genetically based differences in neurotransmitter systems may provide biological mechanisms that explain the genetic basis for a predisposition to PG.

Felsher, J. R., Derevensky, J. L., & Gupta, R. (2003). Parental influences and social modelling of youth lottery participation. *Journal of Community & Applied Social Psychology*, 13(5), 361-377.

Keywords: social, biological

Abstract: Objective. The present study sought to investigate the relationship between perceived parental lottery involvement and the bearing this has upon youth lottery participation. Participants. One thousand seventy-two youth, 10-18 years of age participated from 20 elementary and nine high schools throughout the province of Ontario, Canada. Measurements. Measuring Youth Lottery Participation and Playing Behaviour Questionnaire and the DSM-IV-MR-J Revised to screen for youth pathological gambling. Findings. Youth reported playing all forms of lottery tickets with 77% reporting that their parents purchase scratch tickets, lottery draws (50%), and sports tickets (23%) for them. Parental purchases of lottery tickets for their children increased by level of gambling severity. Participants with significant gambling problems perceived higher parental participation in the lottery compared to non-gamblers and social gamblers. The majority of participants reported that their parents were aware of their lottery involvement and were not afraid of getting caught purchasing lottery tickets in spite of legal prohibitions. Conclusion. The results suggest youths' perception of parental involvement with the lottery plays an important role in the initiation and maintenance of lottery participation for youth. Given that youth report receiving lottery tickets from their parents, it is clear that the lottery is perceived as an innocuous form of gambling. Public awareness programmes and education of this issue is critical.

Ferland, F., Ladouceur, R., & Vitaro, F. (2002). Prevention of problem gambling: Modifying misconceptions and increasing knowledge. *Journal of Gambling Studies*, 18(1), 19-29.

Keywords: cognitive

Abstract: Research on gambling clearly demonstrates that today's youth are very much involved in gambling activities. As they take part in these activities, young people develop and entertain irrational thoughts about gambling and become at risk for developing severe gambling problems. In this study, a video specifically designed to correct misconceptions and increase knowledge about gambling was tested on 424 grade 7 and 8 students. The effectiveness of the video was evaluated using four different experimental conditions. Findings indicated that the video significantly improved subjects' knowledge about gambling and corrected their misconceptions. The implications of these results for the prevention of gambling problems are discussed.

Fisher, S. (1991). Governmental response to juvenile fruit machine gambling in the U.K.: Where do we go from here? *Journal of Gambling Studies*, 7(3), 217-247.

Keywords: behavioral

Abstract: The UK government Home Office observed nearly 500 children (aged <16 yrs) while playing slot machines (commonly known as fruit machines) in response to growing public concern that some children are becoming addicted to this form of gambling and committing crime to fund their play. Researchers found no evidence of an association between the playing of amusement machines, dependency, and delinquency. The Home Office study is critically assessed both on its own merit and in the light of research undertaken before and since. Suggestions are made for future sociological research initiatives.

Fisher, S. (1993). Gambling and pathological gambling in adolescents. *Journal of Gambling Studies*, 9(3), 277-288.

Keywords: behavioral, financial, social, demographic

Abstract: Surveyed 460 UK secondary school students (aged 11-16 yrs) to explore the prevalence of adolescent gambling and pathological gambling on fruit machines and related behaviors. 62% of the Ss gambled on fruit machines, 17.3% at least weekly, and 5.7% pathologically. Pathological fruit machine gambling was correlated with gambling for money on other games, cigarette and alcohol use, video playing, parental gambling, playing alone, and an early start (8 yrs or younger).

Fisher, S. (1999). A prevalence study of gambling and problem gambling in British adolescents. *Addiction Research*, 7(6), 509-538.

Keywords: behavioral, demographic, social, biological

Abstract: This study is the first national prevalence study of gambling and problem gambling among British youth. It is wide in scope, embracing all of the main forms of commercial and non-commercial gambling played by young people, but focuses on fruit machines and National Lottery scratchcards, as the gambling forms which have generated most concern. The sample comprised nearly 10,000 12 - 15 year olds from 114 schools in England and Wales. The study found that commercial gambling, particularly on fruit machines and the National Lottery is widespread: 19% had spent their own money on fruit machines during the week prior to the survey and 13% on the National Lottery. The prevalence of problem gambling was 5.6%. The study enquires into the social costs of youth gambling, the comorbidity of problem gambling with other addictive behaviours, the impact of parental gambling and attitudes, and the impact of National Lottery promotions.

Fisher, S., & Griffiths, M. (1995). Current trends in slot machine gambling: Research and policy issues. *Journal of Gambling Studies. Special Issue: Slot Machine Gambling*, 11(3), 239-247.

Keywords: behavioral

Abstract: Overviews some current trends concentrating on research and policy issues related to slot machine gambling. It is demonstrated that throughout the world, research findings have linked slot machines with pathological gambling. Indeed slot machines are now the predominant form of gambling activity by pathological gamblers treated in self-help groups and professional treatment centers in numerous countries. This paper briefly examines the research on slot machines and pathological gambling and then goes on more specifically to examine four areas. These include slot machine gambling and youth, slot machines and arcade video game playing, the possible developmental link between slot machines and video games, and pathological video game playing.

Fortin, J. M., Ladouceur, R., Pelletier, A., & Ferland, F. (2001). Games of chance and gambling in adolescents and in adolescents-at-risk. *Canadian Journal Of Community Mental Health, 20*(1), 135-151.

Keywords: demographic, behavioral, vocational

Abstract: A number of studies have established that adolescents are attracted to games of chance and gambling, and have confirmed that excessive gambling is not a phenomenon of adulthood alone. In Quebec, the proportion of high school students who are struggling with gambling problems is estimated at 2.6% (Ladouceur, Boudreault, Jacques, & Vitaro, 1999). So far, few researchers have studied adolescent populations that are at greater risk of developing gambling problems. The present study was carried out among 104 adolescents in difficulty, ranging in age from 12 to 19 and served by the Centre jeunesse de Quebec. It assesses the prevalence of excessive gambling and the problems associated with it. The results indicate that 92.3% of adolescents had bet at least once during the previous year and 40.4% bet every week. The prevalence of excessive gambling was established at 7.7%. Girls were found to gamble as frequently as boys and to experience as many gambling problems. In addition, habitual gambling was found to be associated with the consumption of psychotropic substances, delinquent behaviour and school absenteeism. The discussion puts the results obtained in perspective and emphasizes the need for establishing gambling prevention programs among at-risk youth.

Frank, M. L. (1990). Underage gambling in Atlantic City casinos. *Psychol Rep, 67*(3 Part 1), 907-912.

Keywords: structural

Abstract: A three-year survey of college students was conducted to ascertain the frequency and preferences of student gambling at nearby casinos in Atlantic City, New Jersey. The data suggest that gambling by underage college students is common and indicates that age control at casino entrances is quite poor. An additional finding of differential memory for wins and losses suggests the need for an information processing analysis of memory for gambling outcomes.

Gerdner, A., & Svensson, K. (2003). Predictors of gambling problems among male adolescents. *International Journal of Social Welfare, 12*(3), 182-192.

Keywords: individual, social, behavioral, demographic, emotional, biological, review

Abstract: The study concerns prediction of gambling problems in 178 male adolescents (aged 16 and 18 years) who completed a questionnaire, which included the South Oaks Gambling Screen (SOGS), a version of the Temperament and Character Inventory, and a number of questions concerning social background, emotional and life-style factors. About 27% of the boys gamble at least weekly. As many as 16% qualify as probable pathological gamblers according to the SOGS. Another 7% are at risk. None of the social background factors are related to severity of gambling problems. The only significant family factor is parental substance misuse. The optimal multivariate model predicts about 30% of the variance in gambling problems. The strongest factor is frequency of alcohol drinking. Several factors indicate a personality with problems in relations to others. Another factor indicates a dreamy personality. Unexpectedly, impulsiveness is not related to gambling. In conclusion, problem gambling among male adolescents is related to life-style and personality, especially in relation to others, but not to usual social background factors. Gamblers are asocial rather than impulsive. The nature of this finding should be further explored, since an asocial personality may point at genetics as well as to early social influences, as may the finding on the relation between gambling and parental drinking.

Govoni, R., Rupcich, N., & Frisch, R. G. (1996). Gambling behavior of adolescent gamblers. *Journal of Gambling Studies, 12*(3), 305-317.

Keywords: behavioral

Abstract: Describes a study where an adolescent version of the South Oaks Gambling Screen was administered to high school students, aged 14 to 19 years, in Windsor, Ontario. Ninety percent of the adolescents were involved in gambling activities and a substantial proportion of these were engaged in underage gambling.

Griffin-Shelley, E., Sandler, K. R., & Lees, C. (1992). Multiple addictions among dually diagnosed adolescents. *Journal of Adolescent Chemical Dependency, 2*(2), 35-44.

Keywords: behavioral, social

Abstract: Investigated the possible presence of multiple addictions (MAs) among 76 adolescents (aged 12-18 yrs) in treatment for psychological problems coupled with chemical dependencies. It was hypothesized these Ss may report problems with compulsive behaviors in different areas other than chemical abuse, such as food, sex, relationships, and gambling. The hypothesis was supported. More than half of the Ss saw themselves as having symptoms of difficulties with relationships, sex, and food. Nicotine and drug dependencies were the most frequently reported problems. Symptoms of alcoholism were also related by more than 8 out of 10. Although results support the possibility of the presence of MAs in Ss, they should be interpreted with caution.

Griffiths, M. (1990). The acquisition, development, and maintenance of fruit machine gambling in adolescents. *Journal of Gambling Studies, 6*(3), 193-204.

Keywords: emotional, demographic, financial, vocational, behavioral, review

Abstract: 50 adolescent fruit machine players (mean age 16.2 yrs) from a user population in the UK participated in a face-to-face interview and questionnaire study examining factors in the acquisition, development, and maintenance of gambling behavior. Nine males were diagnosed as pathological gamblers as measured by Diagnostic and Statistical Manual of Mental Disorders-III--Revised (DSM-III--R) diagnostic criteria. They reported a number of serious consequences from gambling, including gambling debts, truancy, and stealing. Sociological factors appeared to be important in the acquisition of gambling behavior, although the development and maintenance of pathological gambling appeared to be sustained by psychological and physiological variables.

Griffiths, M. (1991). The observational study of adolescent gambling in UK amusement arcades. *Journal of Community & Applied Social Psychology, 1*(4), 309-320.

Keywords: structural, emotional, financial, behavioral, situational, social, cognitive, review

Abstract: In the UK, excessive fruit machine playing is the most documented form of pathological gambling amongst adolescents. Although there have been a few retrospective questionnaire studies in adolescent fruit machine gambling, there has been very little systematic observational fieldwork into the behaviour. The studies reported explore the social world of fruit machine playing using data collected via the monitoring of 33 UK amusement arcades employing participant and non-participant observation methodologies. The basic aims were to observe the arcade clientele and their behavioural characteristics, and to examine motivations for machine playing. Results suggest that level of adolescent gambling depends upon both time of day and time of year, and regular players conform to rules of etiquette and display stereotypical behaviours when playing fruit machines. The results also suggest that adolescents play fruit machines for a wide range of reasons including fun, to win money, to socialize, to escape and for excitement, and that inland and coastal arcades are frequented by different clienteles, probably as a function of the amusement machine available.

Griffiths, M. (1994). An exploratory study of gambling cross addictions. *Journal of Gambling Studies, 10*(4), 371-384.

Keywords: behavioral, demographic

Abstract: Examined the co-existing links between pathological gambling and alcohol/drug addiction in both the gambling substance abuser and the substance abusing gambler (i.e., cross addiction). 456 letters were sent to all drug and alcohol helping agencies in England requesting such information. A total of 150 usable replies were received. Results indicated that gambling cross addictions occur in both adults and adolescents and were almost exclusively a male condition. However, it must be noted only just over half of the responding agencies had encountered gambling cross addiction and reasons for this are discussed. Results also indicated the existence of various cross addicted subgroups. Alcoholics who also had a gambling cross addiction gambled on horse racing, whereas other gambling cross addicts tended to gamble on fruit machines (particularly young adults and adolescents).

Griffiths, M. (1994). Co-existent fruit machine addiction and solvent abuse in adolescence: A cause for concern? *Journal of Adolescence*, 17(5), 491-498.

Keywords: behavioral, demographic

Abstract: Fruit machine addiction and solvent abuse are two behaviours that appear to be emerging problems that occur primarily during adolescence. The evidence that solvent abuse and fruit machine addiction may actually co-exist within the same individual has yet to materialize. However, data presented here taken from a larger study of gambling cross addictions highlighted 16 agencies reporting that fruit machine gambling was specifically associated with some form of psychoactive substance abuse. By far the biggest sub group were cross-addictions involving solvent abuse and fruit machine gambling (9 out of 16). Despite the severe limitations of the data collected (i.e. a mixture of specific records, personal observations and anecdotal evidence) there is little doubt that the co-existence of these two behaviours occurs in some individuals -- primarily male adolescents -- although the prevalence is probably an insignificant minority.

Griffiths, M. (1995). Towards a risk factor model of fruit machine addiction: A brief note. *Journal of Gambling Studies. Special Issue: Slot Machine Gambling*, 11(3), 343-346.

Keywords: vocational, social, individual, financial, emotional, demographic, behavioral, cognitive, biological, review

Abstract: Presents a list of risk factors which can help identify individuals most likely to develop pathological fruit machine playing habits. These factors include, inter alia, being male and between the ages of 16-25 yrs, early onset of fruit machine playing, experience of a big win on fruit machines early in playing career, tendency to be depressed before and excited during playing fruit machines, tendency to be irrational during playing, academic failure, engagement in other addictive behaviors, and parental history of a gambling or other addiction. Possible warning signs for parents to look for in adolescents and younger children include a sudden drop in school performance, personality changes, evasiveness regarding whereabouts, money missing from home, sales of expensive possessions, loss of interest in other activities, lack of concentration, and disinterest in appearance or hygiene.

Griffiths, M. (1998). Fruit machine addiction: An issue for educational psychologists? *Educational & Child Psychology*, 15(4), 33-44.

Keywords: vocational, behavioral

Abstract: It is almost certainly the case that many educational psychologists do not consider fruit machine addiction as a contributory factor in a child or adolescent's behaviour problems. This article attempts to provide a brief overview of some of the major findings and implications in the area of adolescent fruit machine addiction. Fruit machine addiction is more of a problem to children and adolescents than any other form of gambling because it is the only commercial form of gambling legally available for them to gamble on. The worst effects of fruit machine addiction can include truancy, poor schoolwork, criminal behaviour and aggressive behaviour. These are all issues of primary concern to educational psychologists and they should perhaps be aware that a small proportion of behavioural problems may be due to this "hidden" addiction.

Griffiths, M. (1999). Some comments on 'health-related correlates of gambling on the British National Lottery' by Reid, et al. *Psychological Reports*, 85(1), 143-144.

Keywords: physical

Abstract: Comments on the article by S. Reid et al (see record 1999-13505-043) which investigated whether higher average weekly spending on the British National Lottery is associated with various health-related variables. The present author argues that weekly or biweekly lotteries do not tend to be addictive for adults, and in adolescence rather than adulthood that most concern regarding lotteries has been noticed.

Griffiths, M. (2000). Scratchcard gambling among adolescent males. *Journal of Gambling Studies*, 16(1), 79.

Keywords: social

Abstract: Playing instant scratchcards has become a popular activity among a significant minority of the UK population since their introduction by the National Lottery operators (Camelot) on March 21, 1995. This study examined scratchcard gambling in a group of adolescent males. A total of 204 boys from two secondary schools in Birmingham (aged 11 to 16 years; mean age 13.6 years) were administered a questionnaire on their scratchcard gambling behaviour. Ten classes (five in each school) took part in the survey with one class from each year group selected at random by the head teacher. Within each class almost all the children took part. Forty-two percent of the sample (n=86) had bought their own scratchcards since their introduction in March 1995. Ten children (12% of the gamblers who had bought scratchcards themselves) met an adapted version of the DSM-IV criteria for pathological gambling on scratchcards. Furthermore, a significant relationship was found between parents buying scratchcards and the child's scratchcard purchasing behaviour.

Griffiths, M., & Sparrow, P. (1996). Funding fruit machine addiction: A hidden crime. *Probation Journal*, 43(4), 211-213.

Keywords: behavioral

Abstract: Fruit machine gambling is a significant problem for a minority of adolescents. Reports a growing body of research which connects excessive gambling with acquisitive crime and urges greater attention by criminal justice professionals.

Griffiths, M., & Wood, R. T. A. (2000). Risk factors in adolescence: The case of gambling, videogame playing, and the internet. *Journal of Gambling Studies*, 16(2-3), 199-225.

Keywords: review, behavioral

Abstract: It has been noted that adolescents may be more susceptible to pathological gambling. Not only is it usually illegal, but it appears to be related to high levels of problem gambling and other delinquent activities such as illicit drug taking and alcohol abuse. This paper examines risk factors not only in adolescent gambling but also in videogame playing (which shares many similarities with gambling). There appear to be three main forms of adolescent gambling that have been widely researched. Adolescent gambling activities and general risk factors in adolescent gambling are provided. As well, the influence of technology on adolescents in the form of both videogames and the Internet are examined. It is argued that technologically advanced forms of gambling may be highly appealing to adolescents.

Griffiths, M. D. (1989). Gambling in children and adolescents. *Journal of Gambling Behavior*, 5(1), 66-83.

Keywords: review, social, behavioral

Abstract: The topic of adolescent gambling is attracting growing interest, but there has still been little controlled or systematic research into the area, and much of what has been written would best be described as 'armchair theorizing'. The literature concerning pre-adult gambling behavior falls into three general categories: (a) direct and indirect studies concerning adolescent gambling; (b) studies of the economic socialization of children, and (c) consideration of gambling as play and games as precursors to gambling. This paper presents an overview of the literature examining each of these three categories. Special emphasis is placed upon the playing of fruit machines, as it is this activity which is currently regarded as the biggest problem concerning young gamblers, particularly in the U.K. Recommendations for future research are discussed, particularly for work using a functional/behavioural analysis model to determine the variables which influence how adolescents 'learn' to gamble.

Griffiths, M. D. (1990). Addiction to fruit machines: A preliminary study among young males. *Journal of Gambling Studies*, 6(2), 113-126.

Keywords: emotional, behavioral, financial, social, demographic, cognitive, vocational, review

Abstract: Questioned 8 male adolescents about their addiction to playing coin-in-the-slot-machines, or fruit machines (FRMs). Ss began playing FRMs by the age of 11 yrs. Noncommercial gambling (GB) occurred on a more regular weekly basis, but little money was exchanged. Ss reported little or no association between playing FRMs and video game machines. Peer group pressure to play FRMs was relevant only once the player was established in a group of other players. GB was male-oriented: no Ss gambled in front of or with women. Excitement experienced during play was the major factor related to persistence in playing. Staying on the FRM as long as possible using the least amount of money was viewed as skillful. Associated problems included debt and truancy.

Griffiths, M. D. (1990). Adolescent gambling: An observational pilot-study. *Perceptual and Motor Skills*, 70(3), 1138.

Keywords: [no abstract]

Griffiths, M. D. (1991). Amusement machine playing in childhood and adolescence: A comparative analysis of video games and fruit machines. *J Adolesc*, 14(1), 53-73.

Keywords: behavioral, demographic, individual

Abstract: The introduction of video games has met with mixed reviews. In the US, an ongoing debate focusing on the potential problems of video game playing has been taken up by parents, politicians and social scientists. A number of the concerns that have been raised about the playing of video games in the US are very similar to the concerns raised about the playing of fruit machines (slot machines) in the UK. This paper attempts to put the on-going US and UK amusement machine debates into an empirical perspective and attempts a comparative analysis of video games and fruit machines by examining: incidence of play, sex differences and psychological characteristics of machine players, observational findings in arcade setting, the alleged negative consequences of amusement machine playing (i.e. increased aggression and addiction), and an appraisal of amusement machines' positive aspects. Future directions and an expanded version of Brown's (1989) developmental model of a pathology of man-machine relationships are also discussed.

Griffiths, M. D. (1993). Factors in problem adolescent fruit machine gambling: Results of a small postal survey. *Journal of Gambling Studies*, 9(1), 31-45.

Keywords: emotional, cognitive

Abstract: Analyzes data obtained from a postal study of former adolescent fruit machine addicts. 19 Ss (aged 16-25 yrs) completed a questionnaire, which was analyzed using Mental Disorders-III-Revised (DSM-III-R) criteria. 16 of the Ss were deemed to be (or to have been) probable pathological gamblers. Results show that before playing fruit machines, 14 out of 19 respondents often felt in a good mood, but 11 out of 19 reported feeling depressed. During play, excitement increased and depression decreased, whereas after playing, good moods decreased and bad moods increased. At the core of the majority of the gamblers' reasons for excessive playing was escapism. Cognitive bias may be important in the explanation of excessive gambling despite persistent losses. Treatment and intervention techniques include family communication and attendance at Gamblers Anonymous meetings.

Griffiths, M. D., & Hunt, N. (1998). Dependence on computer games by adolescents. *Psychological Reports*, 82(2), 475-480.

Keywords: demographic, behavioral

Abstract: As computer game playing is a popular activity among adolescents, a questionnaire study was undertaken with 387 adolescents (12-16 years of age) to establish their "dependence" using a scale adapted from the DSM-III-R criteria for pathological gambling. Analysis indicated that one in five adolescents were currently "dependent" upon computer games. Boys played significantly more regularly than girls and were more likely to be classified as "dependent." The earlier children began playing computer games it appeared the more likely they were to be playing at "dependent" levels. These and other results are discussed in relation to research on other gaming dependencies.

Griffiths, M. D., & Sutherland, I. (1998). Adolescent gambling and drug use. *Journal of Community & Applied Social Psychology*, 8(6), 423-427.

Keywords: behavioral

Abstract: In this study, 4,516 adolescents (aged 11-16 years) completed a questionnaire examining the relationship between underage National Lottery gambling, underage scratchcard gambling, cigarette smoking, drinking alcohol and drug use. It was found that these behaviours were closely linked. Adolescent gamblers reported that they were significantly more likely to drink alcohol (particularly 'alcopops'), smoke tobacco and take drugs compared to non-gamblers.

Gupta, R. & Derevensky, J. (1996). The relationship between gambling and video-game playing behavior in children and adolescents. *Journal of Gambling Studies*, 12(4), 375-394.

Keywords: demographic

Abstract: 51 male and 53 female 9-14 yr olds completed a questionnaire exploring issues related to perceptions of video-game playing and gambling. A computerized blackjack game was individually administered. High frequency video-game players (HVPs) were compared to low frequency video-game players (LVPs) with respect to their gambling performance on the blackjack gambling task and information from the questionnaire. Risk-taking strategies used by avid video-game players, and whether or not Ss perceived gambling and video-games as involving similar amounts of skill or realized that gambling is primarily a game of chance were examined. Results suggest that HVPs gamble more than LVPs, report that gambling makes them feel more important, and take greater risks on the blackjack gambling task although no overall differences in success were found. Males exhibited greater risk-taking tendencies on the blackjack task than females.

Gupta, R., & Derevensky, J. (1997). Familial and social influences on juvenile gambling behavior. *Journal of Gambling Studies*, 13(3), 179-192.

Keywords: social, demographic, situational, cognitive, biological, review

Abstract: Social learning theory maintains that individuals model, learn, and maintain behaviors that are observed, appealing, and reinforcing. As such, parents and family members can often serve as significant models for gambling. To provide a clearer understanding of the familial and social factors contributing to juvenile gambling behavior, 477 9-14 year olds in grades 4, 6, and 8 completed a questionnaire inquiring about their gambling activities, including where and with whom gambling occurs, as well as information concerning their perceptions of their own gambling behavior. Results indicate that 86% of Ss who gamble regularly reported gambling with family members. Ss' responses also indicated gambling with their friends (75%), gambling alone (18%), and with strangers (8%). As children's age increased they tended to gamble more at friend's homes and at school. Prevalence rates indicated that 81% of the total sample had gambled at one point in their lives, and 52% of those Ss reported gambling once a week or more. 11% reported that gambling makes them feel important, 27% felt they gamble more than they desire to do so, and only 10% of the grade 8 students fear being caught gambling, suggesting gambling activities to be a socially acceptable behavior.

Gupta, R., & Derevensky, J. (1998). An empirical examination of Jacobs' General Theory of Addictions: Do adolescent gamblers fit the theory? *Journal of Gambling Studies*, 14(1), 17-49.

Keywords: addiction, behavioral

Abstract: The present study examines 817 adolescent High School students' gambling behavior. Participants completed the DSM-IV-J, a gambling screen examining severity of gambling problems along with the High School Personality Questionnaire (HSPQ), the Reynolds Adolescent Depression Scale (RADS) and a questionnaire devised by the authors inquiring about gambling behavior, substance abuse, alcohol consumption, and cigarette smoking. The study seeks to test the Jacobs' (1986) General Theory of Addictions, using problem and pathological adolescent gamblers as the prototype to test the model. The results obtained through path analysis and logistic regression suggest that Jacobs' theory is a plausible and likely explanation for the development of a gambling addiction amongst adolescents. The clinical implications are addressed.

Gupta, R., & Derevensky, J. (1998). Adolescent gambling behavior: A prevalence study and examination of the correlates associated with problem gambling. *Journal of Gambling Studies*, 14(4), 319-345.

Keywords: behavioral, cognitive, social, demographic, biological, review

Abstract: Adolescent high school students in the Montreal region completed the DSM-IV-J gambling screen along with a questionnaire devised by the authors inquiring about their gambling behavior, including items assessing the types of activities in which they engage, frequency of involvement, reasons for gambling, and their cognitive perceptions of gambling activities. The results indicate that, in general, 80.2% of the 817 Ss reported having gambled during the previous year, with 35.1 % gambling a minimum of once per week. Ss reported participating in gambling behavior more often than any other addictive behavior (e.g. cigarette smoking, alcohol consumption, and illicit drug use). The mean age of onset of gambling behavior for the sample was 11.5 years. The rate of pathological gambling was 4.7% as measured by the DSM-IV-J. Pathological gamblers were more likely to have parents with gambling problems and to be engaging in illegal activities than non-pathological gamblers. Gender differences were evident, with males engaging in gambling activities more than females and males more attracted to sports lottery tickets and sports pool betting and females more attracted to lottery tickets and bingo. Gambling awareness and prevention issues are addressed.

Gupta, R., & Derevensky, J. (2000). Adolescents with gambling problems: From research to treatment. *Journal of Gambling Studies*, 16(2-3), 315-342.

Keywords: behavioral, cognitive, social

Abstract: Considerable interest in the area of youth gambling has prompted an increase in empirical investigations examining the correlates associated with youth experiencing severe gambling problems. Based upon the current state of knowledge and our clinical experience, the development of the treatment program for youth with serious gambling problems employed at the McGill University Youth Gambling Research and Treatment Clinic is described. The major tenets, underlying philosophy, and therapeutic processes are presented. A case study is included to illustrate the therapeutic approach. The authors present the need for greater funding for more basic and applied research and the necessity for further scientifically validated treatment and prevention programs.

Hardoon, K. K., & Derevensky, J. (2001). Social influences involved in children's gambling behavior. *Journal of Gambling Studies*, 17(3), 191-215.

Keywords: demographic, social, financial

Abstract: Children (N = 130) in grades 4 and 6 from various schools in the Greater Montreal Region completed a questionnaire concerning their gambling behavior and played a computer-simulated roulette game individually (baseline trial & post-test trial) and in groups (same and mixed gender dyads or triads: group trial). The purpose of this design was to measure children's betting behavior (via average wagers) and to determine if any changes in betting occur as a result of playing in groups of two, three, same and/or different gender peers. Results of repeated measures analyses reveal that during individual and group play, males consistently exhibit higher average wagers than females. Average wagers of females and mixed gender groupings appear to be most affected by the group condition. Females were found to increase their average wagers when playing with females and males. Female dyads' wagers increase significantly during group play, indicating they are dramatically affected by the group game. Most changes resulting from group play were generally maintained over a relatively short period of time in the post-test condition. Results are interpreted with respect to the importance of the influence of the peer group on children's gambling behavior. Future directions for research are suggested.

Hardoon, K. K., & Derevensky, J. (2002). Child and adolescent gambling behavior: Current knowledge. *Clinical Child Psychology and Psychiatry*, 7(2), 263-282.

Keywords: structural, social

Abstract: The past decade has witnessed a widespread proliferation of gambling venues, increased participation in gambling activities and gambling-related problems, and, as a result, an expansion of research in this area. Research concerned with youth gambling has revealed that children and adolescents are at an increased risk for the development of gambling-related problems. There is a significant amount of evidence that suggests that underage youth are actively participating in both legal and illegal forms of gambling. With increases in the availability and accessibility of gambling activities, the problems that youth gamblers face are likely to increase and/or worsen. The growth of the current generation of youth involvement in gambling has not occurred without personal, social and economic costs. Between 4 and 8% of adolescents report significant pathological or problem patterns of gambling, whereas 10-15% remain at risk for the development of severe problems.

Hardoon, K., Derevensky, J., & Gupta, R. (2002). An examination of the influence of familial, emotional, conduct and cognitive problems, and hyperactivity upon youth risk-taking and adolescent gambling problems. Report prepared for the Ontario Problem Gambling Research Centre, Ontario. Available at: <http://www.education.mcgill.ca/gambling/en/PDF/OPGRC.pdf>

Keywords: vocational, social, emotional, behavioral, demographic, cognitive, biological, individual, review

Abstract: The current report presents the results of a study which empirically examined the relationship between several risk and protective variables associated with adolescent gambling. More specifically, the relationship between familial, emotional, social, and behavioral variables and youth gambling problems was investigated. Another purpose of the current study was to identify several risk factors that may be related to youth problem gambling. The sample consisted of 2,336 students, ages 11-19, from 34 elementary and high schools in the Province of Ontario. Participants completed a questionnaire regarding their gambling activities, gambling involvement, perceived social support, academic performance, drug and alcohol dependence, and various social, emotional, cognitive, behavioral and attentional problems. The results of this research program are intended to provide valuable information for the development of successful risk reduction prevention programs for youth.

Herman, J., Gupta, R., & Derevensky, J. (1998). Children's cognitive perceptions of 6/49 lottery tickets. *Journal of Gambling Studies*, 14(3), 227-244.

Keywords: cognitive, demographic

Abstract: Recent studies have shown the high prevalence of youth gambling behavior. In particular, lottery ticket purchases among children and adolescents appear to be a highly preferred activity. Despite this fact, most research has focused on the underlying erroneous cognitions used by adults when selecting lottery tickets. This study examines the cognitive perceptions of children while engaged in selecting 6/49 lottery tickets. One hundred sixty-seven children (61 females; 106 males) from grades 3, 5, and 7 were asked to rank pre-selected 6/49 lottery tickets which were classified into a) long series, b) specific patterns, c) non equilibrated numbers, or d) perceived random selections. Children verbalized their rationale for selecting each ticket and were permitted to change the numbers on the lottery tickets they liked least in order to make them more likely to be the winning ticket. Findings, in general, revealed small developmental differences in the types of underlying cognitive heuristics used by the children. The use of cognitive heuristics underlying the concept of randomness and the use of significant and meaningful numbers was observed to increase as children got older. Children between 9 and 11 were found to have employed the cluster heuristic more frequently than older children, ages 12-13. The results are interpreted in terms of the cognitive developmental changes in children's perceptions and the potential implication for gambling prevention programs are provided.

Hollander, E., Buchalter, A. J., & DeCaria, C. M. (2000). Pathological gambling. *Psychiatric Clinics of North America*, 23(3), 629-642.

Keywords: behavioral, financial, biological, review

Abstract: With increasing access to gambling facilities through casinos, the Internet, and other venues, PG is a rapidly emerging mental health concern. This impulse-control disorder tends to be comorbid with a wide range of other disorders and is reportedly associated with a high rate of suicide. For most gamblers, gambling is a form of entertainment, but for many individuals, the activity leads to far-reaching disruption of family and work. The personal and societal financial ramifications are severe, and many individuals with PG end up in the criminal justice system. An understanding of the neurobiology of PG is beginning to surface. 5-HT is linked to behavioral initiation and disinhibition, which are important in the onset of the gambling cycle and the difficulty in ceasing the behavior. Norepinephrine is associated with the arousal and risk taking in patients with PG. Dopamine is linked to positive and negative reward, the addictive component of this disorder. Effective treatment strategies for pathological gamblers are emerging. Potentially useful pharmacologic agents include SRIs (clomipramine and fluvoxamine), mood stabilizers for pathological gamblers with comorbid bipolar disorders (lithium), and naltrexone. Cognitive-behavioral psychotherapies offer promising results in the treatment of patients with this disorder. To devise prevention and early-intervention programs, research is needed to identify specific features of the individuals at risk for gambling problems. Education targeting vulnerable youth that show early signs of gambling behavior may be worthwhile and should be investigated further. Funding is necessary to support these endeavors, so perhaps a portion of tax revenues generated from the gambling industry should go toward specialized treatment facilities, educational efforts, and research into the neurobiology and treatment of PG.

Huxley, J., & Carroll, D. (1992). A survey of fruit machine gambling in adolescents. *Journal of Gambling Studies*, 8(2), 167-179.

Keywords: situational, behavioral, financial

Abstract: Fruit machine gambling among children and young people in the United Kingdom has attracted increasing interest. Since 1985 a number of questionnaire surveys have been conducted attempting to assess the incidence of adolescent fruit machine use and to explore its relationship with delinquency. Data yielded by these surveys have been somewhat inconsistent. Estimates of the prevalence of fruit machine gambling have varied considerably and there is disagreement over its association with deviant behaviour. Researchers have drawn divergent conclusions with different implications for legislation. In the present study, questionnaires were administered to 1,395 11 - 12 year old and 14-15 year old school children in the Birmingham area. Although for the majority, fruit machine gambling was found to be an infrequent activity involving fairly small amounts of money, a small but significant proportion were found to be gambling often and spending in excess of their income. There was also evidence to suggest that arcades may serve as venues for undesirable activities.

Ibanez, A., Blanco, C., de Castro, I. P., Fernandez-Piqueras, J., & Saiz-Ruiz, J. (2003). Genetics of pathological gambling. *Journal of Gambling Studies* 19(1), 11-22.

Keywords: biological

Abstract: Pathological gambling (PG) is an impulse control disorder and a model 'behavioral' addiction. Familial factors have been observed in clinical studies of pathological gamblers, and twin studies have demonstrated a genetic influence contributing to the development of PG. Serotonergic, noradrenergic, and dopaminergic dysfunction have been reported as biological factors contributing to the pathophysiology of PG. Molecular genetic techniques have been used to investigate the role of genetic factors in PG. Molecular genetic research has identified specific allele variants of candidate genes corresponding to these neurotransmitter systems to be associated with PG. Associations have been reported between pathological gamblers and allele variants of polymorphisms at dopamine receptor genes, the serotonin transporter gene, and the monoamine-oxidase A gene. Although preliminary data suggest that some of these differences are gender-specific, more research needs to be performed to substantiate gender-specific genetic contributions to the development of pathological gambling. The review of the current findings on genetics of PG suggests that liability to PG is in part mediated by genetic factors. Additional studies are needed to replicate and extend these findings, as well as to better understand the influence of specific allelic variants to differences in biological and behavioral functioning.

Ide-Smith, S. G, & Lea, S. E. (1988). Gambling in young adolescents. *Journal of Gambling Behavior*, 4(2), 110-118.

Keywords: individual, demographic, financial

Abstract: Investigated gambling in 30 male and 20 female British 13-14 yr olds. Questionnaire data indicate that gambling was very pervasive (90% of Ss reported at least some gambling activity). Males gambled more than females, both in absolute terms and as a proportion of income. Income had some influence on gambling behavior, while the effects of intelligence and social class were nonsignificant. Slot machines were the most common form of gambling in both sexes.

Jacobs, D. F. (1986). A General Theory of Addiction: A new theoretical model. *Journal of Gambling Behavior*, 2(1), 15-31.

Keywords: addiction, behavioral, emotional, situational

Abstract: Proposes a general theory of addictions, using the compulsive gambler as the prototype. In the present author's view, addiction encompasses persistent, out-of-control behavioral patterns involving substances such as food, alcohol, other licit and illicit drugs, and activities such as gambling. Addiction is defined as a dependent state acquired over time to relieve stress. In the addictive personality syndrome model presented, 2 interrelated sets of factors predispose persons to addictions: an abnormal physiological resting state and childhood experiences producing a deep sense of inadequacy. All addictions are hypothesized to follow a similar 3-stage course: discovery, resistance to change, and exhaustion. The theory suggests it is possible to identify high-risk youth and prevent the development of addictions.

Jacobs, D. F. (2000). Juvenile gambling in North America. An analysis of long term trends and future prospects. *Journal of Gambling Studies*, 16(2/3), 119-152.

Keywords: behavioral, emotional

Abstract: Long term trends, based on findings from twenty independent prevalence studies surveying middle and high school youth in North America, suggest that within the past year two out of three legally underage youth have gambled for money. In the United States and Canada, as many as 15.3 million 12 -17 year olds have been gambling with or without adult awareness or approval, and 2.2 million of these are experiencing serious gambling-related problems. Lottery play dominates legalized forms of gambling among juveniles in both the United States and Canada. Trends between 1984-1999 indicate a substantial increase in the proportion of juveniles who report gambling within the past year, and a parallel increase in the proportion of juveniles reporting serious gambling-related problems. Yet, there continues to be little public awareness or concern about the extent, or the potential hazards associated with juvenile gambling. A composite profile of juveniles reporting numerous gambling problems is contrasted with their peers who reported few or none. Future prospects concerning this growing problem are offered.

Johansson, A., & Gotestam, K. G. (2003). Gambling and problematic gambling with money among Norwegian youth (12-18 years). *Nordic Journal of Psychiatry*, 57(4), 317-321.

Keywords: demographic, behavioral

Abstract: An epidemiological study was performed on a representative sample of the Norwegian youth population (12-18 years; n = 3,237; response rate 45.2%). The proportion that never gambled was 17.6% and a majority (57.5%) gambled seldom, whereas 24.9% gambled weekly (36.2% of the males and 13.1% of the females). In relation to problematic gambling, the results showed that 1.76% had pathological gambling (2.79% in men and 0.69% in females) and 3.46% "at-risk" gambling. Problematic gambling (pathological gambling plus "at-risk" gambling) was 5.22% (7.82% of the males and 2.52% of the females). The group gambling frequently (at least weekly) was used to calculate pathological gambling and "at-risk" gambling. This resulted in high values, with 7.08% with pathological gambling (7.69% of males and 5.31% of females) and an additional 13.91% with "at-risk" gambling. The DSM-IV, with only 10 questions, gives a conservative estimate of pathological gambling. Slot machines proved the most popular game with 81.8%, followed by football tip (70.8%), Lotto (68.7%) and lotteries (39.4%). When it comes to problematic and pathological gambling, Lotto ranked high compared to other plays that were used more frequently.

Kaminer, V., & Petry, N. M. (1999). Gambling behavior in youths: Why we should be concerned. *Psychiatric Services*, 50(2), 167-168.

Keywords: behavioral, social.

Abstract: Discusses gambling behavior in youths. Gambling is a popular recreational outlet for youth and may include sports betting, cards, lotteries, animal racing, and casino gambling. A disturbing report suggests that gambling by teenagers in casinos is on the rise, and that enforcement of legal age restrictions at casinos is quite poor. As with psychiatric substance use, the threshold that separates normative from pathological behavior, particularly in youths, is not clear. Correlates of gambling behavior, as well as what issues that need to be addressed, are included.

Kaminer, Y., Burlinson, J. A., & Jadamec, A. (2002). Gambling behavior in adolescent substance abuse. *Substance Abuse*, 23(3), 191-198.

Keywords: individual, demographic, behavioral, emotional

Abstract: This study assessed the prevalence and correlates of gambling behavior (GB) in adolescent substance abusers (N = 97) consecutively admitted to an outpatient treatment program. Thirty-four percent of the cohort had never gambled; 57% were classified as social, nonpathological gamblers; 8% were labeled as in transition gamblers; and only 1% met criteria for pathological gambling. A significant finding was that males are more likely to gamble and to have a higher severity score than do females. A younger age of GB onset is seen for girls than boys and is correlated with a history of suicide attempts, diagnosis of depression, number of symptoms of oppositional behavior, cluster B personality disorders, and a higher need for psychiatric treatment. None of the gambling youths was ever referred for GB counseling. Increased awareness for and additional studies of adolescent gambling are required.

Kassinove, J. I., Doyle, K. A., & Milburn, N. G. (2000). Gambling and alcohol use in adolescence. *Journal of Social Behavior and Personality, 15*(1), 51-66.

Keywords: behavioral, demographic

Abstract: A stratified random sample of 318 high school students were surveyed to examine gambling and its relationship to alcohol usage in adolescence. Results indicated that many adolescents gamble and a portion do so in excess. Almost three-quarters of the adolescents reported having gambled in their lifetimes, while almost nine-tenths reported having drunk alcohol in their lifetimes. Male adolescents were more likely to gamble than were females and increased alcohol use was found as grade level increased. More than one-half of the sample reported having gambled before the 9th grade. Some adolescents reported drinking alcohol while gambling and this was more prevalent in males than females and increased with grade. These data suggest the importance of further assessment regarding the relationship between gambling and alcohol in adolescence.

Kearney, C. A., Roblek, T., Thurman, J., & Turnbough, P. D. (1996). Casino gambling in private school and adjudicated youngsters: A survey of practices and related variables. *Journal of Gambling Studies, 12*(3), 319-327.

Keywords: emotional, behavioral, cognitive, social, structural

Abstract: 109 adolescents (mean age 15.8 yrs) from a religious high school and 84 adolescents (mean age 15.7 yrs) from a juvenile detention facility in Las Vegas, Nevada were surveyed to provide additional information about casino gambling practices among adolescents. Of these, 71 were found to gamble regularly (58 males and 13 females; mean age 15.9 yrs). Results indicated many similarities among the 2 groups. The overall sample appeared to have a strong affinity to casino gambling, were diverse in their practices and reasons for gambling, reported a variety of emotional and psychological behaviors when gambling, occasionally experienced problems from casino gambling, and had parents who generally approved and were aware of their children's gambling behavior. The accessibility and family-oriented nature of many new casinos may be responsible for these effects.

Kim, S. W., & Grant, J. E. (2001). The psychopharmacology of pathological gambling. *Seminars in Clinical Neuropsychiatry, 6*(3), 184-194.

Keywords: biological

Abstract: We discuss the rationale of the pharmacological approaches to pathological gambling and review the current status of drug treatments in this area. Specifically, we summarize the treatment study results of serotonin reuptake inhibitors, mood stabilizers, and opioid antagonists in pathological gambling. We also briefly describe the animal and human studies of other pharmacologic agents that show future promise in treating this disorder. Finally, we discuss a research agenda to be addressed in future drug treatment studies in pathological gambling.

Ladouceur, R. (1996). The prevalence of pathological gambling in Canada. *Journal of Gambling Studies. Special Issue: Prevalence Studies of Problem and Pathological Gambling, 12*(2), 129-142.

Keywords: review, demographic, structural

Abstract: Reviewed prevalence estimates of problem and pathological gambling in Canada (R. Ladouceur, see record 71-201676). Ss studied were adults, adolescents, and primary school children (4-6th graders). As with adolescents, primary school boys gambled more than their female counterparts. Data indicate that participation in gambling is not limited to adolescents and adults. The proportions of pathological gamblers found in Canadian studies (ranged from 1.2 to 1.9% for adults) are similar to prevalence rates reported in the US. Given the apparent link between gambling availability and increases in the prevalence of problem and pathological gambling, it is hoped that provincial and federal authorities in Canada will make investments in research and treatment of pathological gambling in the future.

Ladouceur, R., Boudreault, N., Jacques, C., & Vitaro, F. (1999). Pathological gambling and related problems among adolescents. *Journal of Child & Adolescent Substance Abuse, 8*(4), 55-68.

Keywords: demographic, behavioral, vocational

Abstract: The present study evaluates the prevalence of pathological gambling and related problems among 3,426 students in junior and senior high schools in Quebec City. Results indicate that 87% of adolescents have gambled in their lifetime, 77% have gambled in the last twelve months, and 13% gamble at least once a week. More than twice as many boys (18.8%) than girls (8%) gamble every week. The current rate of pathological gamblers among adolescents is 2.6%. This rate is higher among boys (3.7%) than girls (1.5%). Pathological gambling is associated with drug and alcohol use, poor grades and delinquent behaviors. The practical and theoretical ramifications of these results are discussed.

Ladouceur, R., & Dubé, D. (1995). Prevalence of pathological gambling and associated problems in individuals who visit non-gambling video arcades. *Journal of Gambling Studies, 11*(4), 361-365.

Keywords: behavioral

Abstract: The frequency of visits to arcades for non-gambling activities appeared to be correlated with the extent to which individuals gamble, and is furthermore associated with pathological gambling. The rate of pathological gamblers who frequent arcades is more than twice as high as the rates reported in other studies with adolescents and adults.

Ladouceur, R., Dubé, D., & Bujold, A. (1994). Gambling among primary school students. *Journal of Gambling Studies, 10*(4), 363-370.

Keywords: demographic, behavioral

Abstract: This study identifies the gambling behavior of 1,320 Quebec City primary school students aged 8 to 12 of the 4th, 5th and 6th grades. Eighty-six percent admitted to having, at some time or another, bet money. Lotteries are the most popular form of gambling for this age group. Sixty-one percent of these students gamble with lotteries. In descending order of popularity, other games played by students were: bingo, card-playing for money, bets on sports, wagering on specific events, video gambling (video poker and slot machines), and finally betting on games of skill. Gambling behaviors differed according to gender. More than 40% of respondents reported gambling once a week or more for at least one game. Because of the early development of gambling behavior in children, prevention programs for pathological gambling should be implemented as early as the fourth grade.

Ladouceur, R., Jacques, C., Ferland, F., & Giroux, I. (1998). Parents' attitudes and knowledge regarding gambling among youths. *Journal of Gambling Studies, 14*(1), 83-90.

Keywords: social

Abstract: Evaluated attitudes and knowledge of parents regarding gambling behaviors among youths (aged 5-17 yrs). Telephone interviews were conducted among 279 parents (aged 25-64 yrs). Results indicate that parents overestimated the age of children's 1st wagers and underestimated the probability that their own child has already gambled. Most parents (86%) believed that the availability of gambling for youths should be reduced and that schools should include prevention programs concerning problem gambling. Results also show that parents failed to associate excessive gambling with poor grades or with alcohol and drug use. Finally, 84% of the parents reported that they would accept buying lottery tickets for their child. It is suggested that prevention programs for excessive gambling among children should include information for parents.

Ladouceur, R., & Mireault, C. (1988). Gambling behaviors among high school students in the Quebec area. *Journal of Gambling Behavior, 4*(1), 3-12.

Keywords: behavioral

Abstract: Investigated the gambling behavior of 1,612 adolescents from 9 high schools in the region of Quebec city via questionnaires. Results show that 76% of the Ss had gambled once in their lifetime, 65% had placed a bet in the last year, and 24% had gambled at least once a week. Of those who had gambled, 5.6% wanted to stop playing but reported they were unable to do so, while 1.7% were considered to be pathological gamblers.

Ladouceur, R., Vitaro, F., & Cote, M. (2001). Parents' attitudes, knowledge, and behavior toward youth gambling: A five-year follow-up. *Journal of Gambling Studies, 17*(2), 101-116.

Keywords: social, structural

Abstract: This study compares the attitudes, knowledge, and behavior of parents of 5- to 17-year-old children regarding youth gambling. This information was obtained through two telephone surveys conducted in 1995, and 5 years later in 2000, in the Quebec City area. Survey 1, in 1995, was conducted on 279 respondents, while survey 2, in 2000, was carried out with 213 respondents. Results showed a number of changes in parents' attitudes, behavior, and knowledge concerning youth gambling: For example, parents' perception of the age of onset of gambling behavior had improved slightly at the end of the 5-year period. Furthermore, parents were more satisfied with government limitation of access to gambling, and more accurately informed about legal aspects of the sale of lottery tickets. However, the percentage of parents who failed to associate youth gambling with some of its correlates (arcade attendance, parental gambling problems, and friendship with gamblers) increased from 1995 to year 2000. The improvements that were observed suggested that parents had benefited from media-transmitted information during this period. However, the deterioration of some parental attitudes, and the stability of other variables, suggest that it is still important to educate parents about youth gambling, and to design interventions adapted to parents' needs.

Langhinrichsen-Rohling, J., Rohde, P., Seeley, J. R., & Rohling, M. L. (2004). Individual, family, and peer correlates of adolescent gambling. *Journal of Gambling Studies, 20*(1), 23-46.

Keywords: social, demographic, individual, behavioral, biological, review

Abstract: The primary purpose of this study was to determine the individual, family, and peer factors that correlate with adolescent gambling. High school students from three states (N = 1,846) completed an anonymous questionnaire assessing the behavior of themselves, their parents, and their peers. Participants also reported on their gambling behavior via the SOGS-RA, which was used to create five adolescent gambling groups (i.e., Non-Gamblers, Non-Problem Gamblers, At-Risk Gamblers, Problem Gamblers, and Probable Pathological Gamblers). In a discriminant function analysis using demographic, individual, family, and peer factors as potential discriminators, two functions emerged that accounted for 94% of the variance between groups. The first function was linear, with the Probable Pathological Gamblers reporting the highest level of peer and parent gambling, susceptibility to peer pressure, conduct problems, binge drinking, suicide attempts, drug use, and being male. The second function highlighted three unique qualities of individuals in the two outlying groups: Probable Pathological Gamblers and Non-Gamblers. These findings suggest that demographic, individual, family, and peer variables are all important correlates of probable pathological gambling in adolescents. Results also support the utility of a five-group classification scheme based on the SOGS-RA. The clinical implications of these results are discussed.

Lesieur, H. R. (2003). Adolescent gambling research: The next wave. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 228-255). Reno, NV, US: University of Nevada Press.

Keywords: review

Abstract: (From the chapter) This chapter reviews the literature on teen gambling and examines the data lacunae existing in the field. It also makes suggestions for the direction of future research. Surveys of teen gambling (including rates of gambling, expenditure, and gambling problems) are discussed in light of allegations of epidemic teen gambling, as well as teen betting-ring hysteria. This chapter emphasizes studies of problem gambling, the range of gambling problems, definitional issues, and related problems; it reviews research on prevention and treatment of problem gambling among teens, and outlines areas of need research as well as a more inclusive multifactorial model of inquiry.

Lesieur, H. R., & Klein, R. (1987). Pathological gambling among high school students. *Addictive Behaviors, 12*(2), 129-135.

Keywords: demographic, social, vocational, biological

Abstract: Eight hundred and ninety-two high school students from four New Jersey high schools were given a questionnaire concerning their gambling behavior. Ninety-one percent of the students had gambled at least once in their lifetime, 86% gambled in the last year and 32% gambled at least once a week. Using an index which was validated in other research (Lesieur, Blume, & Zoppa, 1986) 5.7% of the students showed clear signs of pathological gambling. The pathological gambling signs index was found to be correlated with sex, parental gambling problems, grade average, and the extent of gambling by the student.

Lightsey, O. R. Jr., & Hulseley, C. D. (2002). Impulsivity, coping, stress, and problem gambling among university students. *Journal of Counseling Psychology, 49*(2), 202-211.

Keywords: individual, situational, demographic

Abstract: The authors investigated whether coping styles moderated the relationship between (a) impulsivity and stress and (b) stress and gambling behavior and tested whether impulsive persons who use avoidant or emotion-focused coping under high-stress conditions are most likely to gamble. Among 202 university student volunteers, 33% of men but only 3% of women reported problem or pathological gambling, and neither stress, impulsiveness, nor coping predicted gambling among women. Among men, impulsiveness, task coping, and emotion coping accounted for significant and unique variance in gambling. For higher task coping and lower emotion-focused coping, impulsiveness had a weaker relationship to gambling. Additionally, among nonimpulsive men, emotion-focused coping in high stress conditions was most likely to result in gambling.

Lupu, V., Onaca, E., & Lupu, D. (2002). The prevalence of pathological gambling in Romanian teenagers. *Minerva Medic, 93*(5), 413-418.

Keywords: social, demographic, behavioral, vocational

Abstract: BACKGROUND: The liberalization of teenagers' way of life strikingly increased in Romania after 1989; this includes gambling. The goal of our study is to analyze the different aspects of gambling in some teenager communities in Romania. METHODS: The study included 500 school-teenagers from 3 different Romanian districts (Cluj, Salaj and Bacau). Of these 217 (43.40%) were males and 283 (56.60%) females. Median age was 16 years old (range 14-19). A structural questionnaire was applied to the teenagers consisting in "The 20 questions of the American Anonymous Gambling Association." Other 20 questions about their age, gender, family, income, school, toxic abuse, gambling preferences, the frequency and the amount of money they use in gambling were also proposed. RESULTS: The results of the study were as it follows: 34 (6.8%) of the tested teenagers were pathological gamblers, 28 (82.36%) males and 6 (17.64%) females, with a ratio F:M of 1:4.6. The majority (82.35%) prefers group gambling and only 17.64% prefer individual gambling. Of these, 47.5% of them gamble very often (almost every day) and 38.2% gamble often (once a week). The most frequent gambling was: pool (55.88%), poker (35.29%), bingo (32.35%), and basketball on a bet (5.88%), black-jack, roulette and craps (2.94% each). Gambling was the reason for school absenteeism and modest results at school in 64.70% and 52.94% of all the teenagers respectively. CONCLUSIONS: The results of the study revealed very concerning aspects of the increased incidence of gambling among Romanian teenagers, compared to the UK (6% of them are gambling).

Maden, T., Swinton, M., & Gunn, J. (1992). Gambling in young offenders. *Criminal Behaviour & Mental Health, 2*(3), 300-308.

Keywords: behavioral

Abstract: 404 Ss (mean age 19 yrs 4 mo) from youth custody centers and prison were interviewed regarding the nature and extent of gambling in their lifestyle and their history of being in the care of local authorities or residing in children's homes. 48 Ss reported heavy gambling (i.e., daily or almost daily). 31 of these Ss reported that gambling had caused them problems in the past and 9 Ss met the Mental Disorders-III-Revised (DSM-III-R) criteria for pathological gambling. Compared to the 356 offenders who did not qualify as gamblers, these Ss were more likely to have had a conviction before the age of 15 yrs, to have served more custodial sentences, to have had more convictions for theft, and a higher degree of financial dependence on crime. Frequent gamblers were more likely than other offenders to have experienced local authority care, residence in children's homes, and some form of psychiatric treatment.

Malone, J. D., & Turner, E. M. (2003). Social policy and youth gambling: Perspectives from the public sector. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 219-227). Reno, NV, US: University of Nevada Press.

Keywords: behavioral

Abstract: (From the chapter) This chapter presents two perspectives on gambling. During his two terms as the treasurer of the Commonwealth of Massachusetts (1991-1999), one of the authors also served as chairman of the Massachusetts State Lottery Commission. The other author served as the executive director of the Massachusetts State Lottery from 1991-1995. This chapter reflects their personal perspectives on the nature of gambling and the complex issues that influence state lotteries as well as their concerns about gambling and its potential effects on the youth of their state.

Moore, S. M., & Ohtsuka, K. (1997). Gambling activities of young Australians: Developing a model of behaviour. *Journal of Gambling Studies*, 13(3), 207-237.

Keywords: demographic, structural, social, personality/ cognitive

Abstract: As more gambling venues open in Australia, youth gambling as problem behaviour has been identified. The aim of this study was to assess youth gambling in a population with easy access to gambling, and to evaluate the adequacy of a model for predicting adolescent gambling frequency and problem gambling. The model comprised a combination of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), personality variables (venturesomeness, impulsiveness), and cognitive bias variables derived from Weinstein's (1980) propositions concerning unrealistic optimism about future life events. A sample of 1,017 school- and university- based adolescents indicated relatively low frequencies of gambling and low scores on the problem gambling scale, with males scoring higher than females on both measures. The TRA was supported with about 30% of the variance of each of gambling behaviour and problem gambling accounted for by intentions, attitudes, and subjective norms. Personality factors added significantly to the prediction of gambling. The cognitive bias variables, although independently not statistically significant, further contributed to prediction.

Moore, S. M., & Ohtsuka, K. (1999). Beliefs about control over gambling among young people, and their relation to problem gambling. *Psychology of Addictive Behaviors*, 13(4), 339-347.

Keywords: cognitive, individual, financial

Abstract: The aim of this study was to assess the association between beliefs about 2 types of control-- (a) illusion of control and (b) internal locus of control--and gambling frequency-problem gambling among young people age 14 to 25 years (435 males, 577 females, and 5 unreported gender). A revised version of the South Oaks Gambling Screen and measures of gambling frequency and gambling beliefs were administered. Results indicated that irrational control beliefs were strongly associated with problem gambling. Young problem gamblers were more likely to believe that they needed money and that gambling would provide it. In addition, young problem gamblers had more faith in their ability to manipulate chance and "beat the system." Regression models with illusion of control and internal control over gambling significantly predicted gambling frequency and problem gambling.

Moore, S. M., & Ohtsuka, K. (1999). The prediction of gambling behavior and problem gambling from attitudes and perceived norms. *Social Behavior and Personality*, 27(5), 455-466.

Keywords: social, cognitive, demographic

Abstract: The aims of this study were to characterise gambling attitudes and social norms among adult Australians, and to evaluate whether gambling behavior (frequency) and problem gambling could be predicted by a model combining attitudes and social influences. With a sample of 215 late adolescents and adults, the Theory of Reasoned Action was found significantly to predict gambling frequency and problem gambling, with intentions to gamble predicting behavior, subjective norms predicting intentions (and gambling frequency), and attitudes predicting intentions. Males scored higher than females on both problem gambling and gambling frequency. Across the sample, although most had gambled at some time (89 per cent), gambling frequency and problem gambling were low, and attitudes and subjective norms with respect to gambling were a complex mixture of acceptance and rejection.

Moore, S. M., & Ohtsuka, K. (2000). The structure of young people's leisure and their gambling behaviour. *Behaviour Change, 17*(3), 167-177.

Keywords: demographic, situational, behavioral, social

Abstract: In this study, the relationship between adolescent leisure and gambling was explored. Three different models of time usage were compared as potential predictors of gambling behaviour and problem gambling among 769 adolescents (15 to 18 years old) from five secondary schools in Melbourne. More leisure time, particularly unstructured leisure, predicted more frequent gambling behaviour for girls and boys. Specific activity factors provided the best time usage-based prediction of gambling behaviour. More time socialising and being involved in organised sport predicted more gambling for boys, possibly because of the access these activities provide to gambling venues. For boys, lower levels of so-called masculine pursuits (activities with other male peers) were associated with problem gambling, as were "cognitive pursuits" such as board games and collecting hobbies. For girls, more time in studious activity mitigated against gambling frequency. Lower levels of typically "feminine" adolescent pursuits predicted problem gambling. By far the major predictor of problem gambling for both sexes was gambling frequency. The role of leisure in problem gambling was discussed in terms of the role played by peer socialising, which may increase risk through access to gambling venues yet simultaneously increase protection through a sense of belongingness.

Nower, L., Derevensky, J. L., & Gupta, R. (2004). The relationship of impulsivity, sensation seeking, coping, and substance use in youth gamblers. *Psychology of Addictive Behaviors, 18*(1), 49-55.

Keywords: behavioral, individual, demographic

Abstract: This study examines the relationship of impulsivity, sensation seeking, coping, and substance use to disordered gambling in a sample of 1,339 youth (637 males and 702 females), 17-21 years old. Results indicate that males with serious gambling problems were more likely than their peers to abuse substances and to use avoidant stress-coping strategies, such as seeking emotional outlets, distracting themselves with other activities, and using humor. In contrast, female disordered gamblers were less likely to engage in active coping and planning strategies. Overall, substance use, coping through distraction, and impulsivity proved the most predictive of disordered gambling for males, and intensity seeking and impulsivity proved most predictive for females. Implications for prevention, intervention, and education are discussed.

Peacock, R. B., Day, P. A., & Peacock, T. D. (1999). Adolescent gambling on a Great Lakes Indian Reservation. *Journal of Human Behavior in the Social Environment, 2*(1-2), 5-17.

Keywords: individual, behavioral, social, biological, emotional

Abstract: Examined the gambling habits of Indian and non-Indian adolescents and the relationship between gambling, other high-risk behaviors, and self-esteem. 185 7th-12th grade students (aged 14-19 yrs) attending a tribal or a public school on a Great Lakes Indian reservation completed questionnaires (D. Zitzow, 1992). Results show statistically significant relationships between gambling habits, parental gambling, other high-risk behaviors, and self-esteem. Native American Ss reported significantly higher levels of negative feelings than non-Natives, which may result in greater risk for problem gambling.

Peele, S. (2001). Is gambling an addiction like drug and alcohol addiction? *Electronic Journal of Gambling Issues: eGambling (EJGI), 3*.

Keywords: emotional, cognitive

Abstract: As compulsive gambling and problem gamblers attract continued and increasing attention — due to state reliance on gambling for revenues and government and private marketing of the gambling experience — conceptions of compulsive, or addictive, gambling have evolved. The disease model of alcoholism and drug addiction, which predominates in the U.S. and North America, has generally been widely adopted for purposes of understanding and addressing gambling problems. However, this model fails to explain the most fundamental aspects of compulsive drinking and drug taking, so it can hardly do better with gambling. For example, people regularly outgrow addictions — often without ever labeling themselves as addicts. Indeed, gambling provides a vivid and comprehensible example of an experiential model of addiction. Elements of an addiction model that gambling helps to elucidate are the cycle of excitement and escape followed by loss and depression, reliance on magical thinking, failure to value or practice functional problem solving, and manipulative orientation towards others.

Petry, N. M., & Tawfik, Z. (2001). Comparison of problem-gambling and non-problem-gambling youths seeking treatment for marijuana abuse. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(11), 1324-1331.

Keywords: physical, behavioral, demographic, emotional

Abstract: Evaluated the prevalence and correlates of problem gambling (PG) in marijuana-abusing adolescents. A retrospective analysis was conducted of data collected from participants entering treatment for marijuana abuse. Of 255 adolescents (aged 12-18 yrs) interviewed, 22% experienced gambling problems. Compared with non-problem gamblers (NPGs), PGs were more likely to be male, of African-American ethnicity, and to live in single-parent homes. Multivariate general linear models compared the 2 groups with respect to psychosocial problems. After controlling for age, gender, and race, differences between the groups emerged in drug use severity, legal difficulties, psychiatric problems, and HIV risk behaviors. PGs reported a greater frequency of overall drug and alcohol use and greater intensity of marijuana use than their NPG counterparts. They had more illegal activity and greater somatization and anxiety symptoms, as well as higher levels of victimization. Compared with NPGs, PGs also reported more recent sexual partners. Data suggest that PG is common in marijuana-abusing youths and that they have increased psychosocial problems. They also indicate the need for early identification and treatment of PG in substance-abusing adolescents.

Pietrzak, R., Ladd, G., & Petry, N. (2003). Disordered gambling in adolescents: Epidemiology, diagnosis, and treatment. *Paediatric Drugs, 5*(9), 583-595.

Keywords: structural, demographic, behavioral, social, biological, individual, review

Abstract: Rapid expansion of legalized gambling has been associated with increased rates of gambling disorders among adults and adolescents worldwide. Epidemiologic studies suggest that, in North America, up to 6% of adults and 20% of adolescents have a gambling problem. Despite increasing prevalence rates of gambling disorders, little research is available on how to treat such disorders in adolescents. Much of what is known about how to treat adolescent problem and pathological gambling comes from research on psychosocial and psychopharmacologic treatments for adult pathological gambling. Risk factors for adolescent gambling disorders include male gender, alcohol and drug use, deviant peers, family history of gambling, and impulsive behavior. While several risk factors characterize disordered gambling among adolescents, the extent to which these characteristics are related remains to be determined. In terms of screening for adolescent problem and pathological gambling, several instruments designed to reflect the Diagnostic and Statistical Manual of Mental Disorders diagnostic criteria for pathological gambling are available. Psychosocial approaches used to treat adult pathological gambling include Gamblers Anonymous, cognitive-behavioral therapy (CBT), and motivational enhancement therapy (MET). Among adolescents, CBT as well as an eclectic therapy have been helpful in reducing problematic gambling behavior. In terms of pharmacotherapy, three classes of psychotropic drugs have been used to treat adult pathological gambling - serotonin reuptake inhibitors, opioid antagonists, and mood stabilizers. While some of these pharmacotherapies have been efficacious in treating adult pathological gambling, additional double-blind, placebo-controlled studies are needed to determine the long-term effectiveness of these treatments. No known study has evaluated the use of psychopharmacologic agents in treating adolescent pathological gambling. Possible reasons for the lack of research on treatment for adolescent gambling disorders include lack of motivation to pursue treatment, feelings of self-control, and negative perception of therapy. Referrals from parents, teachers, and peers of adolescents, as well as community outreach programs, may be useful in successfully deriving a treatment population. Clinicians are advised to be sensitive to behavioral risk factors and to screen for disordered gambling in high risk adolescents. A combination of CBT and MET, as well as medication for any comorbid psychiatric condition, is recommended.

Potenza, M. N. (2001). The neurobiology of pathological gambling. *Seminars in Clinical Neuropsychiatry*, 6(3), 217-226.

Keywords: biological, behavioral

Abstract: Despite relatively high prevalence rates and significant morbidity and mortality associated with pathological gambling (PG), our understanding of the neurobiological basis of PG lags in comparison to that for other psychiatric illnesses of comparable magnitude. An improved understanding of the neurobiology of PG would facilitate targeted investigations into more effective treatments. Emerging data suggest shared neurobiological features determine in part pathological gambling and substance use disorders. These findings both challenge current conceptualizations of addictions and provide a substantial basis of knowledge on which to design investigations into the understanding and treatment of pathological gambling. The findings that substance use disorders and the behavioral "addiction" of PG share common causative features raise the question as to what extent other compulsive disorders (e.g., compulsive shopping, compulsive sexual behaviors, compulsive computer use) might be biologically related.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002). Gambling: An addictive behavior with health and primary care implications. *Journal of General Internal Medicine*, 17(9), 721-732.

Keywords: physical, situational, behavioral, biological

Abstract: Over the past several decades, and particularly during the last 10 to 15 years, there has been a rapid increase in the accessibility of legalized gambling in the United States and other parts of the world. Few studies have systematically explored the relationships between patterns of gambling and health status. Existing data support the notion that some gambling behaviors, particularly problem and pathological gambling, are associated with nongambling health problems. The purpose of this article is to provide a perspective on the relationship between gambling behaviors and substance use disorders, review the data regarding health associations and screening and treatment options for problem and pathological gambling, and suggest a role for generalist physicians in assessing problem and pathological gambling. A rationale for conceptualization of pathological gambling as an addictive disorder and a model proposing stress as a possible mediating factor in the relationship between gambling and health status are presented. More research is needed to investigate directly the biological and health correlates associated with specific types of gambling behaviors and to define the role for generalist physicians in the prevention and treatment of problem and pathological gambling.

Poulin, C. (2000). Problem gambling among adolescent students in the Atlantic provinces of Canada. *Journal of Gambling Studies*, 16(1), 53.

Keywords: demographic, behavioral

Abstract: The objectives of the present study were to determine the prevalence of problem gambling among adolescent students in the Atlantic provinces of Canada, and to determine the role of age and deception about legal age status as potential risk factors for problem gambling. In 1998, a total of 13,549 students in grades 7, 9, 10 and 12 in the public school systems of the four Atlantic provinces completed a self-reported anonymous questionnaire that included the South Oaks Gambling Screen--Revised for Adolescents. About 8.2% and 6.4% of adolescent students met the broad definition of at-risk and problem gambling, respectively. About 3.8% and 2.2% of adolescent students met the narrow definition of at-risk and problem gambling, respectively. The prevalence of problem gambling did not vary according to age. Using a fake identification or lying about one's age was found to be an independent risk factor for problem gambling. Playing video gambling machines was the gambling activity associated with the single greatest independent risk of using a fake identification or lying about one's age. It was concluded that deception about legal age status may be a facilitating factor permitting adolescents to gamble to the point of experiencing problems.

Proimos, J., Durant, R. H., Pierce, J. D., & Goodman, E. (1998). Gambling and other risk behaviors among 8th- to 12th-grade students. *Pediatrics, 102*(2), p. e23.

Keywords: behavioral, demographic

Abstract: Objective. To examine the associations between a self-reported history of gambling or problems related to gambling and health risk behaviors in adolescence. Design. An anonymous risk behavior survey was administered to 21 297 8th- through 12th- grade students in 79 public and private schools in Vermont. Gambling or problems related to gambling were the outcome variables of interest. Demographic variables and 13 target risk behaviors related to substance use, sexual activity, and violence were tested for association with gambling and problems related to gambling. Results. Of the students, 53% reported gambling in the past 12 months, and 7% reported problems attributable to gambling. Male gender, any use of alcohol, infrequent use of cigarette smoking, any marijuana use, any inhalant use, infrequent steroid use, frequent illegal drug use, seatbelt nonuse, driving after drinking alcohol, being threatened, carrying a weapon, being involved in a fight, and years of sexual activity were all significantly associated with reported gambling in the past 12 months. Among the students who gambled, younger age, male gender, daily marijuana use, frequent use of cocaine, frequent use of inhalants, any steroid use, never wearing seatbelts, carrying a weapon for up to 3 days a month, fighting, and years of sexual activity were all significantly associated with reported problems with family and friends as a consequence of gambling. There was an increase in the absolute number of risk behaviors reported between those who had not gambled, those who had gambled, and those for whom gambling had created problems. Conclusions. Risk behaviors are associated with gambling in adolescence. The typology of risk behaviors was different for adolescents who reported gambling compared with those for whom gambling had created problems. Both gambling and problems related to gambling were significantly associated with the absolute number of risk behaviors reported by adolescents in a graded manner. Involvement in gambling should be assessed as part of the health encounter. Assessment may provide a nonthreatening entry into the evaluation of other risk behaviors. Furthermore, it may identify youth who are at risk of developing additional risk behaviors or pathological gambling. Interventions then could be targeted toward prevention of these undesirable outcomes.

Pugh, P., & Webley, P. (2000). Adolescent participation in the U.K. national lottery games. *Journal of Adolescence 23*(1), 1-11.

Keywords: structural, behavioral, demographic, social

Abstract: This study investigated illegal participation in the two U.K. National Lottery games (on-line game and scratchcards) by children under the age of 16 years. The sample consisted of 256 children aged between 13 and 15 years from four mixed-sex comprehensive schools/colleges, which serve city, town, rural and coastal catchment areas in the county of Devon, U.K. Pupils completed a questionnaire in a controlled environment at their respective schools/colleges. The findings indicated that 56% of the sample had participated in the National Lottery on-line game and 54% in the National Lottery Instants scratchcards. Regression analysis revealed that the best predictors of participation in the on-line game were income, household participation, whether the TV show was watched and whether a retailer had ever refused to sell a child a lottery ticket. The same variables (minus watching of the TV show) were also the best predictors of buying scratchcards.

Pursley, W. L. (1991). Adolescence, chemical dependency and pathological gambling. *Journal of Adolescent Chemical Dependency, 1*(4), 25-47.

Keywords: demographic, social, behavioral, cognitive

Abstract: Addresses the issues of adolescence, dysfunctional homes, and chemical dependency and pathological gambling among adolescents to provide questions and insights into the nature of the problem and the ways to combat it. It was shown that if research correlates influences from the home, the social setting, and the psychological cognition and behavior of addictions, 2 major accomplishments will occur: (1) an innovative treatment will be provided that is more comprehensive in nature than are existing treatments; and (2) this treatment will be capable of focusing on the specific needs of adolescents who are suffering from addictions. A list of research areas that must be studied if clinicians plan to address the problem of adolescent chemical dependency and pathological gambling successfully is given.

Raylu, N. & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22(7), 1009-1061.

Keywords: review, biological, social, individual, cognitive, structural, demographic, behavioral, emotional, financial

Abstract: Due to recent changes of gambling laws, accessibility to gambling has become more widespread and thus, there has also been an increase in the prevalence of pathological gambling (PG). The wide range of social, economic, and psychological problems associated with PG are well known. There is a need for better understanding of PG and this review attempts to do so. Literature searches using the Medline and PsycINFO databases were used. Critical examining of the literature showed that familial/genetic, sociological, and individual factors (e.g., an individual's personality, biochemistry, psychological states, and cognitions) are implicated in the development and maintenance of PG, yet at present, the evidences are not solid. Similarly, there have been a lot of theories for PG but again, none of them are solid enough to provide a clear understanding of PG. Recent psychological-based theories seem to provide some solid ground for further research. We highlight four areas for future consideration for research. (1) Most studies have generalized findings from one form of gambling to another. It is suggested that it is now not tenable to consider gambling as a single phenomenon that can explain all forms of gambling. (2) Almost all of the studies in the gambling literature are Western-based and the results are often generalized to other ethnic and cultural groups. There is now an urgent need to close this gap. (3) Future studies need to address methodological problems in the current gambling/PG literature. (4) Almost all of the gambling literature has focused on the issue of why people start gambling. It is suggested that looking at variables as to why people stop gambling in a single episode may be a more fruitful area of research than why people start gambling. This is because what motivates one to continue gambling, despite losses in a session and across sessions, is a characteristic that distinguishes nonproblem gamblers from problem gamblers and pathological gamblers (PGs).

Raylu, N., & Oei, T. P. S. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review* 23(8), 1087-1114.

Keywords: review, individual, demographic, social, biological

Abstract: There has been a significant gap in the gambling literature regarding the role of culture in gambling and problem gambling (PG). This paper aims to reduce this gap by presenting a systematic review of the cultural variations in gambling and PG as well as a discussion of the role cultural variables can play in the initiation and maintenance of gambling in order to stimulate further research. The review shows that although studies investigating prevalence rates of gambling and PG among different cultures are not plentiful, evidence does suggest certain cultural groups are more vulnerable to begin gambling and to develop PG. Significant factors including familial/genetic, sociological, and individual factors have been found in the Western gambling literature as playing important roles in the development and maintenance of PG. These factors need to be examined now in other cultural groups so we can better understand the etiological processes involved in PG and design culturally sensitive treatments. In addition, variables, such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviors need to be also examined in relation to the role they could play in the initiation of and maintenance of gambling.

Riglietta, M., Campana, M., Drago, P., Metzger, M., Tincani, A., & Tidone, L. (2002). Prevalence lifetime of substance use and other addictive behaviours in high school students. [Meeting abstract]. *European Psychiatry*, 17(Suppl. 1), 137S.

Keywords: behavioral, cognitive, demographic

Abstract: The prevalence of lifetime substance use and other addictive behaviors of high school students was studied using a self-administered questionnaire. The research sample included 458 female and 153 male students with an average age of 16.4 years, who lived close to the Milan, Italy metropolitan area. Data about use of different substances, attitudes toward gambling, and other risk-seeking behaviors were obtained. The following results of the study were seen: (1) higher cocaine use (9 percent) than that seen in other European studies, where the lowest prevalence was 0.2 percent in Finland and 4.3 percent in Spain; (2) varying THC use from 3 percent in Greece to 41 percent in the UK with a mean score of 18.7 percent in the European Union; (3) use of MDMA ranging from 0.2 percent in Finland to 9 percent in Ireland; (4) high rate of use of MDMA in this Italian study, especially in females (41 percent); (5) high rate of smoking in females (40.8 percent), especially compared to males; (6) rate of alcohol use comparable to that seen in Europe; and (7) difficulties in comparing gambling attitude and risk-seeking behaviors. The authors conclude that there is a need to pay greater attention to the new trends in addiction (in gambling and risk-seeking behaviors) to clearly understand the real prevalence of the pathological aspects of these phenomena.

Rosenthal, R. J. (1992). Pathological gambling. *Psychiatric Annals*, 22(2), 72-78.

Keywords: behavioral, emotional

Abstract: Pathological gambling is very similar in definition and symptoms to substance dependence. This article discusses the evolution of the DSM-IV criteria for diagnosing pathological gamblers. Various studies of pathological gamblers in treatment reveal that approximately 50 percent have histories of alcohol or drug abuse. In males, the disorder typically begins in adolescence. Females typically start gambling later in life, are more apt to be depressed, and gamble as a means of escaping the depression. It is not unusual for male gamblers to have a history of 20 to 30 years when they seek treatment, compared with three years for females.

Rossen, F. (2001). *Youth gambling: A critical review of the public health literature*. Centre for Gambling Studies, University of Auckland. Available at: <http://www.gamblingstudies.co.nz/content/CompleteReview.pdf>

Keywords: review, social

Sanger, S. (2003). Youth-gambling treatment issues. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 84-99). Reno, NV, US: University of Nevada Press. 84-99.

Keywords: individual, social, cognitive, emotional, behavioral

Abstract: (From the chapter) Gambling touches on every aspect of personality, relationships, and impulse. Thus, the techniques used to treat adolescents who gamble may resemble the psychotherapy of all youngsters. This chapter will focus on a helpful core of essential skills and concepts that practitioners and administrators can use to influence the young personality with this addiction. The author states that gambling can perniciously lead adolescents into addiction because it acts synergistically with dissociative thinking. The intensity and seductions of the wagering behavior help to contain the loosely organized or fragmented mental state so typical of adolescence. Gambling helps to protect youngsters from the emotional pain that can result from their characteristically inadequate relationships and needy selves. Adolescents avoid the anguish of feeling lost, lonely and helpless through the use of a number of postures, alterations of consciousness, trances, internal struggles, self-deceptions, impulsivities, and reckless behaviors. However, these coping methods come at a considerable cost and cannot lead to a wholesome outcome. The greatest obstacle to therapy is confronting young gamblers with what they have been trying to avoid all along: integrated thinking.

Schissel, B. (2001). Betting against youth: The effects of socioeconomic marginality on gambling among young people. *Youth & Society* 32(4), 473-491.

Keywords: behavioral, demographic

Abstract: This article contends that youth gambling is a formidable social problem that draws on those who can least afford it, is partly derived from a general disempowerment from society, and as a consequence, is connected with risk-taking behaviors such as drug and alcohol abuse. To explore further the complex nature of youth gambling and its relation to social disadvantage. The empirical analysis incorporates comparisons between Aboriginal and non-Aboriginal youth and between male and female youth. The conclusions suggest that youth gambling is a form of regressive taxation that exploits those who are most vulnerable because of their socioeconomic marginality and their feelings of relative powerlessness.

Shaffer, H. (2003). The emergence of gambling among youth: The prevalence of underage lottery use and the impact of gambling. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 25-38). Reno, NV, US: University of Nevada Press.

Keywords: social, behavioral, emotional

Abstract: (From the chapter) This chapter provides basic information about the extent of gambling activities among adolescents, some of the social and psychological consequences experienced by children who gamble, and the process of initiation of gambling activities. The author notes findings that indicate that the levels of probable pathological gambling among high school students are more than 3 times higher than the prevalence rates for adults; and that adolescents and college students are at significantly greater risk for gambling disorders than are adults. Also, considerable clinical evidence is noted that suggests that drug abuse and compulsive gambling overlap. Jessor and Jessor (1977) found that drug use escalates in a linear pattern until young adulthood; it also appears that, although there is no statistically significant trend, lottery use increases in a linear pattern through grade 11 in high school. Findings of a study of Boston public school students (Shaffer, 1994) using the Massachusetts Gambling Screen confirmed that students reporting gambling more than most other people also showed more social and emotional problems. Vagge (1996) found, in a study of 466 6th-11th graders, the most common first gambling activity started at mean age 10.36 yrs.

Shaffer, H. J., & Hall, M. N. (1996). Estimating the prevalence of adolescent gambling disorders: A quantitative synthesis and guide toward standard gambling nomenclature. *Journal of Gambling Studies*, 12(2), 193-214.

Keywords: demographic, behavioral

Abstract: This article reviews the extant published and unpublished studies that estimate the prevalence of adolescent gambling problems in the US. The 9 nonduplicative studies identified by our literature search included data collected from more than 7,700 adolescents (aged 13-20 yrs) from 5 different regions of the US and Canada. In addition to comparing the conceptual and methodological differences that exist among these studies, this article employed a meta-analytic strategy to synthesize prevalence estimates from the existing studies. This analysis revealed that within a 95% confidence interval, between 9.9 and 14.2% of adolescents are at risk of developing or returning to serious gambling problems. Similarly, between 4.4 and 7.4% of adolescents exhibit seriously adverse compulsive or pathological patterns of gambling activity. Finally, the discussion proposes a generic multi-level classification scheme to reconcile the divergent classification methods and data reporting strategies. This new multi-level approach to reporting gambling prevalence will facilitate interstudy comparisons among existing estimates of gambling prevalence and help to provide a general data reporting system for future research.

Shaffer, H. J., & Hall, M. N. (2001). Updating and refining prevalence estimates of disordered gambling behaviour in the United States and Canada. *Canadian Journal of Public Health, 92*(3), 168-172.

Keywords: demographic

Abstract: Background: This study updates prevalence estimates of gambling-related disorders in the United States and Canada, identifies differences in prevalence estimates among population segments, and identifies changes in prevalence over the past 25 years. Method: A meta-analytic strategy guided the synthesis of 180 estimates derived from 146 prevalence studies. Results: Prevalence estimates among adolescent samples were significantly higher than estimates among adult samples for both clinical (level 3) and sub-clinical (level 2) measures of disordered gambling within both lifetime and past-year time frames. Among adults, level 3 prevalence estimates continue to increase significantly. Conclusion: Membership in youth, treatment, and prison population segments is significantly associated with experiencing gambling-related disorders. Understanding sub-clinical gamblers provides a meaningful opportunity to lower the public health burden associated with gambling disorders. Prospective studies of incidence are necessary to determine whether the prevalence of disordered gambling continues to increase among the adult general population and how adolescent gambling experiences change as this cohort ages.

Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: A research synthesis. *Am J Public Health, 89*(9), 1369-1376.

Keywords: demographic

Abstract: This study developed prevalence estimates of gambling related disorders in the US and Canada, identified differences in prevalence among population segments, and identified changes in prevalence over the past 20 yrs. A meta-analytic strategy was employed to synthesize estimates from 119 prevalence studies. This method produced more reliable prevalence rates than were available from any single study. Results show that prevalence estimates among samples of adolescents were significantly higher than estimates among samples of adults for both clinical (level 3) and subclinical (level 2) measures of disordered gambling within both lifetime and past-year time frames (e.g., 3.9% vs 1.6% for lifetime estimates of level 3 gambling). Among adults, prevalence estimates of disordered gambling have increased significantly during the past 20 yrs. Findings suggest that membership in youth, treatment, or prison population segments is significantly associated with experiencing gambling-related disorders. Understanding subclinical gamblers provides a meaningful opportunity to lower the public health burden associated with gambling disorders.

Shaffer, H. J., Hall, M., Vander Bilt, J., & Vagge, L. (2003). Introduction: Youth and gambling: Creating a legacy of risk. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 1-24). Reno, NV, US: University of Nevada Press.

Keywords: review, social, behavioral

Abstract: (From the chapter) Presents an overview of the book that explores the nature of adolescents' involvement in gambling by examining issues related to youth-gambling research, treatment, education, economics, and policy. The chapter begins by defining the concepts of gambling, pathological gambling, and estimating the prevalence of youth gambling problems. The author discusses the psychosocial consequences of excessive gambling, the psychological elements of pathological gambling, and gambling as an object of addiction. Also discussed are conceptual problems with measuring pathological gambling, prospects for gambling prevention and education programs.

Shaffer, H. J., & Kidman, R. (2003). Shifting perspectives on gambling and addiction. *Journal of Gambling Studies 19*(1), 1-6.

Keywords: social, biological, review

Abstract: This brief discussion addresses the need for less stringent and restrictive perspectives on addiction in general and pathological gambling in particular. It is suggested that there is a need for clinical constructs of behavioral addictions that address the biological, psychological and social aspects of the disorder.

Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health, 23*, 171-212.

Keywords: review, structural, financial, social, psychological

Abstract: This article reviews the prevalence of gambling and related mental disorders from a public health perspective. It traces the expansion of gambling in North America and the psychological, economic, and social consequences for the public's health, and then considers both the costs and benefits of gambling and the history of gambling prevalence research. A public health approach is applied to understanding the epidemiology of gambling-related problems. International prevalence rates are provided and the prevalence of mental disorders that often are comorbid with gambling problems is reviewed. Analysis includes an examination of groups vulnerable to gambling-related disorders and the methodological and conceptual matters that might influence epidemiological research and prevalence rates related to gambling. The major public health problems associated with gambling are considered and recommendations made for public health policy, practice, and research.

Skinner, H. A., Biscope, S., Murray, M., & Korn, D. (2004). Dares to addiction: Youth definitions and perspectives on gambling. *Canadian Journal of Public Health, 95*(4), 264-267.

Keywords: cognitive, demographic, behavioral, emotional, financial

Abstract: Background: Over the past decade there has been a rapid growth of gambling in Canada, and internationally. Although youth are a potentially vulnerable group, little is known about what they understand and if they are being affected by the recent increase. Methods: This study examined how youth view gambling using an inductive qualitative research design and analysis based on grounded theory principles. Twelve focus groups were conducted comprising 103 participants (15 year old median age) with diverse representation of Ontario youth. Focus group questions were designed to capture youth's experiences and opinions about gambling. Results: Youth participants defined a spectrum of gambling from a dare and friendly betting to legalized forms of gambling (lotteries, casinos) and addiction. Their opinions varied according to age and gambling type. For example, daring and friendly betting were identified as positive activities used by younger adolescents to relieve boredom and establish social relationships. Gambling was separate from daring because of its association with money. Many participants had minimal awareness of the potential negative impact of gambling. Information technology (Internet) was seen as an attractive medium for playing games and gambling where no money is involved. Conclusion: Lack of awareness of gambling among youth and its consequences underscores the need for public education. The diverse range of gambling behaviour and age dependent access to money need careful consideration in defining youth gambling "problems" and in designing public health interventions.

Spunt, B. (2002). Pathological gambling and substance misuse. *Substance Use & Misuse, 37*(8-10), 1299-1304.

Keywords: review

Abstract: This paper first discusses the ways in which pathological gambling (a disorder of impulse control) and substance misuse are similar. It then examines research focusing on substance misuse among pathological gamblers, and research on pathological gambling among substance misusers, focusing on a study examining gambling among 462 methadone patients from New York City. That study found that 21% of the sample were probable pathological gamblers, while an additional 9% were problem gamblers (i.e., they had some problem related to their gambling). The treatment implications of these findings and future research directions are also discussed.

Stinchfield, R. (2000). Gambling and correlates of gambling among Minnesota public school students. *Journal of Gambling Studies*, 16(2/3), 153-173.

Keywords: demographic, behavioral, emotional, experimentation

Abstract: This study examines the prevalence of gambling and measures the relationships between gambling behavior and a number of demographic, psychosocial, and behavioral variables among Minnesota public school students. The sample includes 78,582 male and female Minnesota public school students enrolled in the 9th and 12th grades. Students were administered the 1998 Minnesota Student Survey, a 121-item, anonymous self-administered, paper-and-pencil questionnaire that inquires about multiple health-related content domains, including gambling behavior. The majority of students were found to have gambled at least once during the past year, however, most students did not report gambling frequently, nor did they report problems associated with their gambling. Boys reported gambling more often than girls, and older students gambled more often than younger students. A larger percentage of Mexican/Latin American, African American, American Indian, and mixed race students gambled at weekly and daily rates than Asian American and Caucasian students. Variables associated with gambling frequency included antisocial behavior, gender (being a male), alcohol and tobacco use, age, feeling bad about the amount of money they bet, a desire to stop gambling, and increased sexual activity. Gambling appears to be related to other risk-taking behaviors and may be a part of the adolescent experimentation with adult behaviors.

Stinchfield, R. (2001). A comparison of gambling by Minnesota public school students in 1992, 1995, and 1998. *Journal of Gambling Studies*, 17(4), 273-296.

Keywords: demographic, structural

Abstract: The purpose of this study was to compare rates of gambling among Minnesota public school students between 1992, 1995, and 1998. The three samples included 75,806 students in the 9th and 12th grades in 1992; 73,897 9th and 12th grade students in 1995; and 78,564 9th and 12th grade students in 1998. Students were administered the Minnesota Student Survey, a 121-item, anonymous, self-administered, paper-and-pencil questionnaire that inquires about multiple behavioral domains, including gambling behaviors. The same questionnaire, with minor revisions to the gambling items, was administered in 1992, 1995, and 1998 to students in their classrooms by the Minnesota Department of Education. The results showed two opposite trends. On the one hand, fewer students gambled in 1998 than in 1995 and 1992. On the other hand, there was a small, but growing number of 12th grade students who gambled frequently. In terms of trends over time for specific games, the lottery showed a significant decline in the number of 9th grade students who played at all. There was also a significant increase in the number of 12th grade students who played the lottery weekly or more often. The findings that frequent lottery gambling has increased among 12th grade students and that underage gambling continues among these students, are both cause for concern. This is the first generation of youth to be exposed to widespread accessibility to legalized gambling venues and gambling advertising. Legalized gambling may be a new "rite of passage" for some of today's youth. It will be important to continue to monitor youth gambling and to provide information and resources to assist youth in making healthy decisions about their gambling behavior.

Stinchfield, R. (2002). Youth gambling: How big a problem? *Psychiatric Annals*, 32(3), 197-202.

Keywords: demographic, behavioral

Abstract: Discusses the prevalence and treatment of youth problem gambling. Most youth have gambled, but they spend small amounts of money and experience few adverse consequences or problems. Most youth play private informal games, such as cards and games of skill, with young males gambling more frequently than females. However, there is a small percentage of youth who are overly involved in gambling, and this number appears to be increasing. Underage youth report illegal gambling activities as well as playing legalized games such as state lotteries and casino gambling. Those measuring problem gambling among youth have tended to be more lenient with diagnostic criteria and cut scores than when examining adults. Little research has been conducted on the treatment of young problem gamblers.

Stinchfield, R., & Winters, K. C. (1998). Gambling and problem gambling among youths. *Annals of the American Academy of Political and Social Science*, 556, 172-85.

Keywords: social, structural

Abstract: With the rapid expansion of gambling have also come concerns about underage gambling and youth problem gambling. Most studies of youth gambling have found that the majority of youths have gambled but do so infrequently and do not suffer any adverse consequences. A minority of youths, however, appear to be over-involved in gambling and are experiencing problems associated with their gambling. This is the first generation of youths to be exposed to such widespread access to gambling venues, ubiquitous gambling advertising, and general social approval of gambling. Gambling is the only so-called vice endorsed and promoted in many locales by both the church and state. On the one hand, youths are instructed by their teachers (and ostensibly their state department of education) that the way to get ahead in life is to study and work hard; on the other hand, their state lottery tells them that they need only to be lucky. Youths are adept at recognizing these apparent discrepancies and may be confused by this mixed message. Future research will need to address a number of gaps in our knowledge about youth gambling.

Stinchfield, R., & Winters, K. C. (in press). Epidemiology of adolescent and young adult gambling. In J. E. Grant and M. N. Potenza (Eds.), *Understanding and treating pathological gambling*. Washington, DC: American Psychiatric Publishing, Inc.

Keywords: social, structural

Abstract: To understand youth gambling, we must first consider the context in which youth gambling occurs. There has been unprecedented growth in legalized gambling and a concomitant shift in public sentiment toward gambling. Although there are varying opinions about gambling, in general, there has been a shift from a negative sentiment toward gambling to one of tolerance and acceptance. The public image of gambling has transformed from an illegal vice to a legal and socially acceptable activity for adults.

Stitt, B. G., Giacomassi, D., & Vandiver, M. (2000). A minor concern? Underage casino gambling and the law. *The Social Science Journal* 37(3), 361-373.

Keywords: demographic, structural

Abstract: This article compared rates of underage casino gambling by students in two different regions of the country. Questionnaires were completed by 420 students at the University of Memphis and 415 students at the University of Nevada, Reno. Although Reno has long had casinos, Memphis residents have had access to casinos only since 1992 with the legalization of casino gambling in nearby Mississippi. The results indicate that 24.2% of underage Memphis respondents and 52.7% of underage Reno respondents had illegally gambled in casinos. We concluded that routine activity theory may help explain the different rates of underage gambling and question whether the security precautions against underage gambling are adequate.

The WAGER. (2001). Child gamblers: The development of gambling strategy. *The WAGER* 6(46).

Keywords: cognitive

The WAGER has reviewed studies that highlight youth gambling as a serious and important public health issue. Consistently, meta-analytic evaluation of prevalence studies suggests that gambling problems are quite common among youths (Shaffer, Hall, & Vanderbilt, 1999). The current WAGER reports on a cross-sectional study that investigates development changes in children's cognitive processing while gambling. Specifically, Herman, Gupta, & Derevensky (1998) explored developmental differences in the cognitions and heuristics (mental shortcuts) that children use when choosing lottery ticket numbers. The WAGER focuses on children's selection processes.

The WAGER. (2002). Problem behavior syndrome: A prospective look at gambling risk factors in adolescence. *The WAGER* 7(17).

Keywords: emotional, individual, social

Several cross-sectional studies have uncovered a number of psychosocial risk factors for adolescent gambling, such as substance abuse, school problems, and juvenile delinquency (Winters, Stinchfield, Botzet, & Anderson, 2002). While informative, unfortunately cross-sectional research does not allow for temporal sequencing of those psychosocial factors and the development of problem gambling. Consequently, cause and consequence cannot be distinguished. This WAGER reports on a recent longitudinal study of gambling risk factors among adolescents (Winters et al., 2002).

Tremblay, G. C., Huffman, L., & Drabman, R. S. (1998). The effects of modeling and experience on young children's persistence at a gambling game. *Journal of Gambling Studies, 14*(2), 193-210.

Keywords: social, financial

Abstract: Gambling is common among children and adolescents, but little is known about factors initiating or maintaining this behavior. 51 male and 51 female kindergarten and first grade children were invited to play a game involving repeated opportunities to select colored chips from a cup while blindfolded. Children playing for tangible incentives elected to play longer than those who were not. Seeing a videotaped model win or fail to win a large prize had no effect on persistence with the game. Playing again 1 wk later, children playing for incentives exhibited a more successful strategy, quitting sooner and with more winnings. The parameters of experiential vs observational learning are discussed, with implications for educating children about risk-taking.

Trott, J. C., & Griffiths, M. (1991). Teenage gambling: A pilot study. *Psychological Reports, 68*(3 Pt. 1), 946.

Keywords: demographic

Abstract: Conducted structured interviews with 40 male gamblers (aged 17-24 yrs). 50% of the 17-28 yr olds and 75% of the 19-24 yr olds reported being regular gamblers (gambled 3 or more times a week), as did all Ss who were unemployed or at school.

Vander Bilt, J., & Franklin, J. (2003). Gambling in a familial context. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 120-125). Reno, NV, US: University of Nevada Press.

Keywords: demographic, structural, social, behavioral, biological, review

Abstract: (From the chapter) The authors state that the proliferation of gambling during the 1980s and 1990s and the increased prevalence of adult gambling behavior have resulted in a generation of children growing up in households and families where gambling is increasingly common. The extant research reports that children of pathological gamblers are more likely than children of nonpathological gamblers to develop gambling problems themselves. Moderate gambling or compulsive gambling, like substance abuse, is more than an individual problem and must be viewed in the context of family and social systems. The authors examine the consequences of gambling on youth residing in gambling households, specifically family violence. Family related items in gambling screening instruments, violence and pathological gambling as impulse disorders, the relationship among violence, pathological gambling and substance abuse, are examined. Treatment issues discussed include family therapy for children of compulsive gamblers, and treatment services for adolescent compulsive gamblers, as well as treatment of the family system, and education issues.

Villa, B., Becona, E., & Vazquez, F. L. (1997). Pathological gambling with slot machines among primary school students from Gijon. *Adicciones, 9*(2), 195-208.

Keywords: demographic, vocational, social, biological, behavioral

Abstract: Studied the prevalence of slot machine gambling among school-age children and adolescents aged 11-16 yrs in Gijon, Spain. 2,185 male and female 6th-8th graders were administered the Mental Disorders-IV (DSM-IV) Gambling Questionnaire (S. Fisher, 1993). The results indicate that 1.6% of Ss were probable pathological gamblers. Pathological gamblers differed from occasional gamblers in the prevalence of gambling parents, the level of school absenteeism and illegal activities, and the need for help to stop gambling. The findings show that males gambled more than females did. The role of gambling prevention at home and in the schools is discussed.

Vitaro, F., Arseneault, L., & Tremblay, R. E. (1997). Dispositional predictors of problem gambling in male adolescents. *American Journal of Psychiatry, 154*(12), 1769-1770.

Keywords: individual

Abstract: Objective: This study investigated the possible relationship between impulsivity in early adolescence and gambler status in late adolescence. Method: Impulsivity measures consisting of self-reports and teacher ratings were gathered from 754 boys in early adolescence, and their gambling status in late adolescence was assessed with a self-report measure. Results: On both measures of impulsivity, nongamblers had the lowest scores, recreational gamblers had the next higher scores, low problem gamblers had still higher scores, and high problem gamblers had the highest scores. Conclusions: These findings support the DSM-IV classification of problem gambling as a deficit in impulse control.

Vitaro, F., Arseneault, L., & Tremblay, R. E. (1999). Impulsivity predicts problem gambling in low SES adolescent males. *Addiction, 94*(4), 565-575.

Keywords: individual, demographic, behavioral

Abstract: Aims: This study investigated whether impulsivity measured in 12-14-year-olds could predict problem gambling in late adolescence, above and beyond other personality factors such as aggressiveness and anxiety. Design: A prospective-longitudinal design was used, thus overcoming limitations of past studies which used concurrent or retrospective designs. Participants and measurements: The sample included 154 boys living in economically deprived neighborhoods. Impulsivity measures comprised self-reports, teacher ratings and laboratory tasks, and were administered during early adolescence. Gambling behavior was assessed at age 17 using a self-report measure. Early gambling behavior and socio-demographic information were also collected for control purposes. Findings: Results revealed that a self-report measure of impulsiveness and a card-sorting task significantly predicted problem gambling, even after controlling for socio-demographic variables, early gambling behavior and other personality variables such as aggressiveness and anxiety. Moreover, the predictive link held across and levels of aggressiveness and anxiety. Both impulsivity measures seemed to tap an inability to foresee negative consequences and an inability to stop responding despite unfavorable contingencies. Conclusion: These findings suggest that disinhibited individuals with response modulation deficits are at risk for problem gambling, thus supporting the DSM-IV classification of pathological gambling as an impulse control deficit.

Vitaro, F., Brendgen, M., Ladouceur, R., & Tremblay, R. E. (2001). Gambling, delinquency, and drug use during adolescence: Mutual influences and common risk factors. *Journal of Gambling Studies, 17*(3), 171-190.

Keywords: behavioral, social, demographic, individual

Abstract: The purpose of this study was threefold: (1) to assess the possible mutual influence between gambling, substance use, and delinquency over a two-year period during mid adolescence, (2) to test whether variables that are usually predictive of delinquency and substance use also predict gambling, and (3) to test whether the links between the three problem behaviors could be, at least partially, accounted for by common antecedent factors (impulsivity, parental supervision, and deviant friends) assessed during early adolescence. Seven hundred and seventeen boys participated in the study. Impulsivity, parental supervision, and friends' deviancy were collected when participants were 13 and 14 years of age. Gambling, substance use, and delinquency were collected through self-reports at ages 16 and 17 years. Results showed no influence or modest influence of problem behaviors on each other from age 16 to age 17 years, once current links and auto-correlations were accounted for. Conversely, the cross-sectional links between the three problem behaviors at each age were moderately high. Impulsivity, low parental supervision, and deviant friends were predictively related to each problem. Finally, a significant, although modest, portion of the covariance between the three problem behaviors was accounted for by these three predictors. The present findings contradict previous findings about the influence of gambling on other problem behaviors and support the notion of a "general problem behavior syndrome" fed by generic risk factors.

Vitaro, F., Ferland, F., Jacques, C., & Ladouceur, R. (1998). Gambling, substance use, and impulsivity during adolescence. *Psychology of Addictive Behaviors, 12*(3), 185-194.

Keywords: behavioral, individual, demographic

Abstract: This study tested whether problem gambling and substance use in adolescents are related and whether they could have a common link with impulsivity. A community sample of 765 adolescents participated. Gambling and substance use were assessed when adolescents were 17 yrs old. Impulsivity and impulsivity-related behaviors were assessed when adolescents were 12, 13, and 14 yrs old. Groups of gamblers and groups of substance users were formed. A comorbid group was also formed. Results indicated that problem gamblers were more at risk of also being problem substance users and vice versa than nonproblem participants. In addition, comorbid participants were more impulsive than problem gamblers only or problem substance users only. These findings are discussed in light of the possibility that problem gambling and substance use develop simultaneously during adolescence and share a common impulse-control deficits origin.

Vitaro, F., Ladouceur, R., & Bujold, A. (1996). Predictive and concurrent correlates of gambling in early adolescent boys. *Journal of Early Adolescence, 16*(2), 211-228.

Keywords: behavioral, individual, emotional

Abstract: This study had two objectives: (a) to identify a link between gambling delinquency, and substance use in a sample of early adolescent males and (b) to verify if behavioral precursors of gambling are similar to behavioral precursors of delinquency and substance use. Results indicated a concurrent link between gambling, delinquency, and substance use. They also revealed that low anxiety/withdrawal at 10 and 11 years of age predicted, although modestly, gambling. Somewhat different predictors were related to delinquency and substance use. Gambler and nongambler groups also were compared on concurrent self-ratings of delinquency and substance use and on antecedent teacher ratings and mother ratings of behavior problems. Results revealed that gamblers reported more delinquency and more substance use than nongamblers. Gamblers also were rated by teachers as less anxious/withdrawn than were nongamblers. Implications of the present results for understanding behavioral dimensions leading to gambling are discussed.

Vitaro, F., Wanner, B., Ladouceur, R., Brendgen, M., & Tremblay, R. E. (2004). Trajectories of gambling during adolescence. *Journal of Gambling Studies, 20*(1), 47-69.

Keywords: demographic, behavioral, emotional, individual

Abstract: This study aimed at empirically identifying groups of adolescents with distinct longitudinal trajectories of gambling involvement and validating these groups by comparing them with respect to correlates. 903 low SES boys were followed annually from age 11 to 16 years. Three groups were found: an early-onset high-level chronic group, a late-onset high-level group, and a low gambler group. The Chronic group and the Low group consistently differed on teacher-rated inhibition (i.e., anxiety) during childhood and early adolescence. They also differed on concurrent teacher and self ratings of disinhibition (i.e., impulsivity), while the Late Onset group appeared to lie in between these groups. Compared to the Low group, both high groups subsequently had elevated scores on later gambling related problems.

Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: Implications for public health. *American Journal of Public Health, 84*(2), 237-241.

Keywords: structural, demographic

Abstract: Investigates the prevalence of pathological gambling in five states, raising issues such as the potential public health impacts of the expanding availability of legalized gambling. Policy and program decisions should particularly take into account specific at-risk groups such as women, minorities and children.

Walters, G. D. (2001). Behavior genetic research on gambling and problem gambling: A preliminary meta-analysis of available data. *Journal of Gambling Studies, 17*(4), 255-271.

Keywords: biological, social, demographic

A meta-analysis of family and twin studies on gambling and problem gambling was initiated in an effort to determine the probable role of genetic factors in high risk wagering. Two twin studies and 17 investigations employing the family history or family study method were included in this meta-analysis. A summation of the 19 studies produced a small but significant overall effect size (weighted $\phi = .10$, unweighted $\phi = .13$), with both family (weighted $\phi = .12$, unweighted $\phi = .14$) and twin (weighted $\phi = .06$, unweighted $\phi = .05$) studies achieving significant individual mean effects. Given the paucity of twin data, further analysis was confined to family studies and revealed a stronger familial effect for the sons of problem gambling fathers than for the daughters of problem gambling mothers and for more severe forms of problem gambling than for less severe forms of problem wagering, and was strongest for high severity problem gambling in males. The implications of these results are discussed.

Wardman D., El-Guebaly, N., & Hodgins, D. (2001). Problem and pathological gambling in North American Aboriginal populations: A review of the empirical literature. *Journal of Gambling Studies*, 17(2), 81.

Keywords: demographic

Abstract: This literature review attempts to: estimate Aboriginal population prevalence rates for problem and pathological gambling and compare these rates to the general population; determine factors associated with the Aboriginal population problem gambling behaviour; and identify other salient findings and issues. Materials used in the review were drawn from available research literature and bibliographies. There were no time restrictions or study design criteria included in the review. Key words used: Aboriginal, Indians, First Nations, Native, lotteries, gambling, casinos, and gaming. Eleven descriptive studies were identified. Gambling appears to be problematic among Aboriginal people. Aboriginal adolescents have higher rates of problem gambling, as do Aboriginal adults for both problem and pathological gambling than their non-Aboriginal counterparts. The odds ratios indicate that the Aboriginal population has a problem gambling behaviour rate 2.2 to 15.69 times higher than the non-Aboriginal population. A number of factors associated with Aboriginal population problem and pathological gambling were identified. Gambling literature specific to the Aboriginal population is limited and there is extensive variation in estimates of their increased risk. Several associated factors were identified but whether these are specific to the Aboriginal population or to all problem and pathological gamblers needs to be determined. More research, particularly qualitative, into these factors is warranted.

Westphal, J. R., Rush, J. A., Stevens, L., & Johnson, L. J. (1998). Gambling behavior of adolescents in residential placement in northwest Louisiana. *Southern Medical Journal*, 91(11), 1038-1041.

Keywords: behavioral

Abstract: Background: The rapid expansion of legalized gambling in the United States necessitates evaluation of its impact on vulnerable populations, especially adolescents. Methods: Gambling behavior in 135 adolescents in residential placement in northwestern Louisiana was measured using the South Oaks Gambling Screen-Revised for Adolescents. Results: During the past year, 41% of these adolescents reported minimal problems with gambling, 21% reported level 2 or problem gambling, and 38% reported level 3 or pathologic gambling. In this population, the first drink of alcohol, the first cigarette, and the first experience with gambling began on average at 11 years of age, with the first use of marijuana and the first episode of alcohol intoxication occurring a year later. Conclusion: The level 2 rate of gambling exceeded the upper extreme of the adolescent community sample range, and the level 3 rate was approximately six times the reported level 3 community prevalence rate for adolescents. Residential placements sites should be considered when developing prevention programs for gambling disorders.

Westphal, J. R., Rush, J. A., Stevens, L., & Johnson, L. J. (2000). Gambling behavior of Louisiana students in grades 6 through 12. *Psychiatric Services*, 51(1), 96-99.

Keywords: behavioral

Abstract: Objectives: The prevalence of problem and gambling behavior, the average age of onset of gambling behavior, and the co-occurrence of gambling disorder with substance use were determined in the Louisiana student population grades 6 through 12. Methods: A stratified randomized sample of 12,066 students in Louisiana schools during the 1996-1997 school year was surveyed about gambling behavior using the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA). Results: Fourteen percent of the students never gambled, 70.1 percent gambled without problems, 10.1 percent indicated problem gambling in the past year (level 2 according to the SOGS-RA), and 5.8 percent indicated pathological gambling behavior in the past year (level 3). Weekly or more frequent lottery play was reported by 16.5 percent. The average age of onset of gambling behavior was 11.2 years. Fifty-nine percent of the students with problem and pathological gambling behavior reported frequent alcohol and illicit drug use. Conclusions: A significant minority of Louisiana students in grades 6 through 12--15.9 percent--acknowledged gambling-related symptoms and life problems. The association of problem and pathological gambling with use of alcohol, tobacco, and marijuana provides preliminary support for the inclusion of gambling among other adolescent risk behaviors.

Winters, K. C., & Anderson, N. (2000). Gambling involvement and drug use among adolescents. *Journal of Gambling Studies, 16*(2-3), 175-198.

Keywords: behavioral

Abstract: The literature on youth gambling often notes the relationship of gambling involvement to drug use. The extent of this association and its importance toward advancing knowledge about the origins and course of adolescent gambling are discussed. The authors contend that (a) adolescent gambling, like drug use, may be a normal part of adolescence from a statistical perspective, (b) claims that the prevalence rate of problem/pathological gambling is comparable or higher than the rate of substance use disorders are not supportable at this time given the weaker methodological studies in the gambling area, (c) while research suggests that similar risk factors may be important determinants for both behavior domains, prospective studies of adolescent development are needed to further clarify which factors are unique and common to adolescent gambling, and (d) greater documentation of the harm associated with adolescent gambling is a major barrier to garnering more prevention and treatment resources for this issue.

Winters, K. C., Stinchfield, R., Botzet, A., & Anderson, N. (2002). A prospective study of youth gambling behaviors. *Psychology of Addictive Behaviors, 16*(1), 3-9.

Keywords: demographic

Abstract: Little is known about the course and outcomes of adolescent gambling. This prospective study describes findings from a 3-wave (Time 1 [T1], Time 2 [T2], and Time 3 [T3]) assessment of gambling behaviors among youth (gambling and regular gambling (weekly or daily) were observed across T1, T2, and T3). The rate of at-risk gambling significantly increased at T3 (young adulthood), whereas the rate of problem gambling remained stable over time. Several adolescent risk factors were associated with either T3 at-risk or problem gambling, many of which are risk factors for adolescent substance abuse. Findings suggest that important to the origins of young adult gambling problems are risk factors associated with the problem behavior syndrome of adolescence.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993). Patterns and characteristics of adolescent gambling. *Journal of Gambling Studies, 9*(4), 371-386.

Keywords: demographic, vocational, behavioral, social, biological, review

Abstract: Surveyed 702 adolescents (aged 15-18 yrs) regarding their gambling experiences and psychosocial risk status. Gambling was reported by most of the Ss, with 8.7% classified as problem gamblers. Correlates of problem gambling included school difficulties, regular drug use, delinquency, parental gambling, and being male. Adolescent gambling is conceptualized as a normal experience of youth, yet those in the problem gambling group may be particularly vulnerable to future gambling problems.

Winters, K. C., Stinchfield, R., & Kim, L. (1995). Monitoring adolescent gambling in Minnesota. *Journal of Gambling Studies, 11*(2), 165-183.

Keywords: behavioral, structural

Abstract: ABSTRACT: Youth gambling was investigated in a prospective sample of 532 Minnesota adolescents and young adults (aged 16-20 yrs). Of particular interest was the possible impact among the study sample of a recent state lottery and of reaching the legal age for gambling on changes in the rate and type of gambling. Overall rates of gambling involvement and pathological gambling did not change across the 1.5 yr interval. However, a preference for certain types of gambling activities (e.g., lottery, casino machines) significantly increased, whereas more informal and unregulated games (e.g., betting on games of personal skill) significantly decreased. Also, access to gambling activities by underage youths was high, suggesting the need for tighter controls of legalized games and greater awareness of this problem by the gaming industry and public health officials.

Wood, K., Thomas, L., & Hodgkinson, S. (2000). Young people's experiences of the lottery. *International Journal of Adolescence & Youth*, 8(4), 241-251.

Keywords: emotional, financial, structural, cognitive

Abstract: Examined young people's experiences with the UK Lottery. 24 15-17 yr olds were interviewed about their awareness of the Lottery. Results show that the Lottery was not seen to involve any act of altruism involving charitable giving but seen as a source of fun, the pursuit of a dream and a lifeline for some. The existence of free choice seemed by some to be a key criterion in justifying this resource use in the economy but this simplistic justification was challenged by the views of others. The Lottery was justified in terms of the positive effect of supplementing government spending. The method of its promotion made the Lottery an acceptable form of gambling, despite the possibility of addiction for all but those whose personal belief systems proscribe any form of gambling. The variation present in these responses provides a basis for exploring young people's understanding of the economic cycle of causality.

Wood, R. T., Griffiths, M. D., Derevensky, J. L., & Gupta, R. (2002). Adolescent accounts of the UK National Lottery and scratchcards: An analysis using Q-sorts. *Journal of Gambling Studies*, 18(2), 161-183.

Keywords: cognitive

Abstract: The study examined adolescents' accounts of the UK National Lottery and scratchcards. Q-sorts were used to examine the views of 62 participants aged between 11 and 15 years of age. Findings identified four distinct accounts in relation to the National Lottery (Moral Opposition, Luck Seeking, Rationalist, & Uncertainty), and four distinct accounts in relation to scratchcards (Skepticism, Thrill-Seeking, Rationalist, & Libertarian). Some of the accounts identified described the UK National Lottery and scratchcards as bona fide forms of gambling. Reports indicated that adolescents were pessimistic about the chances of winning large sums of money, while other accounts demonstrated gambling misperceptions particularly in relation to their belief in luck and the laws of probability. It is argued that to fully understand why adolescents take part in these activities it is important to consider the diverse ways that adolescents represent these activities. These differing representations will have consequences for measures aimed at reducing, preventing, or treating adolescent problem gambling. The utility of Q-sorts as a technique for examining the views of problem and non-problem gamblers is also discussed.

Wood, R. T. A., & Griffiths, M. D. (1998). The acquisition, development and maintenance of lottery and scratchcard gambling in adolescence. *Journal of Adolescence*, 21(3), 265-273.

Keywords: cognitive, financial, biological, social

Abstract: The U.K. National Lottery and instant scratchcards are now well established yet there is still little empirical research on the players. This study was an exploratory investigation of the psychosocial effects of these forms of gambling among adolescents (n=1,195; aged 11- to 15-years-old). Using a questionnaire, it was shown that large numbers of adolescents were taking part in these activities. There was a significant link between parental and child gambling with most lottery tickets and scratchcards being bought for the adolescents by their parents. Results showed that many adolescents thought they would win lots of money on these activities and that these activities were in general not perceived to be forms of gambling. Six per cent of adolescents fulfilled the DSM-IV-J criteria for pathological gambling, the majority of which were males.

Wood, R. T. A., & Griffiths, M. D. (2002). Adolescent perceptions of the national lottery and scratchcards: a qualitative study using group interviews. *Journal of Adolescence*, 25(6), 655-668.

Keywords: cognitive, financial, social, emotional

Abstract: Recent research has consistently shown that a small but significant minority of youth engage in illegal lottery and scratchcard gambling. It is clear that most adolescents experience few gambling-related problems as a result of lotteries and scratchcards. However, it is less clear how gambling may be affecting them at a more general level. The present study set out to examine in more detail the perceptions identified in a previous survey. The study provided an opportunity for the participants to articulate and outline what they thought were the most salient issues through the use of semi-structured group interviews. Six separate group interviews took place (three groups of six adolescents and three groups of seven adolescents) aged 11-15 years. Results revealed many salient themes including winning money, socialization, different forms of excitement associated with these activities (entertainment, the fantasy of winning, and the "buzz"), control, (personal choice, luck, chance), and awareness of social problems. These are discussed in relation to the previous survey literature.

Yeoman, T., & Griffiths, M. (1996). Adolescent machine gambling and crime. *Journal of Adolescence, 19*(2), 183-188.

Keywords: behavioral

Abstract: There is growing evidence that children and adolescents who gamble excessively on fruit machines may engage themselves in stealing and commit other criminal offences to fund their habit yet there has been little evidence from the legal professions themselves. The aim of the survey conducted was to see if there was any relationship between criminal activity (most notably their) and gaming machine use. During a 1-year period, police officers in Plymouth (South West England) collected information from 1,851 juvenile offenders with whom they came into contact. The results revealed approximately 4% of juvenile crime was associated with gaming machine use and the survey offers evidence that a minority of individuals commit crimes in order to supplement their fruit machine playing.

Zitzow, D. (1996). Comparative study of problematic gambling behaviors between American Indian and non-Indian adolescents within and near a northern plains reservation. *American Indian and Alaska Native Mental Health Research, 7*(2), 14-26.

Keywords: demographic, behavioral, social, structural

Abstract: Compared the gambling behaviors of American Indian adolescents with their non-Indian peers. 115 American Indian and 161 non-Indian high school students (aged 14-19 yrs) completed an adolescent gambling survey in school. Results indicate that American Indian adolescents displayed greater frequency of gambling involvement, earlier onset of gambling experiences, and greater tendency to exhibit problematic gambling behaviors than did non-Indian students. This discrepancy may have been due to SES, cultural issues, increased direct and vicarious exposure to gambling, and gambling availability among Indians. The effects of Indian reservation casinos and the popularity of bingo and of state-run lotteries are discussed.

4.3 Measurement

Clarke, D., & Rossen, F. (2000). Adolescent gambling and problem gambling: A New Zealand Study. *New Zealand Journal of Psychology, 29*(1), 10-16.

Keywords: SOGS

Abstract: The prevalence of gambling and problem gambling among adolescents in New Zealand has not been adequately investigated. Prospective studies of current underage gambling may be unreliable, because respondents may fear self-incrimination. In this retrospective study, a nonrepresentative sample of 68 first year psychology students, between the ages of 15 and 24 years, completed a questionnaire which asked them to recall their gambling activities before the age of 20 years, and which included the South Oaks Gambling Screen (SOGS). In adolescence, the entire sample had gambled for money at least once, and 18% regularly.

Participants who played housie (bingo), gambled in casinos, or bought Lotto tickets, had the highest spending rates. 13% of the sample was classified as problem gamblers and 5% probable pathological gamblers in adolescence. Activities associated with pathological gambling included scratch tickets, gaming machines and housie. Regular gambling significantly predicted problem gambling scores. The results were compared with findings from a national sample and adolescent samples overseas.

Culleton, R. P. (1989). The prevalence rates of pathological gambling: A look at methods. *Journal of Gambling Behavior, 5*(1), 22-41.

Keywords: issues

Examines the methods which underlie 3 different estimates of the prevalence rate of pathological gambling and critiques them in light of sound epidemiological procedure. Discussion focuses on a 1975 national survey and a Nevada survey conducted by the Institute for Social Research, a 1984-1985 survey of the Delaware Valley and of Ohio, and a 1986 New York State survey. The planning purpose, method, validity, and reliability of prevalence rate research about pathological gambling are addressed.

Cunningham-Williams, R. M., & Cottler, L. M. (2001). The epidemiology of pathological gambling. *Seminars in Clinical Neuropsychiatry, 6*(3), 155-166.

Keywords: issues, review

Abstract: Increased attention has been given to the disorder of pathological gambling, especially since the formation of the latest Presidential Commission to study its social and economic impact on the nation. Researchers have experienced difficulty in establishing the prevalence of pathological gambling disorder attributable to several factors, namely: debate and confusion on the best way to define and classify the disorder; assessments of the disorder that are not diagnostic or comprehensive; and, methodological weaknesses in the majority of gambling studies caused primarily by sampling biases. This article summarizes prevalence estimates of pathological gambling disorder in the general population and for subpopulations while addressing the difficulties inherent in their interpretation. Recommendations are offered for future research into this disorder.

Derevensky, J., & Gupta, R. (1997, September). *Establishing adolescent gambling problems: A comparison of instruments and their clinical significance*. Paper presented at the Interprovincial Conference on Problem Gambling, Regina, Canada.

Keywords: review, comparison, issues

Derevensky, J. L., & Gupta, R. (2000, May). *Prevalence estimates of adolescent gambling: A comparison of the SOGS-RA, DSM-IV-J, and G.A. 20 Questions*. Paper presented at the 10th International Conference on Gambling and Risk-Taking, Montreal, Canada.

Keywords: comparison, review, DSM-IV-J, SOGS-RA, GA, issues

Abstract: Concerns over the rising incidence of adolescent gambling have become more commonplace. A recent meta analysis of studies examining adolescent prevalence rates by Shaffer and Hall (1996) has suggested that between 77-83% of adolescents are engaging in some form of gambling behavior with between 9.9% and 14.2% remaining at risk for a serious gambling problem. Their results further suggest that between 4.4% and 7.4% of adolescents exhibit serious adverse gambling related problems and/or pathological gambling behavior. Comparisons of studies are often difficult due to the variety of measures and classification schemes used. The present study examined the gambling behaviors of 980 adolescents using three measures, the SOGS-RA, DSM IV-J, and the Gamblers Anonymous 20 Questions. The DSM IV-J was found to be the most conservative measure identifying 3.4% of the population as problem/pathological gamblers while the SOGS-RA identified 5.3% and the G.A. 20 Questions identified 6% of adolescents as experiencing a serious gambling related problem. The degree of concordance amongst the measures, gender differences, and classification systems are discussed. The utility of Shaffer and Hall's general multi-level classification scheme to reconcile the divergent classificatory systems are addressed. Special attention is given to the identification of the "at risk" group of adolescent gamblers. The clinical, treatment and research implications of the results are presented.

Derevensky, J., & Gupta, R. (2004). Adolescents with gambling problems: A synopsis of our current knowledge. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Keywords: review, issues

Abstract: It's been 25 years since Henry Lesieur's seminal research on understanding compulsive gambling was published. While still in its infancy, the field of gambling research has evolved and greatly added to a better understanding of this complex behavior, its measurement, its social and familial costs, ways of minimizing and preventing gambling problems, and methods of treating individuals with gambling problems. For most adolescents and adults gambling remains a form of entertainment without serious negative consequences. Yet, adolescent pathological gamblers, like their adult counterparts and independent of the negative consequences resulting from their excessive gambling, continue to chase their losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Our current empirical knowledge of youth gambling problems is reviewed and recommendations for future research are provided.

Derevensky, J., & Gupta, R. (Eds.). (2004). *Gambling problems in youth: Theoretical and applied perspectives*. NY: Kluwer Academic/Plenum Publishers.

Keywords: review, issues

Derevensky, J. L., Gupta, R., & Winters, K. (2003). Prevalence rates of youth gambling problems: Are the current rates inflated? *Journal of Gambling Studies*, 19(4), 405-425.

Keywords: review, issues

Abstract: While there is a general consensus in the literature that it is common for youth to gamble, considerable variability in the reported prevalence rates of youth problem gambling has been found. More recently, issues concerning the possible overestimation of these rates have been raised. Arguments underlying the proposition that problem gambling rates for youth are inflated are examined. It is acknowledged that more rigorous research is required, including the need for the development and refinement of current adolescent instruments and screening tools, agreement upon a gold standard criterion for adolescent problem gambling, and clarity of nomenclature issues. The advancement of scientific knowledge concerning the underlying risk factors associated with the onset and course of youth gambling involvement and the role of effective adolescent prevention and treatment programs will require these fundamental research questions to be addressed.

Dickerson, M. (2003). Exploring the limits of "responsible gambling:" Harm minimisation or consumer protection? *Gambling Research* (Journal of the National Association for Gambling Studies Australia), 15, 29-44.

Keywords: issues

Abstract: In the context of the rapidly developing international interest in responsible gambling the paper presents a brief description of the different definitions of problem gambling and their related methods of measurement: problem gambling defined as a mental disorder, as a harmful impact and as an addictive behaviour. For each of the conceptual approaches the question was posed, "How can problem gambling (gamblers) be identified from behaviour patterns on the gaming room floor?" It was concluded that although all approaches may enable an observer to refine probability statements about whether A or B is a problem gambler, none permit the sure identification of such a person. Current psychological research does not support the responsible gambling objective of excluding the problem gambler from gambling venues but does have significant implications for consumer protection. The argument presented is that loss of control over expenditure of time and money during a session of play/betting is a common and "natural" experience for regular players. This sense of loss of control is likely to be an integral part of the pleasurable experience of gambling. It was concluded that the manner in which continuous gambling products are provided to regular gamblers is in direct conflict with responsible gaming strategies, may fail to satisfy the principle of duty of care, and may be an issue best resolved in terms of consumer protection.

Dickerson, M., & Baron, E. (2000). Contemporary issues and future directions for research into pathological gambling. *Addiction*, 95(8), 1145-1159.

Keywords: issues

Abstract: The recent healthy increase in research into all aspects of gambling is noted. The dominant theme accounting for most of this research is the mental disorder model of pathological gambling and measures that have been derived from this conceptualization. It is suggested that an alternative approach focusing on the construct of choice or subjective control over gambling may be a research direction that will ensure that progress is maintained. In this paper a context for the discussion is provided by first identifying briefly fundamental conceptual and methodological issues associated with the mental disorder model. In particular it is argued that the heterogeneity of the diagnosis of pathological gambling makes the research task of assessing truly independent variables extremely difficult. Subsequently an illustrative schema is presented that demonstrates both the potential advantages and some of the complexities associated with the dependent variable of self-control over gambling behaviour. The main advantages are argued to be (a) the focus of research is narrowed to one potential cause of harmful impacts rather than the great diversity of impacts themselves, (b) prospective studies of regular gamblers in real gambling venues may be a key source of insight into the development of pathological gambling, and (c) it promotes the development of theoretical links with the mainstream of the discipline of psychology. Despite the conceptual difficulties that may be associated with the variable of self-control, it is suggested that these may be overcome because contemporary research into the addictive behaviours has demonstrated considerable success in the definition and measurement of control and related themes such as craving, restraint and temptation.

Fisher, S. (1992). Measuring pathological gambling in children: The case of fruit machines in the U.K. *Journal of Gambling Studies*, 8(3), 263-283.

Keywords: DSM-IV-J

Abstract: The alleged incidence of addiction to fruit machine gambling among children in the U.K. has highlighted the need for a measure to define and count pathological gambling in children. The DSM-IV criteria, which are being refined to diagnose pathological gambling in adults, was adapted for use with pre-adult gamblers. The resulting DSM-IV-J criteria were tested using a questionnaire survey on a sample of 467 schoolchildren aged between 11 and 16 years. Those children who were defined as 'probable pathological' gamblers by the DSM-IV-J index were significantly more likely to be involved in behaviours hitherto associated with dependency, than were the control group. DSM-IV-J appears to be a major advance in the discrimination of pathological gambling in children.

Fisher, S. (1995). Adolescent slot machine dependency and delinquency: Questions on a question of methodology. *Journal of Gambling Studies*, 11(3), 303-310.

Keywords: issues

Abstract: This paper responds to Abbott, Palmisano and Dickerson's methodological challenge to Fisher's (1992) study of adolescent fruit machine gamblers, carried out with young video game players. It is argued that important differences in the game under study, the measure of 'pathological gambling' used, and sample characteristics seriously undermine the extent to which a comparison and extrapolation of findings are achieved. In the analysis which follows, the author wishes to highlight areas of constructive criticism as well as limitations to the challenge with the aim of progressing academic endeavour in this important field.

Fisher, S. (1994). Identifying video game addiction in children and adolescents. *Addictive Behaviors*, 19(5), 545-553.

Keywords: other

Abstract: There is a current trend of thought among some scholars of gambling that arcade video game playing in some adolescents may develop into a behavior which resembles a gambling addiction. A scale, developed to identify arcade video game addiction in adolescents, was administered to 467 secondary school children in a coastal town in the UK. Initial psychometric tests show that the scale has acceptable internal consistency reliability and factorial validity, and is significantly related to alternative means of assessing excessive video game play. The implications of the study findings are discussed together with its limitations and suggestions for future research.

Fisher, S. (2000). Developing the DSM-IV-MR-J criteria to identify adolescent problem gambling in non-clinical populations. *Journal of Gambling Studies*, 16(2-3), 253-273.

Keywords: DSM-IV-MR-J, issues

Abstract: This paper presents a revised version of DSM-IV-J criteria for youth, the DSM-IV-MR-J, together with psychometric data stemming from its use in a major prevalence study of adolescent gambling and problem gambling. The case is made for further development and testing of current and emerging instruments to screen for problem gambling in youth, with the aim of establishing one internationally accepted gold standard measure.

Griffiths, M. (1993). Tolerance in gambling: An objective measure using the psychophysiological analysis of male fruit machine gamblers. *Addictive Behaviors*, 18(3), 365-372.

Keywords: other

Abstract: "Excitement" has often been referred to as the gambler's drug although until recently there was little evidence to substantiate such claims. This study involved the systematic monitoring of the psychophysiology of fruit machine gambling using heart rate measures in 30 adolescent male gamblers. The study was designed to test heart rate differences between regular and nonregular fruit machine gamblers (i.e., between subjects) and differences against the players' own baseline rates (i.e., within subjects). Results showed that there were no heart rate differences between regular and nonregular gamblers although during gambling, both groups' heart rates increased by approximately 22 beats per minute. It was also found that nonregular gamblers' heart rates did not decrease significantly after gambling whereas regular gamblers did. This finding could be argued as the first study to demonstrate an objective measure of gambling tolerance.

Hardoon, K., Derevensky, J., & Gupta, R. (2003). Empirical measures vs. perceived gambling severity among youth: Why adolescent problem gamblers fail to seek treatment. *Addictive Behaviors*, 28(5), 933-946.

Keywords: comparison, DSM-IV-J, SOGS-RA, GA, other, issues

Abstract: A comparison of empirical measures and perceived gambling severity among youth was conducted. Participants (N=980), mean age of 18.6 years, completed several widely accepted measures of pathological gambling [Diagnostic and Statistical Manual of Mental Disorders-IV-Juveniles (DSM-IV-J), South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA), and Gambler's Anonymous 20 Questions (GA 20)] and a questionnaire assessing gambling behavior. Findings revealed that while the DSM-IV-J, SOGS-RA, and GA 20 identified between 3.4% and 5.8% of participants as probable pathological gamblers, only 1.1% of individuals classified themselves as such. Further, 3.3% of the population reported that they considered themselves problem gamblers and 66% reported being social gamblers. It appears as though either youth are grossly underestimating the severity of their gambling problems or the gambling screens are overestimating prevalence rates. The clinical implications and future directions for research are considered.

Jacques, C., & Ladouceur, R. (2003). DSM-IV-J Criteria: A scoring error that may be modifying the estimates of pathological gambling among youths. *Journal of Gambling Studies, 19*(4), 427-431.

Keywords: DSM-IV-J, SOGS-RA, issues

Abstract: Previous studies have shown that prevalence rates among youths may be inflated due to a problem in understanding the questions of the SOGS-RA and DSM-IV-MR-J. This article reports another reason why prevalence rates of pathological gambling among youths may be inflated. In 1992, Fisher proposed 9 criteria (the DSM-IV-J) for diagnosing pathological gambling among youths, and formulated 12 questions (the Test questions) to identify the presence of these criteria. An analysis of a sample of studies using the DSM-IV-J reveals that some researchers have incorrectly used the 12 Test questions instead of the 9 criteria, which may have led to overestimated prevalence rates among youths. Other measurement issues may also be contributing to the overestimation of problem gambling in young people. The methodological implications of these issues are discussed.

Kassinove, J. I. (1998). Development of the gambling attitude scales: Preliminary findings. *J Clin Psychol, 54*(6), 763-771.

Keywords: other

Abstract: Social scientists recognize gambling as a universal phenomenon that occurs in a myriad of forms. Although gambling is often a harmless social activity, some participants become pathological gamblers. Given the negative consequences associated with pathological gambling, it is important to understand attitudes toward gambling because they typically represent a readiness to act. One hundred and seventy university students completed four gambling attitude scales constructed to measure general attitudes and attitudes toward gambling in casinos, betting on horse races, and playing the lottery. Results showed the scales to be internally consistent and to have short-term temporal stability. The most positive attitudes were shown toward playing the lottery and the least positive were shown toward betting on horse races. In general, men reported more positive attitudes than women. Positive attitudes toward gambling were related to a tendency toward risk taking.

Kearney, C. A. (1997). Response to "A methodological critique of 'Casino gambling in private school and adjudicated youngsters: A survey of practices and related variables.'" *Journal of Gambling Studies, 13*(1), 91-95.

Keywords: other

Abstract: Responds to the critique by R. A. Yaffee (see record 2000-08931-003) of the author's study (see record 1997-03194-004) of casino gambling practices among adolescents. The author addresses Yaffee's statements regarding sample size, lack of control for "school effects," the generalizability of the study, the choice of Las Vegas as a study site, and the lack of closer examination of pathological gambling.

Ladouceur, R., Bouchard, C., Rheaume, N., Jacques, C., Ferland, F., Leblond, J., & Walker, M. (2000). Is the SOGS an accurate measure of pathological gambling among children, adolescents and adults? *Journal of Gambling Studies, 16*(1), 1-24.

Keywords: SOGS, issues

Abstract: The South Oaks Gambling Screen (SOGS) is widely used to assess the prevalence of pathological gambling. For a variety of reasons, this instrument may not provide an accurate rate of the prevalence of pathological gambling. In this paper, one source of error in data provided by the SOGS is investigated. It is argued that individuals may not fully understand the meaning of some items, and that clarification of the meaning of misunderstood items may in some cases lead to a changed score on the scale. The present study evaluates respondents' understanding of the SOGS items. The results from three studies are reported, each using a different sample: grade school children, adolescents and adults. It was hypothesized that (1) participants would not understand some items of the SOGS, (2) problem gamblers and probable pathological gamblers would be more inclined to interpret items incorrectly than would non-problem gamblers and, (3) consistent with the first two hypotheses, clarification of items would decrease the number of participants identified as problem gamblers or probable pathological gamblers. The data obtained supported hypotheses 1 and 3. Furthermore, hypothesis 2 was supported for grade school children, but not for adolescents or adults. These results are consistent with recent literature on endorsement and acquiescence phenomena, and have implications for prevalence studies of probable pathological gambling.

Lange, M. A. (2001). "If you do not gamble, check this box": Perceptions of gambling behaviors. *Journal of Gambling Studies*, 17(3), 247-254.

Keywords: other

Abstract: Examined what activities are viewed as gambling, especially by those who do not see themselves as gamblers. 449 17-50 yr old university students returned surveys about their participation in gambling activities. After completing a questionnaire recording the style and frequency of gambling participation, Ss were asked to indicate whether or not they gambled. Results indicate that gamblers participated in twice as many forms of gambling activities as those who classified themselves as non-gamblers. Scratch tickets and lottery tickets were not generally considered gambling unless purchased frequently. Casino visits, bingo, dog races, football pools, golf matches, local poker games, and other card games were more likely to be viewed as gambling, especially when engaged in frequently. Ss who had gambled on at least one occasion with bookies, dice games, video poker in a bar, dog or cock fights, or off track betting almost always identified themselves as gamblers.

Langhinrichsen-Rohling, J., Rohde, P., Seeley, J. R., & Rohling, M. L. (2004). Individual, family, and peer correlates of adolescent gambling. *Journal of Gambling Studies*, 20(1), 23-46.

Keywords: SOGS-RA

Abstract: The primary purpose of this study was to determine the individual, family, and peer factors that correlate with adolescent gambling. High school students from three states (N = 1,846) completed an anonymous questionnaire assessing the behavior of themselves, their parents, and their peers. Participants also reported on their gambling behavior via the SOGS-RA, which was used to create five adolescent gambling groups (i.e., Non-Gamblers, Non-Problem Gamblers, At-Risk Gamblers, Problem Gamblers, and Probable Pathological Gamblers). In a discriminant function analysis using demographic, individual, family, and peer factors as potential discriminators, two functions emerged that accounted for 94% of the variance between groups. The first function was linear, with the Probable Pathological Gamblers reporting the highest level of peer and parent gambling, susceptibility to peer pressure, conduct problems, binge drinking, suicide attempts, drug use, and being male. The second function highlighted three unique qualities of individuals in the two outlying groups: Probable Pathological Gamblers and Non-Gamblers. These findings suggest that demographic, individual, family, and peer variables are all important correlates of probable pathological gambling in adolescents. Results also support the utility of a five-group classification scheme based on the SOGS-RA. The clinical implications of these results are discussed.

Lesieur, H. R. (2003). Adolescent gambling research: The next wave. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 228-255). Reno, NV, US: University of Nevada Press.

Keywords: review, issues

Abstract: (From the chapter) This chapter reviews the literature on teen gambling and examines the data lacunae existing in the field. It also makes suggestions for the direction of future research. Surveys of teen gambling (including rates of gambling, expenditure, and gambling problems) are discussed in light of allegations of epidemic teen gambling, as well as teen betting-ring hysteria. This chapter emphasizes studies of problem gambling, the range of gambling problems, definitional issues, and related problems; it reviews research on prevention and treatment of problem gambling among teens and outlines areas of need research as well as a more inclusive multifactorial model of inquiry.

Neighbors, C., Lostutter, T. W., Larimer, M. E., & Takushi, R. Y. (2002). Measuring gambling outcomes among college students. *Journal of Gambling Studies*, 18(4), 339-360.

Keywords: other, comparison

Abstract: The present research describes the proposal and validation of three gambling outcome measures, the Gambling Quantity and Perceived Norms Scale (GQPN), the Gambling Problem Index (GPI), and the Gambling Readiness to Change Questionnaire (GRTC). The study consisted of 560 undergraduate college students who completed a survey including the newly constructed measures and other measures designed to assess convergent validity. Results confirmed good reliability and convergent validity of all three measures. Implications for evaluating efficacy of treatment and prevention interventions are detailed.

Pelletier, A., Ladouceur, R., & Fortin, J. M. (2004). Assessment of high school students' understanding of DSM-IV-MR-J Items. *Journal of Adolescent Research, 19*(2), 224-232.

Keywords: DSM-IV-MR-J

Abstract: The current study examines the understanding of the DSM-IV-MR-J items to assess pathological gambling among adolescents aged 12 to 15, and explores its accuracy. The DSM-IV-MR-J was first administered in the classroom. Participants were assigned to either an experimental or a control group. Participants in the first group were asked to explain the meaning of each DSM-IV-MR-J item during an individual interview. If the item was not properly understood, the investigator corrected the participant's understanding of the item. The questionnaire was then administered a second time. The control group was only submitted to a test-retest procedure. The results showed that 22% of the items were misunderstood. Changes in diagnostic categories emerged on the second administration for both groups. A 20% and 29.4% decrease in the number of problem/pathological gamblers was observed in the experimental control group. The implications of these results are discussed in terms of the reliability of the DSM-IV-MR-J as a measure of problem gambling among adolescents.

Petry, N. M. (2003). Validity of a gambling scale for the Addiction Severity Index. *Journal of Nervous and Mental Disease, 191*(6), 399-407.

Keywords: ASI, other

Abstract: This study assessed the validity of an adaptation of the Addiction Severity Index (ASI) for evaluating severity of gambling problems. Participants (N = 597) from four different populations (pathological gamblers enrolled in a treatment study, pathological gamblers initiating outpatient treatment at a community-based program, frequent gamblers recruited from advertisement, and substance abusers) completed the ASI, along with a supplemental gambling subscale (ASI-G). Internal consistency of the ASI-G was good ($\alpha = .90$), and a principal components analysis indicated a single factor explained 73% of the variance in responses. ASI-G scores demonstrated excellent convergent validity with other measures of gambling and convergent validity with external sources, including collateral informant and clinician-rated reports. ASI-G scores discriminated among the samples tested. Temporal stability of ASI-G scores was high during a 1-month period for patients with substance abuse disorder who were not seeking gambling treatment. For treatment-seeking gamblers, the number of treatment sessions attended was significantly associated with reductions in ASI-G scores. Together, these data suggest that the ASI-G subscale may be a useful tool for assessing severity of gambling problems in a variety of populations.

Pietrzak, R., Ladd, G., & Petry, N. (2003). Disordered gambling in adolescents: Epidemiology, diagnosis, and treatment. *Paediatric Drugs*, 5(9), 583-595.

Keywords: review

Abstract: Rapid expansion of legalized gambling has been associated with increased rates of gambling disorders among adults and adolescents worldwide. Epidemiologic studies suggest that, in North America, up to 6% of adults and 20% of adolescents have a gambling problem. Despite increasing prevalence rates of gambling disorders, little research is available on how to treat such disorders in adolescents. Much of what is known about how to treat adolescent problem and pathological gambling comes from research on psychosocial and psychopharmacologic treatments for adult pathological gambling. Risk factors for adolescent gambling disorders include male gender, alcohol and drug use, deviant peers, family history of gambling, and impulsive behavior. While several risk factors characterize disordered gambling among adolescents, the extent to which these characteristics are related remains to be determined. In terms of screening for adolescent problem and pathological gambling, several instruments designed to reflect the Diagnostic and Statistical Manual of Mental Disorders diagnostic criteria for pathological gambling are available. Psychosocial approaches used to treat adult pathological gambling include Gamblers Anonymous, cognitive-behavioral therapy (CBT), and motivational enhancement therapy (MET). Among adolescents, CBT as well as an eclectic therapy have been helpful in reducing problematic gambling behavior. In terms of pharmacotherapy, three classes of psychotropic drugs have been used to treat adult pathological gambling - serotonin reuptake inhibitors, opioid antagonists, and mood stabilizers. While some of these pharmacotherapies have been efficacious in treating adult pathological gambling, additional double-blind, placebo-controlled studies are needed to determine the long-term effectiveness of these treatments. No known study has evaluated the use of psychopharmacologic agents in treating adolescent pathological gambling. Possible reasons for the lack of research on treatment for adolescent gambling disorders include lack of motivation to pursue treatment, feelings of self-control, and negative perception of therapy. Referrals from parents, teachers, and peers of adolescents, as well as community outreach programs, may be useful in successfully deriving a treatment population. Clinicians are advised to be sensitive to behavioral risk factors and to screen for disordered gambling in high risk adolescents. A combination of CBT and MET, as well as medication for any comorbid psychiatric condition, is recommended.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002). Gambling: An addictive behavior with health and primary care implications, *Journal of General Internal Medicine*, 17(9), 721-732.

Keywords: review

Abstract: Over the past several decades, and particularly during the last 10 to 15 years, there has been a rapid increase in the accessibility of legalized gambling in the United States and other parts of the world. Few studies have systematically explored the relationships between patterns of gambling and health status. Existing data support the notion that some gambling behaviors, particularly problem and pathological gambling, are associated with nongambling health problems. The purpose of this article is to provide a perspective on the relationship between gambling behaviors and substance use disorders, review the data regarding health associations and screening and treatment options for problem and pathological gambling, and suggest a role for generalist physicians in assessing problem and pathological gambling. A rationale for conceptualization of pathological gambling as an addictive disorder and a model proposing stress as a possible mediating factor in the relationship between gambling and health status are presented. More research is needed to investigate directly the biological and health correlates associated with specific types of gambling behaviors and to define the role for generalist physicians in the prevention and treatment of problem and pathological gambling.

Poulin, C. (2001). An assessment of the validity and reliability of the SOGS-RA. *Journal of Gambling Studies*, 18(1), 67-93.

Keywords: SOGS-RA, issues

Abstract: The present is a validation study seeking to determine the degree of confidence that can be placed on inferences about problem gambling among adolescents in the Atlantic provinces, based on their South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA) scores. The major source of data was a 1998 survey of 13,549 students in junior and high school of the public school systems of the 4 Atlantic provinces of Canada. The SOGS-RA was found to have adequate stability and internal consistency reliability. Statistically significant gender differences were demonstrated relative to endorsement and construct validity. Regarding the latter, this study shows that the existing cut-point of the SOGS-RA score for problem gambling identifies as problem gamblers, markedly different proportions of male than female daily gamblers. Regarding construct validity in relation to the Atlantic Alcohol and Drug Risk Continua, this study suggests that while statistically highly significant, the association between problem gambling and substance-related problems may be of low clinical significance. Regarding criterion validity, there is an urgent need to perform the types of enquiry that will allow clarification about how adolescent problem gambling is conceptualized, by adults versus adolescents, by males versus females, and from a clinical versus a public or population health perspective.

Raylu, N., & Oei, T. P. S. (2002). Pathological gambling: A comprehensive review. *Clinical Psychology Review*, 22(7), 1009-1061.

Keywords: review, issues

Abstract: Due to recent changes of gambling laws, accessibility to gambling has become more widespread and thus, there has also been an increase in the prevalence of pathological gambling (PG). The wide range of social, economic, and psychological problems associated with PG are well known. There is a need for better understanding of PG and this review attempts to do so. Literature searches using the Medline and PsycINFO databases were used. Critical examining of the literature showed that familial/genetic, sociological, and individual factors (e.g., an individual's personality, biochemistry, psychological states, and cognitions) are implicated in the development and maintenance of PG, yet at present, the evidences are not solid. Similarly, there have been a lot of theories for PG but again, none of them are solid enough to provide a clear understanding of PG. Recent psychological-based theories seem to provide some solid ground for further research. We highlight four areas for future consideration for research. (1) Most studies have generalized findings from one form of gambling to another. It is suggested that it is now not tenable to consider gambling as a single phenomenon that can explain all forms of gambling. (2) Almost all of the studies in the gambling literature are Western-based and the results are often generalized to other ethnic and cultural groups. There is now an urgent need to close this gap. (3) Future studies need to address methodological problems in the current gambling/PG literature. (4) Almost all of the gambling literature has focused on the issue of why people start gambling. It is suggested that looking at variables as to why people stop gambling in a single episode may be a more fruitful area of research than why people start gambling. This is because what motivates one to continue gambling, despite losses in a session and across sessions, is a characteristic that distinguishes nonproblem gamblers from problem gamblers and pathological gamblers (PGs).

Raylu, N., & Oei, T. P. S. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review*, 23(8), 1087-1114.

Keywords: issues

Abstract: There has been a significant gap in the gambling literature regarding the role of culture in gambling and problem gambling (PG). This paper aims to reduce this gap by presenting a systematic review of the cultural variations in gambling and PG as well as a discussion of the role cultural variables can play in the initiation and maintenance of gambling in order to stimulate further research. The review shows that although studies investigating prevalence rates of gambling and PG among different cultures are not plentiful, evidence does suggest certain cultural groups are more vulnerable to begin gambling and to develop PG. Significant factors including familial/genetic, sociological, and individual factors have been found in the Western gambling literature as playing important roles in the development and maintenance of PG. These factors need to be examined now in other cultural groups so we can better understand the etiological processes involved in PG and design culturally sensitive treatments. In addition, variables, such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviors need to be also examined in relation to the role they could play in the initiation of and maintenance of gambling.

Rossen, F. (2001). *Youth gambling: A critical review of the public health literature*. Centre for Gambling Studies, University of Auckland. Available at: <http://www.gamblingstudies.co.nz/content/CompleteReview.pdf>

Keywords: review

Shaffer, H. J., & Hall, M. N. (1996). Estimating the prevalence of adolescent gambling disorders: A quantitative synthesis and guide toward standard gambling nomenclature. *Journal of Gambling Studies*, 12(2), 193-214.

Keywords: review, issues

Abstract: This article reviews the extant published and unpublished studies that estimate the prevalence of adolescent gambling problems in the US. The 9 nonduplicative studies identified by our literature search included data collected from more than 7,700 adolescents (aged 13-20 yrs) from 5 different regions of the US and Canada. In addition to comparing the conceptual and methodological differences that exist among these studies, this article employed a meta-analytic strategy to synthesize prevalence estimates from the existing studies. This analysis revealed that within a 95% confidence interval, between 9.9 and 14.2% of adolescents are at risk of developing or returning to serious gambling problems. Similarly, between 4.4 and 7.4% of adolescents exhibit seriously adverse compulsive or pathological patterns of gambling activity. Finally, the discussion proposes a generic multi-level classification scheme to reconcile the divergent classification methods and data reporting strategies. This new multi-level approach to reporting gambling prevalence will facilitate interstudy comparisons among existing estimates of gambling prevalence and help to provide a general data reporting system for future research.

Shaffer, H. J., Hall, M., Vander Bilt, J., & Vagge, L. (2003). Introduction: Youth and gambling: Creating a legacy of risk. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 1-24). Reno, NV, US: University of Nevada Press.

Keywords: issues

Abstract: (From the chapter) Presents an overview of the book that explores the nature of adolescents' involvement in gambling by examining issues related to youth-gambling research, treatment, education, economics, and policy. The chapter begins by defining the concepts of gambling, pathological gambling, and estimating the prevalence of youth gambling problems. The author discusses the psychosocial consequences of excessive gambling, the psychological elements of pathological gambling, and gambling as an object of addiction. Also discussed are conceptual problems with measuring pathological gambling, prospects for gambling prevention and education programs.

Shaffer, H. J., LaBrie, R., Scanlan, K. M., & Cummings, T. N. (1994). Pathological gambling among adolescents: Massachusetts Gambling Screen (MAGS). *Journal of Gambling Studies*, 10(4), 339-362.

Keywords: DSM-IV, MAGS, issues

Abstract: Describes the development of the MAGS, a brief clinical screening instrument that can (1) yield an index of non-pathological (NPLG) and pathological (PLG) gambling during a 5 to 10 min survey or interview and (2) document the 1st psychometric translation of the proposed Mental Disorders-IV (DSM-IV) PLG gambling criteria into a set of survey or clinical interview questions. Data for the MAGS were obtained from a survey of 856 students in 3 suburban Boston high schools. Results provide evidence that weighted item scores could correctly classify 96% of the adolescent gamblers (n = 589) as PLG, in transition, or NPLG when DSM-IV criteria were employed. Results also describe the prevalence of a variety of social and emotional problems associated with adolescent gambling. Finally, the discussion examined the normalization and contemporary social context of gaming and the impact of these influences on the measurement and identification of PLG gambling.

Steenbergh, T. A., Meyers, A. W., May, R. K., & Whelan, J. P. (2002). Development and validation of the Gamblers' Beliefs Questionnaire. *Psychology of Addictive Behaviors, 16*(2), 143-149.

Keywords: other

Abstract: The Gamblers' Beliefs Questionnaire (GBQ) is a self-report measure of gamblers' cognitive distortions. GBQ test items were constructed on the basis of theory, empirical evidence, and expert review. Four hundred three adults completed the initial set of items, and 21 items were selected to make up the final GBQ. The factor structure of the GBQ consisted of 2 closely related factors: Luck/Perseverance and Illusion of Control. The full scale showed good internal consistency ($\alpha = .92$) and adequate test-retest reliability ($r = .77$). Problem and pathological gamblers scored higher than nonproblem gamblers on the GBQ and its factors. GBQ scores were moderately correlated with the duration of gambling sessions among problem and pathological gamblers, and there was no relationship between GBQ scores and social desirability.

Stinchfield, R. (2002). Reliability, validity, and classification accuracy of the South Oaks Gambling Screen (SOGS). *Addictive Behaviors, 27*(1), 1-19.

Keywords: SOGS, DSM-IV, comparison

Abstract: The South Oaks Gambling Screen (SOGS) was originally developed to screen for pathological gambling in clinical settings; however, its use has expanded to other purposes, settings, and populations, including prevalence studies of pathological gambling in the general population. Questions have been raised about the accuracy of the SOGS with its use in these new settings and populations. The purpose of this study is to examine current estimates of the reliability, validity, and classification accuracy of the SOGS in two different samples: (a) a general population sample (N= 803) and (b) a gambling treatment sample (N = 1,589). DSM-IV diagnostic criteria served as the standard against which to measure the SOGS classification accuracy and both the SOGS and DSM-IV diagnostic criteria were administered to participants. The SOGS was found to have satisfactory reliability with coefficient alphas of .69 and .86 in the general population and gambling treatment samples, respectively. The SOGS demonstrated satisfactory validity by differentiating between the general population and the gambling treatment sample and by exhibiting high correlations with DSM-IV diagnostic criteria and moderate correlations with other measures of gambling problem severity. The SOGS demonstrated good to excellent classification accuracy in the gambling treatment sample, but had poorer accuracy in the general population sample with a 50% false positive rate. The SOGS overestimated the number of pathological gamblers in the general population, as compared to DSM-IV diagnostic criteria.

Stinchfield, R. (2003). Reliability, validity, and classification accuracy of a measure of DSM-IV diagnostic criteria for pathological gambling. *American Journal of Psychiatry, 160*(1), 180-182.

Keywords: DSM-IV

Abstract: OBJECTIVE: The purpose of this study was to measure the reliability, validity, and classification accuracy of the DSM-IV diagnostic criteria for pathological gambling. METHOD: Participants in this study were drawn from two sources: 803 men and women from the general adult population of Minnesota and 259 men and women who were admitted to a gambling treatment program. A 19-item measure of the DSM-IV diagnostic criteria for pathological gambling was administered, along with other validity measures. RESULTS: The DSM-IV diagnostic criteria were found to be reliable and valid. With a standard cutoff score of 5, DSM-IV criteria yielded satisfactory classification accuracy results; however, a cutoff score of 4 made modest improvements in classification accuracy and, most important, reduced the rate of false negatives. CONCLUSIONS: The DSM-IV diagnostic criteria for pathological gambling, when operationalized into questions, demonstrated satisfactory reliability, validity, and classification accuracy, and a cutoff score of 4 improved diagnostic precision.

Stinchfield, R. (2002). Youth gambling: How big a problem? *Psychiatric Annals, 32*(3), 197-202.

Keywords: issues

Abstract: Discusses the prevalence and treatment of youth problem gambling. Most youth have gambled, but they spend small amounts of money and experience few adverse consequences or problems. Most youth play private informal games, such as cards and games of skill, with young males gambling more frequently than females. However, there is a small percentage of youth who are overly involved in gambling, and this number appears to be increasing. Underage youth report illegal gambling activities as well as playing legalized games such as state lotteries and casino gambling. Those measuring problem gambling among youth have tended to be more lenient with diagnostic criteria and cut scores than when examining adults. Little research has been conducted on the treatment of young problem gamblers.

Stinchfield, R., Govoni, R., & Frisch, R. (2001). A critical review of screening and assessment instruments for problem gambling. Windsor, Ontario: Problem Gambling Research Group, University of Windsor.

Keywords: review, issues, SOGS, DSM-IV

Abstract: This report presents a critical review of screening and assessment instruments for problem gambling and Pathological Gambling. The objectives of this review are to provide information about instruments that will serve as a resource to research and mental health professionals regarding the issues involved in screening and assessment of problem gambling, to inventory the types of instruments that are available, and to make recommendations for further development. To this end, each instrument is described in terms of its development, content, intended purpose, administration method, psychometric properties, and interpretation. There are a number of existing instruments that serve as the backbone of case identification in clinical settings and of surveys of problem gambling among the general population. Existing instruments are used on a daily basis to make clinical, scientific, and public policy decisions, and therefore, it is critical that these instruments demonstrate evidence of their reliability and validity for these purposes. The rate of development of new gambling assessment instruments has outpaced the rate of rigorous psychometric research on existing and new instruments. As a result, many instruments have not been rigorously evaluated in terms of psychometric properties, beyond their development study. The SOGS has accumulated the most research to date on its psychometric properties, however, the current momentum in test development has focused on DSM-IV-based instruments. It is recommended that the field adopt the standards used in educational and psychological testing, and generate a body of rigorous psychometric research that demonstrates the reliability, validity, and classification accuracy of existing and new instruments. This research will justify the use of those instruments found to be reliable, valid, and accurate, and will serve to revise and refine these existing instruments to improve measurement precision.

Stinchfield, R., Govoni, R., & Frisch, R. (in press). DSM-IV diagnostic criteria for pathological gambling: Reliability, validity, and classification accuracy. *American Journal on Addictions*.

Keywords: DSM-IV, other, comparison

Abstract: Objective: The purpose of this study was to examine the reliability, validity, and classification accuracy of the DSM-IV diagnostic criteria for Pathological Gambling. Methods: Given the lack of a gold standard to diagnose Pathological Gambling, such as a laboratory test, this study employed a close approximation of a gold standard to test classification accuracy by recruiting two groups of participants: a general population sample, unlikely to have the disorder, and a gambling treatment sample, likely to have the disorder. Two groups of participants were recruited: 121 men and women clients at a gambling treatment facility and 300 men and women selected at random from the Windsor, Ontario general population. The Gambling Behavior Interview was administered to both groups. The Gambling Behavior Interview includes items that measure the ten DSM-IV diagnostic criteria for Pathological Gambling, as well as other gambling problem severity measures and scales that served as tests of convergent validity. Results: The ten DSM-IV diagnostic criteria were found to exhibit satisfactory reliability, validity, and classification accuracy, however, lowering the cut score to four, and using item weights, yielded improved classification accuracy over the standard cut score of five. Some diagnostic criteria were found to have greater discriminatory power than other criteria. Conclusions: The results of this study suggest that the classification accuracy of DSM-IV diagnostic criteria can be improved upon with a lower cut score or using weighted criteria.

Strong, D. R., Breen, R. B., Lesieur, H. R., & Lejuez, C. W. (2003). Using the Rasch model to evaluate the South Oaks Gambling Screen for use with nonpathological gamblers. *Addictive Behaviors*, 28(8), 1465-1472.

Keywords: SOGS, other, issues

Abstract: Despite its utility for the dichotomous differentiation of pathological and nonpathological gamblers, some have questioned the use of the South Oaks Gambling Screen (SOGS) [Am. J. Psychiatry 144 (1987) 1184] for discriminating individuals across the entire range of gambling problems. Using methods from item response theory, we derived a six-item version of the SOGS. This shortened version of the SOGS performed uniformly across a sample of pathological gamblers and a sample of students and resulted in five levels of discrimination and the following interpretation: a score of 1 reveals potential for problems; 2 reveals likely problem gambling; 3 or 4 items endorsed represent significant levels of problems noticeable by others; while 5 or 6 represents severe problems with significant financial involvement. We discuss the implications and remaining limitations of using this shortened measure for the continuum-based assessment of gambling problems.

Volberg, R., & Banks, S. (1990). A review of two measures of pathological gambling in the United States. *Journal of Gambling Studies*, 6(2), 153-163.

Keywords: SOGS, other, issues

Abstract: This paper addresses a debate that has emerged in the field of pathological gambling research. This debate concerns measures of the prevalence of pathological gambling in the general population. Two instruments have been used to measure prevalence in the United States, the South Oaks Gambling Screen and the Cumulative Clinical Signs Method. These measures are described and several problems with the statistical properties of the Cumulative Clinical Signs Method is discussed. The authors conclude with a call for continued research in the area of prevalence studies of pathological gambling.

Wiebe, J. M. D., Cox, B. J., & Mehmel, B. G. (2000). The South Oaks Gambling Screen Revised for Adolescents (SOGS-RA): Further psychometric findings from a community sample. *Journal of Gambling Studies*, 16(2-3), 275-288.

Keywords: SOGS-RA, issues

Abstract: The broad expansion of gambling across North America during the last two decades has generated concern about the extent of gambling and problem gambling in youth, and the need to more accurately monitor it. The South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA) is a promising instrument for screening problem gambling (K. C. Winters, et al., 1993) that requires more evaluation. Psychometric analysis of the instrument was conducted in 1,000 males and females aged 12-17 yrs. The analyses extended previous focus by including females, young adolescents, and all evaluation of youth classified as "at-risk." Consistent with preliminary findings obtained during scale development, the distribution of item endorsement revealed trends of over-endorsement for some items (e.g., gambled more than intended, felt bad about the amount bet), and under-endorsement for others (e.g., criticized or told you had a gambling problem). These results suggest consideration of some form of weighting procedure, item deletion or re-wording. A factor analysis of the SOGS-RA items suggested a 2-factor solution, with one factor interpreted as Control over Gambling and the other Gambling Consequences. The 2 factors may represent early versus more severe levels of gambling problems, respectively.

Winters, K. C., & Anderson, N. (2000). Gambling involvement and drug use among adolescents. *Journal of Gambling Studies*, 16(2-3), 175-198.

Keywords: issues

Abstract: The literature on youth gambling often notes the relationship of gambling involvement to drug use. The extent of this association and its importance toward advancing knowledge about the origins and course of adolescent gambling are discussed. The authors contend that (a) adolescent gambling, like drug use, may be a normal part of adolescence from a statistical perspective, (b) claims that the prevalence rate of problem/pathological gambling is comparable or higher than the rate of substance use disorders are not supportable at this time given the weaker methodological studies in the gambling area, (c) while research suggests that similar risk factors may be important determinants for both behavior domains, prospective studies of adolescent development are needed to further clarify which factors are unique and common to adolescent gambling, and (d) greater documentation of the harm associated with adolescent gambling is a major barrier to garnering more prevention and treatment resources for this issue.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993). Toward the development of an adolescent gambling problem severity scale. *Journal of Gambling Studies*, 9(1), 63-84.

Keywords: comparison, other, SOGS

Abstract: The development and initial psychometric properties of an adolescent gambling problem severity measure are described. The scale, based on a revision of the South Oaks Gambling Screen, was administered to 1,101 adolescents (aged 15-18 yrs) as part of a state-wide gambling survey. Study results indicate that the scale had moderate internal consistency reliability and was significantly related to alternate measures of problem severity for male Ss. Because the rate and severity of gambling among females was very low, the psychometric adequacy of the scale for females is not known at this time.

Yaffee, R. A. (1997). A methodological critique of Kearney et al's (1996) "Casino gambling in private school and adjudicated youngsters: A survey of practices and related variables." *Journal of Gambling Studies*, 13(1), 85-90.

Keywords: issues

Abstract: Comments on the study by C. A. Kearney et al (see record 1997-03194-004) concerning casino gambling practices among adolescents. The author states that the methodology seems impaired. The internal validity of the study is plagued with several problems. Differential selection of the sample precludes representativeness. Low sample size deprives the findings of statistical power and conclusion validity. Lack of control for key confounding variables deprives the paper of implied construct validity and explanatory power, rendering apparent differences probably specious. In addition, the school and community settings were so atypical and their interaction so serious as to deprive the study of generalizability.

4.4 Treatment

Arseneault, L., Ladouceur, R., & Vitaro, F. (2001). Gambling and psychotropic substance consumption: Prevalence, coexistence and consequences. *Canadian Psychology, 42*(3), 173-184.

Abstract: The present article is a critical review of research examining the relationship between pathological gambling and drug/alcohol addiction in adults and adolescents. We present diagnostic criteria and prevalence estimates for each population. In adults, the prevalence of drug or alcohol dependence is five times greater among pathological gamblers in treatment than it is among the general population. Adults with both disorders exhibit greater levels of impulsiveness and disinhibition than individuals with a single diagnosis. The few studies that have investigated the co-morbidity of pathological gambling and drug/alcohol addiction in adolescents yield results similar to those obtained in adults. Pathological gambling is highly correlated with drug, alcohol and cigarette consumption. Moreover, impulsiveness is greater among adolescents with a co-morbid diagnosis. This review suggests the importance for treatment and prevention programs to take into account the possible co-morbidity among these disorders.

Chambers, R. A., & Potenza, M. N. (2003). Neurodevelopment, impulsivity, and adolescent gambling. *Journal of Gambling Studies, 19*(1), 53-84.

Abstract: The prevalence of problem and pathological gambling in adolescence and young adulthood has been found to be two- to fourfold higher than in adulthood. Given that these high rates might predict future increases across all age groups, it is important to explore the causes of the elevated rates of problem and pathological gambling among youths. This article reviews evidence for a neurobiological basis for adolescent vulnerability to problem and pathological gambling behaviors. We propose that a common trait motif of impulsivity might underlie the phenomenology of pathological gambling, commonly comorbid psychiatric disorders, and related aspects of adolescent behavior. Recent advances in understanding the brain mechanisms involved in motivation, reward, and decision-making allow a discussion of neural circuitry underlying impulsivity. Emerging data indicate that important neurodevelopmental events during adolescence occur in brain regions associated with motivation and impulsive behavior. We hypothesize that immaturity of frontal cortical and subcortical monoaminergic systems during normal neurodevelopment underlies adolescent impulsivity as a transitional trait-behavior. While these neurodevelopmental processes may confer advantage by promoting a learning drive for optimal adaptation to adult roles, they may also confer an increased vulnerability to addictive behaviors such as problem and pathological gambling. An exploration of the developmental changes in neural circuitry involved in impulse control has significant implications for understanding adolescent behaviors and treating problem and pathological gambling among youths.

DeCaria, C. M., Hollander, E., Grossman, R., Wong, C. M., Mosovich, S. A., & Cherasky, S. (1996). Diagnosis, neurobiology, and treatment of pathological gambling. *The Journal of Clinical Psychiatry, 5*(Suppl. 8), 80-84.

Abstract: Pathological gambling is a disabling disorder that affects at least 2 1/2 million Americans and their families. Although pathological gambling has been characterized as an impulse control disorder, it has also been associated with compulsivity. Essential features of pathological gambling include constantly recurring gambling behavior that is maladaptive, in that personal, familial, and/or vocational endeavors are disrupted. Affective disorders and substance abuse often co-occur. Incidence of suicidality is extremely high. Despite the fact that this disorder is a widespread public health problem, few controlled studies of causes or treatment have been conducted. Preliminary neurobiological studies implicate serotonergic dysfunction in pathological gamblers. Treatment with serotonin reuptake inhibitors, such as clomipramine and fluvoxamine, may be effective in treating this disorder. Well-defined and controlled clinical trials in large samples of pathological gamblers are needed.

Derevensky, J., & Gupta, R. (2000). Youth gambling: A clinical and research perspective. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 2.

Abstract: This paper provides an overview of the current state of knowledge of youth gambling problems. The goals and contributions of the McGill University Youth Gambling Research & Treatment Clinic are highlighted. The authors integrate their clinical and research program findings within the context of the necessity of identifying risk factors associated with problem gambling amongst adolescents. Specific recommendations are made as well as a call for collaborative effort between the public, industry, legislators, clinicians and researchers to help resolve this growing problem.

Derevensky, J., & Gupta, R. (2004). Adolescents with gambling problems: A synopsis of our current knowledge. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Abstract: It's been 25 years since Henry Lesieur's seminal research on understanding compulsive gambling was published. While still in its infancy, the field of gambling research has evolved and greatly added to a better understanding of this complex behavior, its measurement, its social and familial costs, ways of minimizing and preventing gambling problems, and methods of treating individuals with gambling problems. For most adolescents and adults, gambling remains a form of entertainment without serious negative consequences. Yet, adolescent pathological gamblers, like their adult counterparts and independent of the negative consequences resulting from their excessive gambling, continue to chase their losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Our current empirical knowledge of youth gambling problems is reviewed and recommendations for future research are provided.

Derevensky, J., & Gupta, R. (Eds.). (2004). *Gambling problems in youth: Theoretical and applied perspectives*. NY: Kluwer Academic/Plenum Publishers.

Dickson, L. M., Derevensky, J. L., & Gupta, R. (2004). Harm reduction for the prevention of youth gambling problems: Lessons learned from adolescent high-risk behavior prevention programs. *Journal of Adolescent Research*, 19(2), 233-263.

Abstract: Despite the growing popularity of the harm reduction approach in the field of adolescent alcohol and substance abuse, a harm reduction approach to prevention and treatment of youth problem gambling remains largely unexplored. This article poses the question of whether the harm reduction paradigm is a promising approach to the prevention of adolescent problem gambling and other risky behaviors. The authors use a universal, selective, and indicative prevention framework to present current prevention initiatives that have emerged from the harm reduction health paradigm for adolescent substance and alcohol abuse. The risk-protective factor model is used as a conceptual basis for designing youth problem gambling harm reduction prevention programs. This framework illustrates the developmental appropriateness of the harm reduction approach for youth. Implications drawn from this conceptual examination of harm reduction as a prevention approach to adolescent problem gambling provide valuable information for treatment providers as well.

DiClemente, C. C., Story, M., & Murray, K. (2000). On a roll: The process of initiation and cessation of problem gambling among adolescents. *Journal of Gambling Studies, 16*(2-3), 289-313.

Abstract: As gambling becomes more accessible and acceptable in society, problems associated with gambling and gaming have begun to affect ever increasing numbers of adolescents. Although restricted from most forms of gambling by law, many adolescents are finding a path into problem gambling. Some are becoming compulsive gamblers early in their gambling career, facing a future filled with consequences and problems. Understanding the pathway or process by which these adolescents become engaged in gambling behavior and how they can extricate themselves from this addictive behavior can enhance the efficiency and effectiveness of our interventions. This article offers a perspective on the initiation and cessation of compulsive gambling using the basic elements of the process of intentional behavior change outlined in the Stages of Change from the Transtheoretical Model. The process of initiation of a problematic behavior is similar to the process of modification or cessation of a problematic behavior in terms of these stages of change. With adolescents it is important to distinguish between the process of initiation, which has implications for prevention of gambling problems, and the process of cessation, which often necessitates the assistance of treatment. Creating interventions that parallel the process of change offers the potential for personalizing and potentiating efforts to reduce the prevalence and consequences associated with compulsive or pathological and problem gambling. Application of this model to gambling behavior offers a heuristic that is intriguing and requires substantiation through rigorous research.

Griffiths, M. D. (1993). Factors in problem adolescent fruit machine gambling: Results of a small postal survey. *Journal of Gambling Studies, 9*(1), 31-45.

Abstract: Analyzes data obtained from a postal study of former adolescent fruit machine addicts. 19 Ss (aged 16-25 yrs) completed a questionnaire, which was analyzed using Mental Disorders-III-Revised (DSM-III-R) criteria. 16 of the Ss were deemed to be (or to have been) probable pathological gamblers. Results show that before playing fruit machines, 14 out of 19 respondents often felt in a good mood, but 11 out of 19 reported feeling depressed. During play, excitement increased and depression decreased, whereas after playing, good moods decreased and bad moods increased. At the core of the majority of the gamblers' reasons for excessive playing was escapism. Cognitive bias may be important in the explanation of excessive gambling despite persistent losses. Treatment and intervention techniques include family communication and attendance at Gamblers Anonymous meetings.

Griffiths, M. D., & Macdonald, H. F. (1999). Counselling in the treatment of pathological gambling: An overview. *British Journal of Guidance & Counselling, 27*(2), 179-190.

Abstract: Gambling is an activity that will become increasingly known to the counselling profession as the problematic effects of gambling deregulation in the UK slowly take effect over the next 5 to 10 yrs. The gambling literature and the phases of the pathological gambler's career are briefly examined. Counselling approaches that have been used in the treatment of pathological gambling include (1) psychotherapy, (2) conjoint marital therapy, (3) minimal interventions, (4) behavioural counselling, and (5) practical approaches to the treatment of adolescent problem gamblers. It is concluded that, although a number of evaluation studies have been carried out, few are directly comparable with one another, and several have methodological problems which may undermine the value of the evidence produced.

Gupta, R., & Derevensky, J. (2000). Adolescents with gambling problems: From research to treatment. *Journal of Gambling Studies, 16* (2-3), 315-342.

Abstract: Considerable interest in the area of youth gambling has prompted an increase in empirical investigations examining the correlates associated with youth experiencing severe gambling problems. Based upon the current state of knowledge and our clinical experience, the development of the treatment program for youth with serious gambling problems employed at the McGill University Youth Gambling Research and Treatment Clinic is described. The major tenets, underlying philosophy, and therapeutic processes are presented. A case study is included to illustrate the therapeutic approach. The authors present the need for greater funding for more basic and applied research and the necessity for further scientifically validated treatment and prevention programs.

Hollander, E., Buchalter, A. J., & DeCaria, C. M. (2000). Pathological gambling. *Psychiatric Clinics of North America, 23*(3), 629-642.

Abstract: With increasing access to gambling facilities through casinos, the Internet, and other venues, PG is a rapidly emerging mental health concern. This impulse-control disorder tends to be comorbid with a wide range of other disorders and is reportedly associated with a high rate of suicide. For most gamblers, gambling is a form of entertainment, but for many individuals, the activity leads to far-reaching disruption of family and work. The personal and societal financial ramifications are severe, and many individuals with PG end up in the criminal justice system. An understanding of the neurobiology of PG is beginning to surface. 5-HT is linked to behavioral initiation and disinhibition, which are important in the onset of the gambling cycle and the difficulty in ceasing the behavior. Norepinephrine is associated with the arousal and risk taking in patients with PG. Dopamine is linked to positive and negative reward, the addictive component of this disorder. Effective treatment strategies for pathological gamblers are emerging. Potentially useful pharmacologic agents include SRIs (clomipramine and fluvoxamine), mood stabilizers for pathological gamblers with comorbid bipolar disorders (lithium), and naltrexone. Cognitive-behavioral psychotherapies offer promising results in the treatment of patients with this disorder. To devise prevention and early-intervention programs, research is needed to identify specific features of the individuals at risk for gambling problems. Education targeting vulnerable youth that show early signs of gambling behavior may be worthwhile and should be investigated further. Funding is necessary to support these endeavors, so perhaps a portion of tax revenues generated from the gambling industry should go toward specialized treatment facilities, educational efforts, and research into the neurobiology and treatment of PG.

Kaminer, Y., Burleson, J. A., & Jadamec, A. (2002). Gambling behavior in adolescent substance abuse. *Substance Abuse, 23*(3), 191-198.

Abstract: This study assessed the prevalence and correlates of gambling behavior (GB) in adolescent substance abusers (N = 97) consecutively admitted to an outpatient treatment program. Thirty-four percent of the cohort had never gambled; 57% were classified as social, nonpathological gamblers; 8% were labeled as in transition gamblers; and only 1% met criteria for pathological gambling. A significant finding was that males are more likely to gamble and to have a higher severity score than do females. A younger age of GB onset is seen for girls than boys and is correlated with a history of suicide attempts, diagnosis of depression, number of symptoms of oppositional behavior, cluster B personality disorders, and a higher need for psychiatric treatment. None of the gambling youths was ever referred for GB counseling. Increased awareness for and additional studies of adolescent gambling are required.

Kim, S. W., & Grant, J. E. (2001). The psychopharmacology of pathological gambling. *Seminars in Clinical Neuropsychiatry, 6*(3), 184-194.

Abstract: We discuss the rationale of the pharmacological approaches to pathological gambling and review the current status of drug treatments in this area. Specifically, we summarize the treatment study results of serotonin reuptake inhibitors, mood stabilizers, and opioid antagonists in pathological gambling. We also briefly describe the animal and human studies of other pharmacologic agents that show future promise in treating this disorder. Finally, we discuss a research agenda to be addressed in future drug treatment studies in pathological gambling.

Ladouceur, R., Boisvert, J. M., & Dumont, J. (1994). Cognitive-behavioral treatment for adolescent pathological gamblers. *Behav Modif, 18*(2), 230-242.

Abstract: This study evaluated the effectiveness of a cognitive-behavioral treatment for adolescent pathological gamblers. Perception of control and severity of the problem served as dependent variables. Four adolescent

pathological gamblers meeting DSM-III-R criteria were treated in a multiple baseline design across individuals. Results showed clinically significant changes for all subjects; they remained abstinent at 1-, 4-, and 6-month follow-ups. The clinical implications of these results are discussed.

Lesieur, H. R. (2003). Adolescent gambling research: The next wave. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 228-255). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) This chapter reviews the literature on teen gambling and examines the data lacunae existing in the field. It also makes suggestions for the direction of future research. Surveys of teen gambling (including rates of gambling, expenditure, and gambling problems) are discussed in light of allegations of epidemic teen gambling, as well as teen betting-ring hysteria. This chapter emphasizes studies of problem gambling, the range of gambling problems, definitional issues, and related problems; it reviews research on prevention and treatment of problem gambling among teens and outlines areas of need research as well as a more inclusive multifactorial model of inquiry.

Nower, L., & Blaszczynski, A. (2003, October). *A pathways approach to treating youth gamblers*. Paper presented at the European Association for the Study of Gambling conference, Barcelona, Spain.

Abstract: The Pathways Model of pathological gambling (Blaszczynski, 1998; Blaszczynski & Nower, 2002) is the first conceptual theoretical model of gambling to incorporate the multiple biological, psychological, and ecological variables that contribute to the development of pathological gambling and to refute the assumption that pathological gamblers form one homogenous population with similar psychological principles. The model, as applied to the treatment of youth problem gamblers, proposes that individuals follow different pathways leading to three distinct groups of problem gamblers: (a) behaviorally-conditioned problem gamblers, (b) emotionally vulnerable problem gamblers, and (c) anti-social impulsivist problem gamblers. These pathways are characteristically identifiable in childhood or adolescence and have significant implications for treatment approaches for youth gamblers. The clinical treatment strategies for youth in each pathway are discussed.

Petry, N. M., & Tawfik, Z. (2001). Comparison of problem-gambling and non-problem-gambling youths seeking treatment for marijuana abuse. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(11), 1324-1331.

Abstract: Evaluated the prevalence and correlates of problem gambling (PG) in marijuana-abusing adolescents. A retrospective analysis was conducted of data collected from participants entering treatment for marijuana abuse. Of 255 adolescents (aged 12-18 yrs) interviewed, 22% experienced gambling problems. Compared with non-problem gamblers (NPGs), PGs were more likely to be male, of African-American ethnicity, and to live in single-parent homes. Multivariate general linear models compared the 2 groups with respect to psychosocial problems. After controlling for age, gender, and race, differences between the groups emerged in drug use severity, legal difficulties, psychiatric problems, and HIV risk behaviors. PGs reported a greater frequency of overall drug and alcohol use and greater intensity of marijuana use than their NPG counterparts. They had more illegal activity and greater somatization and anxiety symptoms, as well as higher levels of victimization. Compared with NPGs, PGs also reported more recent sexual partners. Data suggest that PG is common in marijuana-abusing youths and that they have increased psychosocial problems. They also indicate the need for early identification and treatment of PG in substance-abusing adolescents.

Pietrzak, R., Ladd, G., & Petry, N. (2003). Disordered gambling in adolescents: Epidemiology, diagnosis, and treatment. *Paediatric Drugs*, 5(9), 583-595.

Abstract: Rapid expansion of legalized gambling has been associated with increased rates of gambling disorders among adults and adolescents worldwide. Epidemiologic studies suggest that, in North America, up to 6% of adults and 20% of adolescents have a gambling problem. Despite increasing prevalence rates of gambling disorders, little research is available on how to treat such disorders in adolescents. Much of what is known about how to treat adolescent problem and pathological gambling comes from research on psychosocial and psychopharmacologic treatments for adult pathological gambling. Risk factors for adolescent gambling disorders include male gender, alcohol and drug use, deviant peers, family history of gambling, and impulsive behavior. While several risk factors characterize disordered gambling among adolescents, the extent to which these characteristics are related remains to be determined. In terms of screening for adolescent problem and pathological gambling, several instruments designed to reflect the Diagnostic and Statistical Manual of Mental Disorders diagnostic criteria for pathological gambling are available. Psychosocial approaches used to treat adult pathological gambling include Gamblers Anonymous, cognitive-behavioral therapy (CBT), and motivational enhancement therapy (MET). Among adolescents, CBT as well as an eclectic therapy have been helpful in reducing problematic gambling behavior. In terms of pharmacotherapy, three classes of psychotropic drugs have been used to treat adult pathological gambling - serotonin reuptake inhibitors, opioid antagonists, and mood stabilizers. While some of these pharmacotherapies have been efficacious in treating adult pathological gambling, additional double-blind, placebo-controlled studies are needed to determine the long-term effectiveness of these treatments. No known study has evaluated the use of psychopharmacologic agents in treating adolescent pathological gambling. Possible reasons for the lack of research on treatment for adolescent gambling disorders include lack of motivation to pursue treatment, feelings of self-control, and negative perception of therapy. Referrals from parents, teachers, and peers of adolescents, as well as community outreach programs, may be useful in successfully deriving a treatment population. Clinicians are advised to be sensitive to behavioral risk factors and to screen for disordered gambling in high risk adolescents. A combination of CBT and MET, as well as medication for any comorbid psychiatric condition, is recommended.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002). Gambling: An addictive behavior with health and primary care implications. *Journal of General Internal Medicine*, 17(9), 721-732.

Abstract: Over the past several decades, and particularly during the last 10 to 15 years, there has been a rapid increase in the accessibility of legalized gambling in the United States and other parts of the world. Few studies have systematically explored the relationships between patterns of gambling and health status. Existing data support the notion that some gambling behaviors, particularly problem and pathological gambling, are associated with nongambling health problems. The purpose of this article is to provide a perspective on the relationship between gambling behaviors and substance use disorders, review the data regarding health associations and screening and treatment options for problem and pathological gambling, and suggest a role for generalist physicians in assessing problem and pathological gambling. A rationale for conceptualization of pathological gambling as an addictive disorder and a model proposing stress as a possible mediating factor in the relationship between gambling and health status are presented. More research is needed to investigate directly the biological and health correlates associated with specific types of gambling behaviors, and to define the role for generalist physicians in the prevention and treatment of problem and pathological gambling.

Pursley, W. L. (1991). Adolescence, chemical dependency and pathological gambling. *Journal of Adolescent Chemical Dependency*, 1(4), 25-47.

Abstract: Addresses the issues of adolescence, dysfunctional homes, and chemical dependency and pathological gambling among adolescents to provide questions and insights into the nature of the problem and the ways to combat it. It was shown that if research correlates influences from the home, the social setting, and the psychological cognition and behavior of addictions, 2 major accomplishments will occur: (1) an innovative treatment will be provided that is more comprehensive in nature than are existing treatments; and (2) this treatment will be capable of focusing on the specific needs of adolescents who are suffering from addictions. A list of research areas that must be studied if clinicians plan to address the problem of adolescent chemical dependency and pathological gambling successfully is given.

Raylu, N., & Oei, T. P. S. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review*, 23(8), 1087-1114.

Abstract: There has been a significant gap in the gambling literature regarding the role of culture in gambling and problem gambling (PG). This paper aims to reduce this gap by presenting a systematic review of the cultural variations in gambling and PG as well as a discussion of the role cultural variables can play in the initiation and maintenance of gambling in order to stimulate further research. The review shows that although studies investigating prevalence rates of gambling and PG among different cultures are not plentiful, evidence does suggest certain cultural groups are more vulnerable to begin gambling and to develop PG. Significant factors including familial/genetic, sociological, and individual factors have been found in the Western gambling literature as playing important roles in the development and maintenance of PG. These factors need to be examined now in other cultural groups so we can better understand the etiological processes involved in PG and design culturally sensitive treatments. In addition, variables, such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviors need to be also examined in relation to the role they could play in the initiation of and maintenance of gambling.

Sanger, S. (2003). Youth-gambling treatment issues. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 84-99). Reno, NV, US: University of Nevada Press. 84-99.

Abstract: (From the chapter) Gambling touches on every aspect of personality, relationships, and impulse. Thus, the techniques used to treat adolescents who gamble may resemble the psychotherapy of all youngsters. This chapter will focus on a helpful core of essential skills and concepts that practitioners and administrators can use to influence the young personality with this addiction. The author states that gambling can perniciously lead adolescents into addiction because it acts synergistically with dissociative thinking. The intensity and seductions of the wagering behavior help to contain the loosely organized or fragmented mental state so typical of adolescence. Gambling helps to protect youngsters from the emotional pain that can result from their characteristically inadequate relationships and needy selves. Adolescents avoid the anguish of feeling lost, lonely and helpless through the use of a number of postures, alterations of consciousness, trances, internal struggles, self-deceptions, impulsivities, and reckless behaviors. However, these coping methods come at a considerable cost and cannot lead to a wholesome outcome. The greatest obstacle to therapy is confronting young gamblers with what they have been trying to avoid all along: integrated thinking.

Shaffer, H. J., & Hall, M. N. (2001). Updating and refining prevalence estimates of disordered gambling behaviour in the United States and Canada. *Canadian Journal of Public Health*, 92(3), 168-172.

Abstract: Background: This study updates prevalence estimates of gambling-related disorders in the United States and Canada, identifies differences in prevalence estimates among population segments, and identifies changes in prevalence over the past 25 years. Method: A meta-analytic strategy guided the synthesis of 180 estimates derived from 146 prevalence studies. Results: Prevalence estimates among adolescent samples were significantly higher than estimates among adult samples for both clinical (level 3) and sub-clinical (level 2) measures of disordered gambling within both lifetime and past-year time frames. Among adults, level 3 prevalence estimates continue to increase significantly. Conclusion: Membership in youth, treatment, and prison population segments is significantly associated with experiencing gambling-related disorders. Understanding sub-clinical gamblers provides a meaningful opportunity to lower the public health burden associated with gambling disorders. Prospective studies of incidence are necessary to determine whether the prevalence of disordered gambling continues to increase among the adult general population and how adolescent gambling experiences change as this cohort ages.

Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: A research synthesis. *Am J Public Health, 89*(9), 1369-1376.

Abstract: This study developed valence estimates of gambling related disorders in the US and Canada, identified differences in prevalence among population segments, and identified changes in prevalence over the past 20 yrs. A meta-analytic strategy was employed to synthesize estimates from 119 prevalence studies. This method produced more reliable prevalence rates than were available from any single study. Results show that prevalence estimates among samples of adolescents were significantly higher than estimates among samples of adults for both clinical (level 3) and subclinical (level 2) measures of disordered gambling within both lifetime and past-year time frames (e.g., 3.9% vs 1.6% for lifetime estimates of level 3 gambling). Among adults, prevalence estimates of disordered gambling have increased significantly during the past 20 yrs. Findings suggest that membership in youth, treatment, or prison population segments is significantly associated with experiencing gambling-related disorders. Understanding subclinical gamblers provides a meaningful opportunity to lower the public health burden associated with gambling disorders.

Shaffer, H. J., Hall, M., Vander Bilt, J., & Vagge, L. (2003). Introduction: Youth and gambling: Creating a legacy of risk. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 1-24). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) Presents an overview of the book that explores the nature of adolescents' involvement in gambling by examining issues related to youth-gambling research, treatment, education, economics, and policy. The chapter begins by defining the concepts of gambling, pathological gambling, and estimating the prevalence of youth gambling problems. The author discusses the psychosocial consequences of excessive gambling, the psychological elements of pathological gambling, and gambling as an object of addiction. Also discussed are conceptual problems with measuring pathological gambling, prospects for gambling prevention and education programs.

Tavares, H., Martins, S. S., Zilberman, M. L., & el-Guebaly, M. (2002). Gamblers seeking treatment: Why haven't they come earlier? *Addictive Disorders & Their Treatment, 1*(2), 65-69.

Abstract: Objectives: The process of seeking treatment is gathering increasing attention in the addiction field. Few studies have addressed the reasons precluding gamblers from seeking treatment earlier, even in the face of cumulative problems. This study tested the combination of four hypotheses as potential treatment-delaying factors: gamblers resist stopping gambling before they have recovered previous losses; financial hardship causes lack of resources for treatment (e.g., money, transportation, time); shame and secrecy; and lack of readiness to engage in the change processes. Methods: To evaluate the delaying factors, a "Reasons for Delaying Treatment Scale" was developed. The score on this scale was compared with the number of years elapsed between the first gambling problem and the first treatment attempt, controlling for severity and cohort effects. Eighty-four pathologic gamblers were interviewed. Results: The total score on reasons for delaying treatment was significantly related to the number of years of problem gambling prior to treatment. Shame and secrecy, and attempts at financial recovery were the best predictors of treatment delay. The period of problem gambling was shorter for the younger cohorts as they experienced problems at a time when treatment availability was greater. Conclusions: It is concluded that aside from focusing on public awareness and treatment availability, future awareness campaigns should also address gamblers' feelings of isolation, and illusions about overcoming financial problems through gambling.

Vander Bilt, J., & Franklin, J. (2003). Gambling in a familial context. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 120-125). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) The authors state that the proliferation of gambling during the 1980s and 1990s and the increased prevalence of adult gambling behavior have resulted in a generation of children growing up in households and families where gambling is increasingly common. The extant research reports that children of pathological gamblers are more likely than children of nonpathological gamblers to develop gambling problems themselves. Moderate gambling or compulsive gambling, like substance abuse, is more than an individual problem and must be viewed in the context of family and social systems. The authors examine the consequences of gambling on youth residing in gambling households, specifically family violence. Family related items in gambling screening instruments, violence and pathological gambling as impulse disorders, the relationship among violence, pathological gambling and substance abuse, are examined. Treatment issues discussed include family therapy for children of compulsive gamblers, and treatment services for adolescent compulsive gamblers, as well as treatment of the family system, and education issues.

Wold, J. E., Hauger, R., Rimehaug, T., & Susegg, T. S. (2002). Treatment of pathological gambling in adolescents in Levanger, Norway. *Nordic Journal of Psychiatry*, 56, 35.

Wood, R. T., Griffiths, M. D., Derevensky, J. L., & Gupta, R. (2002). Adolescent accounts of the UK National Lottery and scratchcards: An analysis using Q-sorts. *Journal of Gambling Studies*, 18(2), 161-183.

Keywords: cognitive

Abstract: The study examined adolescents' accounts of the UK National Lottery and scratchcards. Q-sorts were used to examine the views of 62 participants aged between 11 and 15 years of age. Findings identified four distinct accounts in relation to the National Lottery (Moral Opposition, Luck Seeking, Rationalist, & Uncertainty), and four distinct accounts in relation to scratchcards (Skepticism, Thrill-Seeking, Rationalist, & Libertarian). Some of the accounts identified described the UK National Lottery and scratchcards as bona fide forms of gambling. Reports indicated that adolescents were pessimistic about the chances of winning large sums of money, while other accounts demonstrated gambling misperceptions particularly in relation to their belief in luck and the laws of probability. It is argued that to fully understand why adolescents take part in these activities it is important to consider the diverse ways that adolescents represent these activities. These differing representations will have consequences for measures aimed at reducing, preventing, or treating adolescent problem gambling. The utility of Q-sorts as a technique for examining the views of problem and non-problem gamblers is also discussed.

4.5 Prevention

Arseneault, L., Ladouceur, R., & Vitaro, F. (2001). Gambling and psychotropic substance consumption: Prevalence, coexistence and consequences. *Canadian Psychology, 42*(3), 173-184.

Abstract: The present article is a critical review of research examining the relationship between pathological gambling and drug/alcohol addiction in adults and adolescents. We present diagnostic criteria and prevalence estimates for each population. In adults, the prevalence of drug or alcohol dependence is five time greater among pathological gamblers in treatment than it is among the general population. Adults with both disorders exhibit greater levels of impulsiveness and disinhibition than individuals with a single diagnosis. The few studies that have investigated the co-morbidity of pathological gambling and drug/alcohol addiction in adolescents yield results similar to those obtained in adults. Pathological gambling is highly correlated with drug, alcohol and cigarette consumption. Moreover, impulsiveness is greater among adolescents with a co-morbid diagnosis. This review suggests the importance for treatment and prevention programs to take into account the possible co-morbidity among these disorders.

Brosig, T. (2003). A personal view from the gaming industry: Recognizing a problem, working toward a solution. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 208-218). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) This chapter presents the personal perspective of a gaming industry executive on the prevention of youth gambling problems. The author's involvement in the North American Think Tank on Youth Gambling Issues is explicated.

Cote, M. A., Vitaro, F., & Ladouceur, R. (2003). Attitudes, knowledge and behavior of Quebec parents in regard to games of chance and gambling youth. *Canadian Psychology, 44*(2), 152-161.

Abstract: The present study assessed the attitudes, knowledge, and behaviours of parents regarding youth gambling. The randomized sample consisted of 597 parents of children aged 5 to 17 years. The telephone survey was conducted by a professional survey firm. Results indicate that most parents are cognizant about problem gambling among youths. Findings further indicate that parents have accurate and realistic attitudes toward youth gambling. Interestingly, these findings suggest that parents tend to overestimate the prevalence of problem gambling among youths, and underestimate the probability that their own child has gambled and that he/she may have a gambling problem. The majority of parents approve the implementation of prevention programs in schools and many would be interested in participating in such activities if they were offered to adults. This study underscores the pertinence of informing parents about youth gambling and highlights their openness towards and preferences regarding prevention interventions.

Crites, T. W. (2003). What are my chances? Using probability and number sense to educate teens about the mathematical risks of gambling. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 63-83). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) This chapter examines how incorporating a discussion of various games of chance into a classroom unit on probability can build students' number sense while increasing their knowledge on the likelihood of random events. Specifically, this chapter looks at the mathematics of some of the most popular and easily analyzed games: lotteries, keno, roulette, and craps. Some of the fallacies and misconceptions associated with gaming are also presented. Finally, some suggestions on how to incorporate these ideas into the classroom are discussed.

Derevensky, J., & Gupta, R. (2000). Youth gambling: A clinical and research perspective. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 2.

Abstract: This paper provides an overview of the current state of knowledge of youth gambling problems. The goals and contributions of the McGill University Youth Gambling Research & Treatment Clinic are highlighted. The authors integrate their clinical and research program findings within the context of the necessity of identifying risk factors associated with problem gambling amongst adolescents. Specific recommendations are made as well as a call for collaborative effort between the public, industry, legislators, clinicians and researchers to help resolve this growing problem.

Derevensky, J., & Gupta, R. (2004). Adolescents with gambling problems: A synopsis of our current knowledge. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Abstract: It's been 25 years since Henry Lesieur's seminal research on understanding compulsive gambling was published. While still in its infancy, the field of gambling research has evolved and greatly added to a better understanding of this complex behavior, its measurement, its social and familial costs, ways of minimizing and preventing gambling problems, and methods of treating individuals with gambling problems. For most adolescents and adults gambling remains a form of entertainment without serious negative consequences. Yet, adolescent pathological gamblers, like their adult counterparts and independent of the negative consequences resulting from their excessive gambling, continue to chase their losses, exhibit a preoccupation with gambling, and have an impaired ability to stop gambling in spite of repeated attempts and their desire to do so. Our current empirical knowledge of youth gambling problems is reviewed and recommendations for future research are provided.

Derevensky, J., & Gupta, R. (Eds.). (2004). *Gambling problems in youth: Theoretical and applied perspectives*. NY: Kluwer Academic/Plenum Publishers.

Dickson, L. M., Derevensky, J., & Gupta, R. (2002). The prevention of gambling problems in youth: A conceptual framework. *Journal of Gambling Studies*, 18(2), 97-159.

Abstract: Despite increased awareness of the need to begin educating young children about the potential dangers of gambling, empirical knowledge of the prevention of adolescent problem gambling and its translation into science-based prevention initiatives is scarce. This paper poses the question of whether or not the common elements of tobacco, alcohol, and illicit drug abuse prevention programs can be applied to gambling prevention. Common risk and protective factors across addictions, including gambling, appear to point to the need to develop a general model of primary, secondary, and tertiary prevention. The authors present the need for science-based prevention initiatives and describe a general adolescent risk-taking model as a basis for science-based prevention of adolescent problem gambling and other risk behaviors.

Dickson, L. M., Derevensky, J. L., & Gupta, R. (2004). Harm reduction for the prevention of youth gambling problems: Lessons learned from adolescent high-risk behavior prevention programs. *Journal of Adolescent Research*, 19(2), 233-263.

Abstract: Despite the growing popularity of the harm reduction approach in the field of adolescent alcohol and substance abuse, a harm reduction approach to prevention and treatment of youth problem gambling remains largely unexplored. This article poses the question of whether the harm reduction paradigm is a promising approach to the prevention of adolescent problem gambling and other risky behaviors. The authors use a universal, selective, and indicative prevention framework to present current prevention initiatives that have emerged from the harm reduction health paradigm for adolescent substance and alcohol abuse. The risk-protective factor model is used as a conceptual basis for designing youth problem gambling harm reduction prevention programs. This framework illustrates the developmental appropriateness of the harm reduction approach for youth. Implications drawn from this conceptual examination of harm reduction as a prevention approach to adolescent problem gambling provide valuable information for treatment providers as well.

DiClemente, C. C., Story, M., Murray, K. (2000). On a roll: The process of initiation and cessation of problem gambling among adolescents. *Journal of Gambling Studies*, 16(2-3), 289-313.

Abstract: As gambling becomes more accessible and acceptable in society, problems associated with gambling and gaming have begun to affect ever increasing numbers of adolescents. Although restricted from most forms of gambling by law, many adolescents are finding a path into problem gambling. Some are becoming compulsive gamblers early in their gambling career, facing a future filled with consequences and problems. Understanding the pathway or process by which these adolescents become engaged in gambling behavior and how they can extricate themselves from this addictive behavior can enhance the efficiency and effectiveness of our interventions. This article offers a perspective on the initiation and cessation of compulsive gambling using the basic elements of the process of intentional behavior change outlined in the Stages of Change from the Transtheoretical Model. The process of initiation of a problematic behavior is similar to the process of modification or cessation of a problematic behavior in terms of these stages of change. With adolescents it is important to distinguish between the process of initiation, which has implications for prevention of gambling problems, and the process of cessation, which often necessitates the assistance of treatment. Creating interventions that parallel the process of change offers the potential for personalizing and potentiating efforts to reduce the prevalence and consequences associated with compulsive or pathological and problem gambling. Application of this model to gambling behavior offers a heuristic that is intriguing and requires substantiation through rigorous research.

Eadington, W. R. (2003). Economic, social, and policy observations on youth gambling. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 190-198). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) This chapter notes the author's observations on the economic, social and policy issues of youth gambling. Underage gambling is discussed from the perspective of youthful omnipotence, fantasy and reality; gambling and youth development; values and attitudes of youths. Public policy questions are discussed.

Evans, R. I. (2003). Some theoretical models and constructs generic to substance abuse prevention programs for adolescents: Possible relevance and limitations for problem gambling. *Journal of Gambling Studies*, 19(3), 287-302.

Abstract: For the past several years the author and his colleagues have explored the area of how social psychological constructs and theoretical models can be applied to the prevention of health threatening behaviors in adolescents. In examining the need for the development of gambling prevention programs for adolescents, it might be of value to consider the application of such constructs and theoretical models as a foundation to the development of prevention programs in this emerging problem behavior among adolescents. In order to provide perspective to the reader, the present paper reviews the history of various psychosocial models and constructs generic to programs directed at prevention of substance abuse in adolescents. A brief history of some of these models, possibly most applicable to gambling prevention programs, are presented. Social inoculation, reasoned action, planned behavior, and problem behavior theory, are among those discussed. Some deficits of these models, are also articulated. How such models may have relevance to developing programs for prevention of problem gambling in adolescents is also discussed. However, the inherent differences between gambling and more directly health threatening behaviors such as substance abuse must, of course, be seriously considered in utilizing such models. Most current gambling prevention programs have seldom been guided by theoretical models. Developers of gambling prevention programs should consider theoretical foundations, particularly since such foundations not only provide a guide for programs, but may become critical tools in evaluating their effectiveness.

Felsher, J. R., Derevensky, J. L., & Gupta, R. (2003). Parental influences and social modelling of youth lottery participation. *Journal of Community & Applied Social Psychology, 13*(5), 361-377.

Abstract: Objective. The present study sought to investigate the relationship between perceived parental lottery involvement and the bearing this has upon youth lottery participation. Participants. One thousand seventy-two youth, 10-18 years of age participated from 20 elementary and nine high schools throughout the province of Ontario, Canada. Measurements. Measuring Youth Lottery Participation and Playing Behaviour Questionnaire and the DSM-IV-MR-J Revised to screen for youth pathological gambling. Findings. Youth reported playing all forms of lottery tickets with 77% reporting that their parents purchase scratch tickets, lottery draws (50%), and sports tickets (23%) for them. Parental purchases of lottery tickets for their children increased by level of gambling severity. Participants with significant gambling problems perceived higher parental participation in the lottery compared to non-gamblers and social gamblers. The majority of participants reported that their parents were aware of their lottery involvement and were not afraid of getting caught purchasing lottery tickets in spite of legal prohibitions. Conclusion. The results suggest youths' perception of parental involvement with the lottery plays an important role in the initiation and maintenance of lottery participation for youth. Given that youth report receiving lottery tickets from their parents, it is clear that the lottery is perceived as an innocuous form of gambling. Public awareness programmes and education of this issue is critical.

Ferland, F., Ladouceur, R., & Vitaro, F. (2002). Prevention of problem gambling: Modifying misconceptions and increasing knowledge. *Journal of Gambling Studies, 18*(1), 19-29.

Abstract: Research on gambling clearly demonstrates that today's youth are very much involved in gambling activities. As they take part in these activities, young people develop and entertain irrational thoughts about gambling and become at risk for developing severe gambling problems. In this study, a video specifically designed to correct misconceptions and increase knowledge about gambling was tested on 424 grade 7 and 8 students. The effectiveness of the video was evaluated using four different experimental conditions. Findings indicated that the video significantly improved subjects' knowledge about gambling and corrected their misconceptions. The implications of these results for the prevention of gambling problems are discussed.

Fisher, S. (1991). Governmental response to juvenile fruit machine gambling in the U.K.: Where do we go from here? *Journal of Gambling Studies, 7*(3), 217-247.

Abstract: The UK government Home Office observed nearly 500 children (aged <16 yrs) while playing slot machines (commonly known as fruit machines) in response to growing public concern that some children are becoming addicted to this form of gambling and committing crime to fund their play. Researchers found no evidence of an association between the playing of amusement machines, dependency, and delinquency. The Home Office study is critically assessed both on its own merit and in the light of research undertaken before and since. Suggestions are made for future sociological research initiatives.

Fisher, S., & Griffiths, M. (1995). Current trends in slot machine gambling: Research and policy issues. *Journal of Gambling Studies. Special Issue: Slot Machine Gambling, 11*(3), 239-247.

Abstract: Overviews some current trends concentrating on research and policy issues related to slot machine gambling. It is demonstrated that throughout the world, research findings have linked slot machines with pathological gambling. Indeed slot machines are now the predominant form of gambling activity by pathological gamblers treated in self-help groups and professional treatment centers in numerous countries. This paper briefly examines the research on slot machines and pathological gambling and then goes on more specifically to examine four areas. These include slot machine gambling and youth, slot machines and arcade video game playing, the possible developmental link between slot machines and video games, and pathological video game playing.

Gaboury, A., & Ladouceur, R. (1993). Evaluation of a prevention program for pathological gambling among adolescents. *Journal of Primary Prevention, 14*(1), 21-28.

Abstract: Used 289 high school students (mean age 16 yrs) to evaluate a gambling prevention program consisting of an overview of the legality of gambling, the commercial nature of the activity, automatic gambling behaviors, pathological gambling, and coping skills. There were 134 experimental Ss and 155 control Ss. Ss completed questionnaires at baseline and at follow-up that assessed their gambling behavior and their knowledge and attitudes about gambling. The program improved knowledge about gambling and coping skills, but coping skills were not maintained. Gambling behavior and attitudes were not significantly modified.

Griffiths, M. (1995). Towards a risk factor model of fruit machine addiction: A brief note. *Journal of Gambling Studies. Special Issue: Slot Machine Gambling, 11*(3), 343-346.

Abstract: Presents a list of risk factors which can help identify individuals most likely to develop pathological fruit machine playing habits. These factors include, inter alia, being male and between the ages of 16-25 yrs, early onset of fruit machine playing, experience of a big win on fruit machines early in playing career, tendency to be depressed before and excited during playing fruit machines, tendency to be irrational during playing, academic failure, engagement in other addictive behaviors, and parental history of a gambling or other addiction. Possible warning signs for parents to look for in adolescents and younger children include a sudden drop in school performance, personality changes, evasiveness regarding whereabouts, money missing from home, sales of expensive possessions, loss of interest in other activities, lack of concentration, and disinterest in appearance or hygiene.

Griffiths, M. (1998). Fruit machine addiction: An issue for educational psychologists? *Educational & Child Psychology, 15*(4), 33-44.

Abstract: It is almost certainly the case that many educational psychologists do not consider fruit machine addiction as a contributory factor in a child or adolescent's behaviour problems. This article attempts to provide a brief overview of some of the major findings and implications in the area of adolescent fruit machine addiction. Fruit machine addiction is more of a problem to children and adolescents than any other form of gambling because it is the only commercial form of gambling legally available for them to gamble on. The worst effects of fruit machine addiction can include truancy, poor schoolwork, criminal behaviour and aggressive behaviour. These are all issues of primary concern to educational psychologists and they should perhaps be aware that a small proportion of behavioural problems may be due to this "hidden" addiction.

Hollander, E., Buchalter, A. J., & DeCaria C. M. (2000). Pathological gambling. *Psychiatric Clinics of North America, 23*(3), 629-642.

Abstract: With increasing access to gambling facilities through casinos, the Internet, and other venues, PG is a rapidly emerging mental health concern. This impulse-control disorder tends to be comorbid with a wide range of other disorders and is reportedly associated with a high rate of suicide. For most gamblers, gambling is a form of entertainment, but for many individuals, the activity leads to far-reaching disruption of family and work. The personal and societal financial ramifications are severe, and many individuals with PG end up in the criminal justice system. An understanding of the neurobiology of PG is beginning to surface. 5-HT is linked to behavioral initiation and disinhibition, which are important in the onset of the gambling cycle and the difficulty in ceasing the behavior. Norepinephrine is associated with the arousal and risk taking in patients with PG. Dopamine is linked to positive and negative reward, the addictive component of this disorder. Effective treatment strategies for pathological gamblers are emerging. Potentially useful pharmacologic agents include SRIs (clomipramine and fluvoxamine), mood stabilizers for pathological gamblers with comorbid bipolar disorders (lithium), and naltrexone. Cognitive-behavioral psychotherapies offer promising results in the treatment of patients with this disorder. To devise prevention and early-intervention programs, research is needed to identify specific features of the individuals at risk for gambling problems. Education targeting vulnerable youth that show early signs of gambling behavior may be worthwhile and should be investigated further. Funding is necessary to support these endeavors, so perhaps a portion of tax revenues generated from the gambling industry should go toward specialized treatment facilities, educational efforts, and research into the neurobiology and treatment of PG.

Korn, D. A., & Shaffer, H. J. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies, 15*(4), 289-365.

Abstract: Associated with the increase of gambling in North America, there has been an increase in the

prevalence of problem and pathological gambling among the general adult population, as well as a sustained high level of gambling-related problems among youth. The authors encourage the adoption of a public health perspective towards gambling. More specifically, the authors' discussion has 4 primary objectives: (1) create awareness among health professionals about gambling, its rapid expansion, and its relationship with the health care system; (2) place gambling within a public health framework by examining it from several perspectives, including population health, human ecology and addictive behaviors; (3) outline the major public health issues about how gambling can affect individuals, families and communities; and (4) propose an agenda for strengthening policy, prevention and treatment practices through greater public health involvement, using the framework of The Ottawa Charter for Health Promotion as a guide. By understanding gambling and its potential impacts on the public's health, policy makers and health practitioners can minimize gambling's negative impacts and appreciate its potential benefits.

Ladouceur, R., Dubé, D., & Bujold, A. (1994). Gambling among primary school students. *Journal of Gambling Studies*, 10(4), 363-370.

Abstract: This study identifies the gambling behavior of 1,320 Quebec City primary school students aged 8 to 12 of the 4th, 5th and 6th grades. Eighty-six percent admitted to having, at some time or another, bet money. Lotteries are the most popular form of gambling for this age group. Sixty-one percent of these students gamble with lotteries. In descending order of popularity, other games played by students were: bingo, card-playing for money, bets on sports, wagering on specific events, video gambling (video poker and slot machines), and finally betting on games of skill. Gambling behaviors differed according to gender. More than 40% of respondents reported gambling once a week or more for at least one game. Because of the early development of gambling behavior in children, prevention programs for pathological gambling should be implemented as early as the fourth grade.

Ladouceur, R., Jacques, C., Ferland, F., & Giroux, I. (1998). Parents' attitudes and knowledge regarding gambling among youths. *Journal of Gambling Studies*, 14(1), 83-90.

Abstract: Evaluated attitudes and knowledge of parents regarding gambling behaviors among youths (aged 5-17 yrs). Telephone interviews were conducted among 279 parents (aged 25-64 yrs). Results indicate that parents overestimated the age of children's 1st wagers and underestimated the probability that their own child has already gambled. Most parents (86%) believed that the availability of gambling for youths should be reduced and that schools should include prevention programs concerning problem gambling. Results also show that parents failed to associate excessive gambling with poor grades or with alcohol and drug use. Finally, 84% of the parents reported that they would accept buying lottery tickets for their child. It is suggested that prevention programs for excessive gambling among children should include information for parents.

Ladouceur, R., Vitaro, F., & Cote, M. (2001). Parents' attitudes, knowledge, and behavior toward youth gambling: A five-year follow-up. *Journal of Gambling Studies*, 17(2), 101-116.

Abstract: This study compares the attitudes, knowledge, and behavior of parents of 5- to 17-year-old children regarding youth gambling. This information was obtained through two telephone surveys conducted in 1995, and 5 years later in 2000, in the Quebec City area. Survey 1, in 1995, was conducted on 279 respondents, while survey 2, in 2000, was carried out with 213 respondents. Results showed a number of changes in parents' attitudes, behavior, and knowledge concerning youth gambling: For example, parents' perception of the age of onset of gambling behavior had improved slightly at the end of the 5-year period. Furthermore, parents were more satisfied with government limitation of access to gambling, and more accurately informed about legal aspects of the sale of lottery tickets. However, the percentage of parents who failed to associate youth gambling with some of its correlates (arcade attendance, parental gambling problems, and friendship with gamblers) increased from 1995 to year 2000. The improvements that were observed suggested that parents had benefited from media-transmitted information during this period. However, the deterioration of some parental attitudes, and the stability of other variables, suggest that it is still important to educate parents about youth gambling, and to design interventions adapted to parents' needs.

Lavioe, M., & Ladouceur, R. (2004). Prevention of gambling among youth: Increasing knowledge and modifying attitudes toward gambling. *Electronic Journal of Gambling Issues: eGambling (EJGI)*, 10.

Abstract: Research shows that gambling is a popular activity among youth. The more young people become involved in these activities, the more likely they are to develop irrational thoughts and habits related to gambling. In this study, 273 French-speaking students in grades 5 and 6 helped to test a video designed to (a) increase knowledge about gambling and (b) correct inaccurate knowledge. The effectiveness of the video was evaluated using two experimental conditions and one control condition. Analysis indicated that the video significantly increased gambling knowledge and decreased errors in attitudes toward gambling. The implications of these results for the prevention of gambling problems are discussed.

Oxford, J. (2003). Why the British Government is wrong to continue to allow juvenile gaming machine playing. *Addiction Research & Theory*, 11(6), 375-382.

Abstract: Amongst the British Government's plans for the future regulation of gambling is the proposal to continue to allow children to play low stake/low prize gaming machines. No other country permits juvenile gaming machine playing, and the 2001 Gambling Review Report bowed to industry pressure to allow it to continue. Evidence from the British Gambling Prevalence Survey and elsewhere suggests that machine gambling is one of the more addictive forms of gambling, and that children and adolescents are particularly vulnerable to problem machine gambling. Theories of child development and of habit formation would predict that playing gaming machines would be dangerous for young people. Given the level of funding that will be available for gambling research, the Government's recommendation that research should be carried out within five years on the harm or lack of it, caused by juvenile gaming machine playing is unrealistic. By proposing to perpetuate the anomaly of juvenile machine gambling, the British government is acting irresponsibly by failing to protect young people and their families from a practice which all existing evidence leads us to believe is likely to be hazardous.

Potenza, M. N., Fiellin, D. A., Heninger, G. R., Rounsaville, B. J., & Mazure, C. M. (2002). Gambling: An addictive behavior with health and primary care implications. *Journal of General Internal Medicine, 17*(9), 721-732.

Abstract: Over the past several decades, and particularly during the last 10 to 15 years, there has been a rapid increase in the accessibility of legalized gambling in the United States and other parts of the world. Few studies have systematically explored the relationships between patterns of gambling and health status. Existing data support the notion that some gambling behaviors, particularly problem and pathological gambling, are associated with nongambling health problems. The purpose of this article is to provide a perspective on the relationship between gambling behaviors and substance use disorders, review the data regarding health associations and screening and treatment options for problem and pathological gambling, and suggest a role for generalist physicians in assessing problem and pathological gambling. A rationale for conceptualization of pathological gambling as an addictive disorder and a model proposing stress as a possible mediating factor in the relationship between gambling and health status are presented. More research is needed to investigate directly the biological and health correlates associated with specific types of gambling behaviors and to define the role for generalist physicians in the prevention and treatment of problem and pathological gambling.

Proimos, J., Durant, R. H., Pierce, J. D., & Goodman, E. (1998). Gambling and other risk behaviors among 8th- to 12th-grade students. *Pediatrics, 102*(2), p. e23.

Abstract: Objective. To examine the associations between a self-reported history of gambling or problems related to gambling and health risk behaviors in adolescence. Design. An anonymous risk behavior survey was administered to 21 297 8th- through 12th- grade students in 79 public and private schools in Vermont. Gambling or problems related to gambling were the outcome variables of interest. Demographic variables and 13 target risk behaviors related to substance use, sexual activity, and violence were tested for association with gambling and problems related to gambling. Results. Of the students, 53% reported gambling in the past 12 months, and 7% reported problems attributable to gambling. Male gender, any use of alcohol, infrequent use of cigarette smoking, any marijuana use, any inhalant use, infrequent steroid use, frequent illegal drug use, seatbelt nonuse, driving after drinking alcohol, being threatened, carrying a weapon, being involved in a fight, and years of sexual activity were all significantly associated with reported gambling in the past 12 months. Among the students who gambled, younger age, male gender, daily marijuana use, frequent use of cocaine, frequent use of inhalants, any steroid use, never wearing seatbelts, carrying a weapon for up to 3 days a month, fighting, and years of sexual activity were all significantly associated with reported problems with family and friends as a consequence of gambling. There was an increase in the absolute number of risk behaviors reported between those who had not gambled, those who had gambled, and those for whom gambling had created problems. Conclusions. Risk behaviors are associated with gambling in adolescence. The typology of risk behaviors was different for adolescents who reported gambling compared with those for whom gambling had created problems. Both gambling and problems related to gambling were significantly associated with the absolute number of risk behaviors reported by adolescents in a graded manner. Involvement in gambling should be assessed as part of the health encounter. Assessment may provide a nonthreatening entry into the evaluation of other risk behaviors. Furthermore, it may identify youth who are at risk of developing additional risk behaviors or pathological gambling. Interventions then could be targeted toward prevention of these undesirable outcomes.

Raylu, N. & Oei, T. P. S. (2004). Role of culture in gambling and problem gambling. *Clinical Psychology Review*, 23(8), 1087-1114.

Abstract: There has been a significant gap in the gambling literature regarding the role of culture in gambling and problem gambling (PG). This paper aims to reduce this gap by presenting a systematic review of the cultural variations in gambling and PG as well as a discussion of the role cultural variables can play in the initiation and maintenance of gambling in order to stimulate further research. The review shows that although studies investigating prevalence rates of gambling and PG among different cultures are not plentiful, evidence does suggest certain cultural groups are more vulnerable to begin gambling and to develop PG. Significant factors including familial/genetic, sociological, and individual factors have been found in the Western gambling literature as playing important roles in the development and maintenance of PG. These factors need to be examined now in other cultural groups so we can better understand the etiological processes involved in PG and design culturally sensitive treatments. In addition, variables, such as cultural values and beliefs, the process of acculturation, and the influence of culturally determined help-seeking behaviors need to be also examined in relation to the role they could play in the initiation of and maintenance of gambling.

Rose, L. N. (2003). Underage gambling and the law. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 126-189). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) This chapter examines the issue of age and gambling from the perspective of laws in the United States. Age limits, their problems, politics and history, and enforcement are discussed. An overview of the laws of countries other than the US regarding underage gambling is provided. The author also provides a state-by-state analysis of gambling laws in the US.

Satre, P. G. (2003). Youth gambling: The casino industry's responsibility. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 199-207). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) Presents the views of chairman and chief executive officers of Harrah's Entertainment, Inc. on the problem of underage gambling. The author discusses issues including casinos, adolescents and responsibility, underage vs problem gambling and industry commitments in their regard.

Shaffer, H. J., Hall, M., Vander Bilt, J., & Vagge, L. (2003). Introduction: Youth and gambling: Creating a legacy of risk. In H. J. Shaffer, M. N. Hall, J. Vander Bilt, & E. M. George (Eds.), *Futures at stake: Youth, gambling, and society* (pp. 1-24). Reno, NV, US: University of Nevada Press.

Abstract: (From the chapter) Presents an overview of the book that explores the nature of adolescents' involvement in gambling by examining issues related to youth-gambling research, treatment, education, economics, and policy. The chapter begins by defining the concepts of gambling, pathological gambling, and estimating the prevalence of youth gambling problems. The author discusses the psychosocial consequences of excessive gambling, the psychological elements of pathological gambling, and gambling as an object of addiction. Also discussed are conceptual problems with measuring pathological gambling, prospects for gambling prevention and education programs.

Skinner, H. A., Biscope, S., Murray, M., & Korn, D. (2004). Dares to addiction: Youth definitions and perspectives on gambling. *Canadian Journal of Public Health, 264-267*.

Abstract: Background: Over the past decade there has been a rapid growth of gambling in Canada, and internationally. Although youth are a potentially vulnerable group, little is known about what they understand and if they are being affected by the recent increase. Methods: This study examined how youth view gambling using an inductive qualitative research design and analysis based on grounded theory principles. Twelve focus groups were conducted comprising 103 participants (15 year old median age) with diverse representation of Ontario youth. Focus group questions were designed to capture youth's experiences and opinions about gambling. Results: Youth participants defined a spectrum of gambling from a dare and friendly betting to legalized forms of gambling (lotteries, casinos) and addiction. Their opinions varied according to age and gambling type. For example, daring and friendly betting were identified as positive activities used by younger adolescents to relieve boredom and establish social relationships. Gambling was separate from daring because of its association with money. Many participants had minimal awareness of the potential negative impact of gambling. Information technology (Internet) was seen as an attractive medium for playing games and gambling where no money is involved. Conclusion: Lack of awareness of gambling among youth and its consequences underscores the need for public education. The diverse range of gambling behaviour and age dependent access to money need careful consideration in defining youth gambling "problems" and in designing public health interventions.

Stinchfield, R. (2001). A comparison of gambling by Minnesota public school students in 1992, 1995, and 1998. *Journal of Gambling Studies, 17(4), 273-296*.

Abstract: The purpose of this study was to compare rates of gambling among Minnesota public school students between 1992, 1995, and 1998. The three samples included 75,806 students in the 9th and 12th grades in 1992; 73,897 9th and 12th grade students in 1995; and 78,564 9th and 12th grade students in 1998. Students were administered the Minnesota Student Survey, a 121-item, anonymous, self-administered, paper-and-pencil questionnaire that inquires about multiple behavioral domains, including gambling behaviors. The same questionnaire, with minor revisions to the gambling items, was administered in 1992, 1995, and 1998 to students in their classrooms by the Minnesota Department of Education. The results showed two opposite trends. On the one hand, fewer students gambled in 1998 than in 1995 and 1992. On the other hand, there was a small, but growing number of 12th grade students who gambled frequently. In terms of trends over time for specific games, the lottery showed a significant decline in the number of 9th grade students who played at all. There was also a significant increase in the number of 12th grade students who played the lottery weekly or more often. The findings that frequent lottery gambling has increased among 12th grade students and that underage gambling continues among these students, are both cause for concern. This is the first generation of youth to be exposed to widespread accessibility to legalized gambling venues and gambling advertising. Legalized gambling may be a new "rite of passage" for some of today's youth. It will be important to continue to monitor youth gambling and to provide information and resources to assist youth in making healthy decisions about their gambling behavior.

Stinchfield, R., & Winters, K. C. (1998). Gambling and problem gambling among youths. *Annals of the American Academy of Political and Social Science, 556, 172-185*.

Abstract: With the rapid expansion of gambling have also come concerns about underage gambling and youth problem gambling. Most studies of youth gambling have found that the majority of youths have gambled but do so infrequently and do not suffer any adverse consequences. A minority of youths, however, appear to be over-involved in gambling and are experiencing problems associated with their gambling. This is the first generation of youths to be exposed to such widespread access to gambling venues, ubiquitous gambling advertising, and general social approval of gambling. Gambling is the only so-called vice endorsed and promoted in many locales by both the church and state. On the one hand, youths are instructed by their teachers (and ostensibly their state department of education) that the way to get ahead in life is to study and work hard; on the other hand, their state lottery tells them that they need only to be lucky. Youths are adept at recognizing these apparent discrepancies and may be confused by this mixed message. Future research will need to address a number of gaps in our knowledge about youth gambling.

Stitt, B. G., Giacomassi, D., & Vandiver, M. (2000). A minor concern? Underage casino gambling and the law. *The Social Science Journal*, 37(3), 361-373.

Abstract: This article compared rates of underage casino gambling by students in two different regions of the country. Questionnaires were completed by 420 students at the University of Memphis and 415 students at the University of Nevada, Reno. Although Reno has long had casinos, Memphis residents have had access to casinos only since 1992 with the legalization of casino gambling in nearby Mississippi. The results indicate that 24.2% of underage Memphis respondents and 52.7% of underage Reno respondents had illegally gambled in casinos. We concluded that routine activity theory may help explain the different rates of underage gambling and question whether the security precautions against underage gambling are adequate.

The WAGER. (1996). Preventing pathological gambling among adolescents. *The WAGER*, 1(33).

Tremblay, G. C., Huffman, L., & Drabman, R. S. (1998). The effects of modeling and experience on young children's persistence at a gambling game. *Journal of Gambling Studies*, 14(2), 193-210.

Abstract: Gambling is common among children and adolescents, but little is known about factors initiating or maintaining this behavior. 51 male and 51 female kindergarten and first grade children were invited to play a game involving repeated opportunities to select colored chips from a cup while blindfolded. Children playing for tangible incentives elected to play longer than those who were not. Seeing a videotaped model win or fail to win a large prize had no effect on persistence with the game. Playing again 1 week later, children playing for incentives exhibited a more successful strategy, quitting sooner and with more winnings. The parameters of experiential vs observational learning are discussed, with implications for educating children about risk-taking.

Villa, A., Becona, E., & Vazquez, F. L. (1997). Pathological gambling with slot machines among primary school students from Gijon. *Adicciones*, 9(2), 195-208.

Abstract: Studied the prevalence of slot machine gambling among school-age children and adolescents aged 11-16 yrs in Gijon, Spain. 2,185 male and female 6th-8th graders were administered the Mental Disorders-IV (DSM-IV) Gambling Questionnaire (S. Fisher, 1993). The results indicate that 1.6% of Ss were probable pathological gamblers. Pathological gamblers differed from occasional gamblers in the prevalence of gambling parents, the level of school absenteeism and illegal activities, and the need for help to stop gambling. The findings show that males gambled more than females did. The role of gambling prevention at home and in the schools is discussed.

Volberg, R. A. (1994). The prevalence and demographics of pathological gamblers: Implications for public health. *American Journal of Public Health*, 84(2), 237-241.

Abstract: Investigates the prevalence of pathological gambling in five states, raising issues such as the potential public health impacts of the expanding availability of legalized gambling. Policy and program decisions should particularly take into account specific at-risk groups such as women, minorities and children.

Westphal, J. R., Rush, J. A., Stevens, L., & Johnson, L. J. (1998). Gambling behavior of adolescents in residential placement in northwest Louisiana. *Southern Medical Journal, 91*(11), 1038-1041.

Abstract: Background: The rapid expansion of legalized gambling in the United States necessitates evaluation of its impact on vulnerable populations, especially adolescents. Methods: Gambling behavior in 135 adolescents in residential placement in northwestern Louisiana was measured using the South Oaks Gambling Screen-Revised for Adolescents. Results: During the past year, 41% of these adolescents reported minimal problems with gambling, 21% reported level 2 or problem gambling, and 38% reported level 3 or pathologic gambling. In this population, the first drink of alcohol, the first cigarette, and the first experience with gambling began on average at 11 years of age, with the first use of marijuana and the first episode of alcohol intoxication occurring a year later. Conclusion: The level 2 rate of gambling exceeded the upper extreme of the adolescent community sample range, and the level 3 rate was approximately six times the reported level 3 community prevalence rate for adolescents. Residential placements sites should be considered when developing prevention programs for gambling disorders.

Winters, K. C., Stinchfield, R., & Kim, L. (1995). Monitoring adolescent gambling in Minnesota. *Journal of Gambling Studies, 11*(2), 165-183.

Abstract: Youth gambling was investigated in a prospective sample of 532 Minnesota adolescents and young adults (aged 16-20 yrs). Of particular interest was the possible impact among the study sample of a recent state lottery and of reaching the legal age for gambling on changes in the rate and type of gambling. Overall rates of gambling involvement and pathological gambling did not change across the 1.5 yr interval. However, a preference for certain types of gambling activities (e.g., lottery, casino machines) significantly increased, whereas more informal and unregulated games (e.g., betting on games of personal skill) significantly decreased. Also, access to gambling activities by underage youths was high, suggesting the need for tighter controls of legalized games and greater awareness of this problem by the gaming industry and public health officials.

Wood, R. T., Griffiths, M. D., Derevensky, J. L., & Gupta, R. (2002). Adolescent accounts of the UK National Lottery and scratchcards: An analysis using Q-sorts. *Journal of Gambling Studies, 18*(2), 161-183.

Abstract: The study examined adolescents' accounts of the UK National Lottery and scratchcards. Q-sorts were used to examine the views of 62 participants aged between 11 and 15 years of age. Findings identified four distinct accounts in relation to the National Lottery (Moral Opposition, Luck Seeking, Rationalist, & Uncertainty), and four distinct accounts in relation to scratchcards (Scepticism, Thrill-Seeking, Rationalist, & Libertarian). Some of the accounts identified described the UK National Lottery and scratchcards as bona fide forms of gambling. Reports indicated that adolescents were pessimistic about the chances of winning large sums of money, while other accounts demonstrated gambling misperceptions particularly in relation to their belief in luck and the laws of probability. It is argued that to fully understand why adolescents take part in these activities it is important to consider the diverse ways that adolescents represent these activities. These differing representations will have consequences for measures aimed at reducing, preventing, or treating adolescent problem gambling. The utility of Q-sorts as a technique for examining the views of problem and non-problem gamblers is also discussed.

5.0 Substance Use and Abuse

5.1 Conceptualization

Babor, T. F., Webb, C., Burleson, J. A., & Kaminer, Y. (2002). Subtypes for classifying adolescents with marijuana use disorders: Construct validity and clinical implications. *Addiction*, *97*(Suppl. 1), 58-69.

Abstract: AIMS: To evaluate the construct and predictive validity of six different subtyping classifications selected on the basis of their empirical support in the literature on adolescent substance abuse. METHODS: Typological data were collected from a heterogeneous sample of 600 adolescents presenting for marijuana treatment. The classification schemes were gender, onset age, family history, externalizing disorders, internalizing disorders and temperament. Subgroups were compared in terms of substance use frequency, substance abuse problems, social support for substance use, family conflict, school problems and negative peer associations. RESULTS: Each of the categorical classification schemes differentiated subtypes significantly on some or all of the construct validation measures after controlling for demographic factors, thereby indicating that each has valuable explanatory power from a theoretical perspective. Externalizing disorders, onset age, difficult temperament and internalizing disorders continued to add unique variance to discrimination after the effects of the other subtypes had been removed. At 12-month follow-up there were no differences between subtypes on substance use frequency, but adolescents with higher levels of externalizing disorders and internalizing disorders continued to experience more substance use problems. CONCLUSION: Categorical subtypes may have particular relevance to the development of treatment interventions as well as prevention measures.

Bailey, S. L. (1999). The measurement of problem drinking in young adulthood. *Journal of Studies on Alcohol*, *60*(2), 234-244.

Abstract: OBJECTIVE: Researchers and clinicians have been struggling for more than 20 years to define problem drinking. This study focuses on young adults and aims to examine the construct validity of three dimensions of problem drinking and to empirically determine appropriate cut-points for problem drinking along these dimensions. METHOD: A stratified sample of 1,269 young adults who reported drinking alcohol in the year prior to 1995 was used in these analyses. Respondents were originally interviewed in 1985 in middle schools in a southeastern U.S. county. RESULTS: Symptoms of dependency and drunkenness were relatively common in this sample, but adverse consequences were rare. Results of analyses using the Chi-squared Automatic Interaction Detector (CHAID) and the Survey Data Analysis (SUDAAN) software suggest that drunkenness and adverse consequences are the most significant predictors of problems in other areas of life. Symptoms of dependency were significant only in interaction with drunkenness, although the analyses were limited to only lifetime measures of dependency. Appropriate cut-points, based on these analyses, appear to be (1) drunk at least six times in the past year, (2) four or more lifetime symptoms of dependency and (3) one or perhaps two or more adverse consequences in the past year. CONCLUSIONS: Results suggest that frequency of drunkenness may be the single best indicator of problem drinking among young adults and that adverse consequences may indicate a more serious form of problem drinking than do symptoms of dependency. In addition, appropriate cut-points on these dimensions for young adults appear to be similar to those that have been used in studies of adolescents. Further study of both adolescents and young adults is suggested.

Brounstein, P. J., Zweig, J. M., & Gardener, S. E. (1999). *Understanding substance abuse prevention: Toward the 21st century: A primer for effective programs*. Rockville: U.S. Department of Health and Human Services Administration, Center for Substance Abuse Prevention, Division of Knowledge Development and Evaluation. **Abstract:** Substance use is one of today's most challenging health and social problems. Further, it is more pervasive in the United States than in any other industrialized nation. Early involvement with any drug is a risk factor for later drug use and criminal activity, and the more severe the early involvement, the greater the risk that antisocial behavior will emerge in the future. Early use of alcohol, tobacco, or illicit drugs has been linked clearly to later substance abuse (Kandel, 1980, 1982; DuPont, 1989; cf. Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996). Thus, young people, a particularly vulnerable at-risk population, are a key target for prevention efforts. It is because of their perceived vulnerability and malleability that youth have been the focus of most substance use prevention and intervention programs. In fact, focusing on young people from early childhood through adolescence has long been recognized as central to an effective substance abuse prevention strategy. Ever since the first major outbreak of substance use among youth in the 1960s, prevention programs directed at children and youth (and their families and schools) have been key elements in broader primary prevention efforts at Federal, State, and local levels. Youth-oriented prevention programs and initiatives have proliferated throughout the country, and several generations of programs, models, and theoretical frameworks for prevention have evolved.

Burglass, M. E., & Shaffer, H. (1983). Diagnosis in the addictions I: Conceptual problems. *Adv Alcohol Subst Abuse*, 3(1-2), 19-34.

Abstract: A crisis of categories exists in the body of knowledge associated with the phenomenon of the addictions. This crisis is characterized by (a) the absence of an accepted paradigm for integrating the knowledge in the field; (b) the consequent paucity of facts; and (c) the lack of integration between research, theory and practice. The problem of diagnosis has been brought into focus by (a) the growth of empirical and theoretical knowledge in the field; (b) the emergence of new patterns of substance use; and (c) changes in socio-cultural values and attitudes. Specifically, the categorical concept of dependence has become confusing and unworkable. A recent attempt at reformulation of diagnostic terminology of the field by the World Health Organization is reviewed and two conceptual schemes for identifying, gathering, and ordering the clinical data necessary to support a multidimensional diagnosis of drug dependence and the specification of drug-related disabilities are examined.

Chambers, R. A., Taylor, J. R., & Potenza, M. N. (2003). Developmental neurocircuitry of motivation in adolescence: A critical period of addiction vulnerability. *American Journal of Psychiatry*, 160(6), 1041-1052. **Abstract:** **OBJECTIVE:** Epidemiological studies indicate that experimentation with addictive drugs and onset of addictive disorders is primarily concentrated in adolescence and young adulthood. The authors describe basic and clinical data supporting adolescent neurodevelopment as a biologically critical period of greater vulnerability for experimentation with substances and acquisition of substance use disorders. **METHOD:** The authors reviewed recent literature regarding neurocircuitry underlying motivation, impulsivity, and addiction, with a focus on studies investigating adolescent neurodevelopment. **RESULTS:** Adolescent neurodevelopment occurs in brain regions associated with motivation, impulsivity, and addiction. Adolescent impulsivity and/or novelty seeking as a transitional trait behavior can be explained in part by maturational changes in frontal cortical and subcortical monoaminergic systems. These developmental processes may advantageously promote learning drives for adaptation to adult roles but may also confer greater vulnerability to the addictive actions of drugs. **CONCLUSIONS:** An exploration of developmental changes in neurocircuitry involved in impulse control has significant implications for understanding adolescent behavior, addiction vulnerability, and the prevention of addiction in adolescence and adulthood.

Chiauzzi, E. J., & Liljegren, S. (1993). Taboo topics in addiction treatment. An empirical review of clinical folklore. *J Subst Abuse Treat, 10*(3), 303-316.

Abstract: This article reviews 11 taboo topics, that is, research findings that question traditional assumptions and teachings of addiction treatment. These topics include: (1) the lack of empirical support for the Minnesota Model; (2) questions about the necessity of Alcoholics Anonymous for maintaining abstinence; (3) the existence of spontaneous remission; (4) the detrimental aspects of labeling; (5) the value of addicted individuals' self-reports; (6) the lack of empirical support for the addictive personality concept; (7) cue exposure as an underutilized intervention; (8) the interactional nature of motivation; (9) the value of smoking cessation in early recovery; (10) the overuse of the addiction concept; and (11) the lack of empirical support for the disease concept of codependency. Misconceptions arise due to the lack of communication between disciplines and the experiential bias of current addiction treatment modalities. Emphasis is placed on the importance of empiricism in order to advance the addiction field beyond faith and supposition.

Chung, T., & Martin, C. S. (2002). Concurrent and discriminant validity of DSM-IV symptoms of impaired control over alcohol consumption in adolescents. *Alcoholism: Clinical and Experimental Research, 26*(4), 485-492.

Abstract: BACKGROUND: Little research has examined impaired control over alcohol consumption in adolescents. This study examined the concurrent and discriminant validity of two DSM-IV dependence criteria that reflect impaired control over drinking: "using more or longer than intended" (Larger/Longer) and "persistent desire or unsuccessful efforts to quit or cut down" (Quit/Cut Down). METHODS: Adolescent drinkers, ages 13-19 (N = 173), were recruited from addictions treatment (76%) and community sources (24%). A modified SCID that included assessment of alcohol craving and questionnaires measuring dependence severity, attempts to limit drinking, and impulsivity were administered. RESULTS: Larger/Longer had higher prevalence and an earlier onset than Quit/Cut Down, suggesting that the symptoms respectively represent milder and more severe manifestations of impaired control over drinking. Both symptoms were associated with drinking frequency, dependence severity, episodes of passing out, and an independent measure of unsuccessful attempts to limit drinking. Alcohol craving was associated with both Larger/Longer and Quit/Cut Down. Impulsivity was correlated with Larger/Longer but not Quit/Cut Down. CONCLUSIONS: Larger/Longer and Quit/Cut Down demonstrated adequate concurrent validity. The two symptoms were distinguished by severity and differential relations with impulsivity, suggesting that Larger/Longer and Quit/Cut Down reflect different types of impaired control over alcohol consumption. Results suggest the need for improved description and scaling of the impaired control construct in adolescents.

Comerci, G. D., & Schwebel, R. (2000). Substance abuse: An overview. *Adolesc Med 11*(1), 79-101.

Abstract: Substance abuse continues to be a major adolescent health risk. Despite encouraging trends toward decreased drug use in the late 1980s, an increase in use occurred in the early 1990s and only now is beginning to level off. A brief update on the status of the most commonly abused substances is provided. A discussion of current research is given in support of viewing drug addiction as a medical condition, i.e., a "brain disease." Reasons are suggested to explain why adolescents use and abuse drugs and why trends occur in their use. Two aspects of diagnosis are reviewed: psychiatric and medical comorbidity and drug screening and laboratory assessment of the adolescent. Prevention and early intervention are presented with an emphasis on drug education, behavioral wellness, family communication, doctor-patient discussion and assessment, and referral. Commentary is made on the ethics of care, issues of confidentiality, and the right to privacy with regard to drug testing and sharing of information are explored. A review of various policy statements of the American Academy of Pediatrics and other medical organizations is presented.

Dawes, M. A., Antelman, S. M., Vanyukov, M. M., Giancola, P., Tarter, R. E., Susman, E. J., et al. (2000).

Developmental sources of variation in liability to adolescent substance use disorders. *Drug Alcohol Depend*, 61(1), 3-14.

Abstract: This review provides a synthesis of the literature on the complex sequence of maturational, psychosocial, and neuroadaptive processes that lead to substance use disorders (SUD) in adolescence. A brief overview introduces the concepts of liability to SUD and epigenesis. A theory is presented explaining how affective, cognitive, and behavioral dysregulation in late childhood is exacerbated during early and middle adolescence by family and peer factors, as well as puberty, leading to substance use. Continued exacerbation of the three components of dysregulation by drug and non-drug stressors during late adolescence is posited to result in neuroadaptations that increase the likelihood of developing SUD, particularly in high-risk individuals. Implications for etiologic research as well as clinical and preventive interventions are discussed.

Donovan, J. E., Jessor, R., & Costa, F. M. (1999). Adolescent problem drinking: Stability of psychosocial and behavioral correlates across a generation. *Journal of Studies on Alcohol*, 60(3), 352-361.

Abstract: Objective: Research conducted in the 1970s demonstrated that Problem Behavior Theory could account for approximately 40% of the variance in problem drinking in both local and national sample studies. The present analyses sought to determine whether the personality, perceived environment, and behavior variables of the framework continue to contribute to the explanation of problem drinking among contemporary American youth. Method: Correlational and multiple regression analyses were performed on six separate databases collected at different times between 1972 and 1992. Due to sociodemographic differences among the samples, separate analyses were performed for male and female adolescents, and age, ethnicity and socioeconomic status were statistically controlled. Results: There was considerable consistency across the samples in both the partial correlations and the partial multiple correlations, and this result held for both genders. Not only did the framework account for the same percentage of the variance (40%) in problem drinking in the 1992 data as it did in the 1972 data, but the results for the intervening years were consistent as well. Conclusions: The consistency of results over a 20-year period confirms that the social-psychological meaning of adolescent involvement in problem drinking has remained stable despite changes in the larger sociohistorical context.

Douglas, D. B. (1986). Alcoholism as an addiction: The disease concept reconsidered. *J Subst Abuse Treat*, 3(2), 115-120.

Abstract: The concept of alcoholism as a disease is compared to the concept of addiction in regard to individual intentionality, the resultant social and legal accountability and especially the total phenomenology of the addictive process. It is held that alcoholism is essentially an addiction like any other that if active, can culminate in various diseases and in death but that its most significant and characteristic volitional disorder--starting to drink when sober--is not explained by the disease concept. The concept of alcoholism as a disease is basically due to a reversal of the perception of cause and effect and has thereby impoverished full understanding and treatment of the entire process of addictive emotionality, addictive relationships and the addictive way of life. The disease concept can contribute best by inclusion to describe the results of active alcoholism but not as an explanation. This means we must turn to the concept of addiction to provide more accurate guidance in the development of adequate domestic and societal responses to alcoholism and especially for more adequate management methods for the physician confronted with the many overt and hidden forms of alcoholism in daily practice.

Drummond, D. C. (2001). Theories of drug craving, ancient and modern. *Addiction*, 96(1), 33-46.

Abstract: This paper reviews the principal theoretical models of drug craving and provides some directions for future research. The main models are classified broadly into three categories: (1) phenomenological models: based on clinical observation and description; these have been influential in classification systems of addictive disorders and in the development of pharmacological therapies; (2) conditioning models: based on conditioning theory; these have been influential in the development of cue exposure treatments; (3) cognitive theories: based on cognitive social learning theory; these have been influential in the development of cognitive therapies of addiction. It is concluded that no one specific theory provides a complete explanation of the phenomenon of craving. However, theories of craving grounded in general theories of human behaviour offer greatest promise, and generate more specific and testable research hypotheses. Theories that do not require craving to be present for relapse to occur have more empirical support than those that provide simplistic causal explanations. The cue-reactivity model shows promise in the exploration of the relationship between craving and relapse. However, further attention to the phenomenology of craving could help to advise the future measurement and study of drug craving, particularly in the context of research in which drugs are available to human subjects, with adequate ethical safeguards. There is a need for further study of the temporal dynamics of craving and consensus in the field on the most appropriate methods of measurement. Finally, new psychotherapies such as cue exposure and pharmacotherapies that aim to attenuate drinking behaviour, such as naltrexone and acamprosate, provide opportunities to improve understanding of the nature and significance of craving. However, the relatively uncritical assumption that craving is the underlying basis of addiction and represents the most appropriate target for treatment is challenged.

Evans, R. I. (2003). Some theoretical models and constructs generic to substance abuse prevention programs for adolescents: Possible relevance and limitations for problem gambling. *Journal of Gambling Studies*, 19(3), 287-302.

Abstract: For the past several years the author and his colleagues have explored the area of how social psychological constructs and theoretical models can be applied to the prevention of health threatening behaviors in adolescents. In examining the need for the development of gambling prevention programs for adolescents, it might be of value to consider the application of such constructs and theoretical models as a foundation to the development of prevention programs in this emerging problem behavior among adolescents. In order to provide perspective to the reader, the present paper reviews the history of various psychosocial models and constructs generic to programs directed at prevention of substance abuse in adolescents. A brief history of some of these models, possibly most applicable to gambling prevention programs, are presented. Social inoculation, reasoned action, planned behavior, and problem behavior theory, are among those discussed. Some deficits of these models, are also articulated. How such models may have relevance to developing programs for prevention of problem gambling in adolescents is also discussed. However, the inherent differences between gambling and more directly health threatening behaviors such as substance abuse must, of course, be seriously considered in utilizing such models. Most current gambling prevention programs have seldom been guided by theoretical models. Developers of gambling prevention programs should consider theoretical foundations, particularly since such foundations not only provide a guide for programs, but may become critical tools in evaluating their effectiveness.

Fulkerson, J. A., Harrison, P. A., & Beebe, T. J. (1999). DSM-IV substance abuse and dependence: Are there really two dimensions of substance use disorders in adolescents? *Addiction, 94*(4), 495-506.

Abstract: AIM: To examine the distinctness of the DSM-IV substance abuse and dependence constructs in a large, general adolescent population. DESIGN: Data were collected using the 1995 Minnesota Student Survey. Survey items were designed to correspond to DSM-IV diagnostic criteria for substance abuse and dependence. SETTINGS: Public schools, alternative schools and area learning centers. PARTICIPANTS: Of the 78,800 students between the ages of 14 and 18 years who completed the survey, 18,803 reported substance use and at least one substance use disorder diagnostic criterion during the previous 12 months and were used for the analyses. The sample was divided randomly into two groups in order to conduct data analyses on one group (n = 9,490) and confirm the findings in the other group (n = 9,313). MEASUREMENTS: Confirmatory factor analyses were conducted to test three competing factor structure models consisting of a single factor model, a two-factor model of distinct dimensions, and a two-factor model with interrelated dimensions. FINDINGS: The single factor and correlated two-factor models had similar parameter estimates and fit the data better than the competing two-factor model with distinct dimensions. Findings were confirmed in a second sample. CONCLUSIONS: The study findings indicate that DSM-IV substance abuse and dependence criteria may be more optimally structured as a unidimensional construct rather than as bidimensional constructs for adolescents.

Glantz, M. D., & Leshner, A. I. (2000). Drug abuse and developmental psychopathology. *Dev Psychopathol, 12*(4), 795-814.

Abstract: Drug abuse research and theory has become much more sophisticated over the last 2 decades, and some of the advancements parallel concepts that are part of the developmental psychopathology approach. The application of the developmental psychopathology perspective to recent drug abuse research findings can provide a greater understanding of that information and point to important areas of future research. Among the drug abuse research areas discussed here and viewed from this perspective are antecedent and co-occurring psychopathological conditions and other problem behaviors; the diversity of the nature of paths to, and processes and outcomes related to, drug abuse; the role of intermediary influences; the interaction of individual and environmental predisposing and protective factors; the role of families and other social institutions in intervention; and developmental stage characteristics. Directions for future research are also discussed.

Hatterer, L. J. (1982). The addictive process. *Psychiatr Q, 54*(3), 149-156.

Abstract: In order to understand and treat addictions one must go beyond the specific agent and practice; one must understand the addictive process. The author bases his conceptualization of an addictive process on twenty-five years of naturalistic observation, individual and group psychoanalytic psychotherapeutic treatment, and therapeutic trials of one hundred and thirty-three single and poly substance and behavior addicted patients. No single addictive personality (addict) exists. People become addicted because specific etiological and constitutional factors contribute to their vulnerability to the addicted process. This process can be defined and diagnosed. It involves common inter/intrapersonal psychodynamics. One must look for the addictive complement and trigger mechanisms which can initiate and perpetuate the process. The process has a life history and stages, which can be cyclic, periodic, or sporadic. The individual can shift from one addiction to another or sustain multiple addictions at different times. Understanding the above factors is essential to making an accurate diagnosis and to treatment.

Hopfer, C. J., Crowley, T. J., & Hewitt, J. K. (2003). Review of twin and adoption studies of adolescent substance use. *Journal of the American Academy of Child & Adolescent Psychiatry, 42*(6), 710-719.

Abstract: Reviewed studies of adolescent substance use and abuse with genetically informative designs. Twin and adoption studies of adolescent substance use were searched in Medline using keywords. Of 19 studies that used adolescent samples, 18 examined initiation or use of substances and 1 examined abuse. Of the 7 retrospective studies using adult samples, 6 examined problematic behaviors such as substance dependence. Genetic and shared environmental influences on adolescent substance use are moderated by the specific substance, age, gender, specific contexts, religiousness, and region. There is some evidence for a common genetic influence on substance use across substances. Genetic influences on adolescent substance use may act through an influence on disinhibited behavior. Shared environment contributed to adolescent substance use consistently across all adolescent samples and common shared environmental influences influenced initiation into tobacco and alcohol use. While parental alcohol use had a small influence on adolescent shared environment, sibling influences were substantial. Twin and adoption studies have increased our understanding of genetic and environmental influences on adolescent substance use and its initiation; however, more studies are needed.

Hughes, T. L. (1989). Models and perspectives of addiction. Implications for treatment. *Nurs Clin North Am, 24*(1), 1-12.

Abstract: The absence of consistent scientific evidence concerning the etiology and basic characteristics of alcoholism and other addictions has created ambiguity and uncertainty. These serve to foster and perpetuate the conflicts that inform the various theoretical perspectives and associated beliefs held by professionals in the addictions field. Addiction is more than a toxic state, a criminal offense, a disease, a mental health problem, or an unhealthy habit. It is also a social problem that affects every aspect of life--physical, psychological, and interpersonal. Given this fact, it is unlikely that one perspective can sufficiently guide the treatment of addicted clients. Thus, care of addicted clients must be based on a model of health-illness that is inclusive and flexible, yet distinct and relevant. Such a model must accommodate the reality that health or illness is the outcome of multiple personal characteristics that interact with a host of interdependent factors within the larger social environment. Nurses, because of their holistic and client-centered focus, are uniquely prepared to provide care to addicted clients.

Hunt, G., & Barker, J. C. (2001). Socio-cultural anthropology and alcohol and drug research: Towards a unified theory. *Soc Sci Med, 53*(2), 165-188.

Abstract: The arrival of the millennium has understandably created a growing tendency for social commentators to evaluate the current state of the world, assess prior developments, and suggest new and enlightened ways forward. In this time of re-appraisals, we assess the current state of the anthropology of alcohol and drug research, consider its early history, examine the range and theoretical underpinnings of work done today, and propose the elements of a possible future model. In formulating the model, we have borrowed from a number of different theoretical approaches and insights not only from anthropological discussions of alcohol and drug issues but also from anthropological research outside these arenas. In examining these issues, and as a way of attempting to answer the question--where has the field come from and where is it heading--we situate anthropological contributions to this area not merely within the wider context of anthropological thought and research, but more importantly within a wider social and political context that takes account of the organizational, funding and conceptual influences, constraints and pressures that operate on anthropologists who wish to conduct research on alcohol and drug issues.

Jacob, T., Sher, K. J., Bucholz, K. K., True, W. T., Sirevaag, E. J., Rohrbaugh, J., et al. (2001). (2001). An integrative approach for studying the etiology of alcoholism and other addictions. *Twin Res*, 4(2), 103-118.

Abstract: Studies of alcoholism etiology often focus on genetic or psychosocial approaches, but not both. Greater understanding of the etiology of alcohol, tobacco and other addictions will come from integration of these research traditions. A research approach is outlined to test three models for the etiology of addictions--behavioral undercontrol, pharmacologic vulnerability, negative affect regulation--addressing key questions including (i) mediators of genetic effects, (ii) genotype-environment correlation effects, (iii) genotype x environment interaction effects, (iv) the developmental unfolding of genetic and environmental effects, (v) subtyping including identification of distinct trajectories of substance involvement, (vi) identification of individual genes that contribute to risk, and (vii) the consequences of excessive use. By using coordinated research designs, including prospective assessment of adolescent twins and their siblings and parents; of adult substance dependent and control twins and their MZ and DZ cotwins, the spouses of these pairs, and their adolescent offspring; and of regular families; by selecting for gene-mapping approaches sibships screened for extreme concordance or discordance on quantitative indices of substance use; and by using experimental (drug challenge) as well as survey approaches, a number of key questions concerning addiction etiology can be addressed. We discuss complementary strengths and weaknesses of different sampling strategies, as well as methods to implement such an integrated approach illustrated for the study of alcoholism etiology. A coordinated program of twin and family studies will allow a comprehensive dissection of the interplay of genetic and environmental risk-factors in the etiology of alcoholism and other addictions.

Kim, S., Crutchfield, C., Williams, C., & Hepler, N. (1998). Toward a new paradigm in substance abuse and other problem behavior prevention for youth: Youth development and empowerment approach. *Journal of Drug Education*, 28(1), 1-17.

Abstract: The purpose of this article is to 1) address a paradigm shift taking place in the field of substance abuse prevention directed for youth and 2) to introduce an innovative approach to substance abuse and other problem behavior prevention that reflects this shift in prevention paradigm. The new path introduced is youth development and empowerment (YD&E) approach. In order to establish a conceptual foundation for this approach, this article 3) reviews the theoretical advances made in the field of substance abuse prevention during the last three decades. This is followed by a conceptualization of the processes of implementing the YD&E program by 4) specifying the mechanism used for the empowering processes and by 5) identifying the structural components of the youth empowerment model that serve the empowering processes. It is hoped that this article serves as a conduit for an improved approach to adolescent substance abuse prevention and youth development that goes beyond, rather than against, the traditional risk-factor approach. In this new approach, youths are viewed as assets and resources to our community rather than social problems or community liabilities. The organizing concept of this new paradigm is: social, economic, and public opportunity denied to youth is equal to social problems imposed on youth by adults.

Kobus, K. (2003). Peers and adolescent smoking. *Addiction*, 98(Suppl. 1), 37-55.

Abstract: There is a considerable body of empirical research that has identified adolescent peer relationships as a primary factor involved in adolescent cigarette smoking. Despite this large research base, many questions remain unanswered about the mechanisms by which peers affect youths' smoking behavior. Understanding these processes of influence is key to the development of prevention and intervention programs designed to address adolescent smoking as a significant public health concern. In this paper, theoretical frameworks and empirical findings are reviewed critically which inform the current state of knowledge regarding peer influences on teenage smoking. Specifically, social learning theory, primary socialization theory, social identity theory and social network theory are discussed. Empirical findings regarding peer influence and selection, as well as multiple reference points in adolescent friendships, including best friendships, romantic relationships, peer groups and social crowds, are also reviewed. Review of this work reveals the contribution that peers have in adolescents' use of tobacco, in some cases promoting use, and in other cases deterring it. This review also suggests that peer influences on smoking are more subtle than commonly thought and need to be examined more carefully, including consideration of larger social contexts, e.g. the family, neighborhood, and media. Recommendations for future investigations are made, as well as suggestions for specific methodological approaches that offer promise for advancing our knowledge of the contribution of peers to adolescent tobacco use.

Kodjo, C. M., & Klein, J. D. (2002). Prevention and risk of adolescent substance abuse. The role of adolescents, families, and communities. *Pediatr Clin North Am, 49*(2), 257-268.

Abstract: Adolescents as young as 12 to 14 years of age are engaging in substance use. Those who use substances are at risk for immediate and future consequences that affect morbidity and mortality. The theoretical models of substance use in adolescents provide a framework for understanding risk and protective factors. These risk and protective factors are pertinent to all contexts, including the individual traits, interpersonal relationships, and greater society. Knowledge of these factors should help the clinician in assessment of the individual adolescent. Knowledge of these factors also should help the clinician provide appropriate interventions. In the case of primary prevention, clinicians can advocate for families and communities to teach children how to be more goal-oriented, insightful, and in tune with their cultures and beliefs. Parents also can be encouraged to set clear limits, monitor their adolescents' behaviors, be good role models, and provide a loving and supportive environment. Advocacy to address some of the societal factors that are less easily changed also has its place. Addressing media portrayal of drug use, availability of substances, and poverty would have a broad impact on the problem of adolescent substance use and would help to improve the health status of many adolescents in the United States.

Kuther, T. L. (2000). Moral reasoning, perceived competence, and adolescent engagement in risky activity. *Journal of Adolescence, 23*(5), 599-604.

Abstract: Relations among moral reasoning, domain specific perceived competencies, and self-reported engagement in risky activity (substance use and antisocial behavior) were examined with 110 10th-12th grade students. An exploratory model demonstrated that perceived behavioral competence mediated the relation of moral reasoning and engagement in risky behavior such that preconventional moral reasoning predicted perceptions of low behavioral competence, which was associated with engagement in risky activity. The results support contentions of moral theorists that a comprehensive theory of moral development must include self-regulatory mechanisms such as perceptions of competence in order to predict moral conduct.

Martin, C. S., Kaczynski, N. A., Maisto, S. A., Bukstein, O. M., & Moss, H. B. (1995). Patterns of DSM-IV alcohol abuse and dependence symptoms in adolescent drinkers. *Journal of Studies on Alcohol, 56*(6), 672-680.

Abstract: **OBJECTIVE:** Diagnostic criteria for alcohol use disorders have largely been developed from research and clinical experience with adults. This research was designed to describe patterns of DSM-IV alcohol use disorder symptoms, and other problem domains, in adolescents with alcohol problems. **METHOD:** A modified version of the Structured Clinical Interview for the DSM (SCID) was used to assess DSM-IV alcohol abuse and alcohol dependence symptoms in 91 male and 90 female adolescent drinkers with various levels of alcohol consumption and alcohol-related problems. The SCID was expanded to assess other alcohol problem domains thought to be relevant for adolescents. **RESULTS:** DSM-IV dependence symptoms showed moderate to high covariation, supporting the utility of the alcohol dependence construct in adolescence. Compared to previous reports from adult samples, some symptoms were relatively infrequent (e.g., withdrawal, medical problems). Tolerance had low specificity for the diagnosis of alcohol dependence. There was significant heterogeneity in the symptomatology of subjects with DSM-IV alcohol abuse. Although they are not in the DSM-IV criteria, alcohol-related blackouts, craving and risky sexual behavior were common in adolescents with DSM-IV alcohol dependence and abuse diagnoses. **CONCLUSIONS:** The data generally support the utility of DSM-IV criteria for alcohol dependence among adolescents. However, tolerance, withdrawal and medical problems appear to present differently in adolescents than has been reported in adults. Those with DSM-IV alcohol abuse diagnoses had very heterogeneous patterns of symptomatology, suggesting limitations of the criteria for DSM-IV alcohol abuse in adolescence. Alcohol-related blackouts, craving and risky sexual behavior are common among adolescents with alcohol use disorders and are an important focus for assessment and treatment efforts.

Martin, C. S., Langenbucher, J. W., Kaczynski, N. A., & Chung, T. (1996). Staging in the onset of DSM-IV alcohol symptoms in adolescents: Survival/hazard analyses. *Journal of Studies on Alcohol, 57*(5), 549-558.

Abstract: OBJECTIVE: This research examined staging in the time to onset of DSM-IV alcohol symptoms in adolescents. Consistent staging in the onset of symptoms provides important tests of the construct validity of diagnostic systems, and aids the development of early case identification strategies. METHOD: The Structured Clinical Interview for the DSM (SCID), adapted to assess DSM-IV alcohol abuse and dependence symptoms, was used to determine time to symptom onset in 102 male and 97 female adolescent drinkers with and without alcohol use disorders. The sample provided a broad range of drinking practices and alcohol-related problems. Symptom onset patterns were examined using survival-hazard analyses. RESULTS: Survival and hazard data suggested three stages of alcohol problems distinguished by time to onset: heavy and heedless drinking with associated social and role obligation problems, psychological dependence, and withdrawal. This three-stage model fit both the male and female data, and described staging patterns in 70% of the subjects. CONCLUSIONS: The symptom onset model suggested a first stage of adolescent alcohol symptoms characterized by heavy and heedless drinking with associated interpersonal and role obligation problems. The data did not support the construct validity of DSM-IV alcohol abuse when applied to adolescents, and suggested staging among DSM-IV alcohol dependence symptoms. Implications for the diagnosis and early identification of adolescent alcohol problems are discussed.

McCusker, C. G. (2001). Cognitive biases and addiction: An evolution in theory and method. *Addiction, 96*(1), 47-56.

Abstract: An evolution in theoretical models and methodological paradigms for investigating cognitive biases in the addictions is discussed. Anomalies in traditional cognitive perspectives, and problems with the self-report methods which underpin them, are highlighted. An emergent body of cognitive research, contextualized within the principles and paradigms of cognitive neuropsychology rather than social learning theory, is presented which, it is argued, addresses these anomalies and problems. Evidence is presented that biases in the processing of addiction-related stimuli, and in the network of propositions which motivate addictive behaviours, occur at automatic, implicit and pre-conscious levels of awareness. It is suggested that methods which assess such implicit cognitive biases (e.g. Stroop, memory, priming and reaction-time paradigms) yield findings which have better predictive utility for ongoing behaviour than those biases determined by self-report methods of introspection. The potential utility of these findings for understanding "loss of control" phenomena, and the desynchrony between reported beliefs and intentions and ongoing addictive behaviours, is discussed. Applications to the practice of cognitive therapy are considered.

Merikle, E. P. (1999). The subjective experience of craving: An exploratory analysis. *Subst Use Misuse, 34*(8), 1101-1115.

Abstract: Craving is a motivational state associated with a variety of addictive behaviors. To date no studies have systematically asked substance misusers to describe their subjective experience of craving. The aim of the present study was to examine the common themes found in descriptions of craving and the situations that give rise to the experience of craving in a sample of substance misusers (N = 23). Analyses of the interview text revealed that the subjective experience of craving is heterogeneous. Eight dimensions were found to be associated with the subjective experience of craving: specificity, strength, positive outcomes, behavioral intention, thoughts, physical symptoms, affect, and cues. Individual differences in the extent to which each of these dimensions is experienced across substance misusers was evident in the interview text. Implications of these results for the development of a multivariate theory of craving are discussed.

Morrison, D. M., Mar, C. M., Wells, E. A., Rogers Gillmore, M., Hoppe, M. J., Wilsdon, A., et al. (2002). The Theory of Reasoned Action as a model of children's health behavior. *Journal of Applied Social Psychology, 32*(11), 2266-2295.

Abstract: This research examined the applicability of the theory of reasoned action to school-age children. Using structural equation modeling, the authors longitudinally modeled children's attitudes, norms, intentions, and behavior with regard to drinking alcohol. Respondents were 1,061 children attending public schools in the northwestern United States. Attitude, norms, and intentions (measured when the children were in 6th, 7th, 8th, and 9th grades) were used to predict alcohol use 1 year later. Two modifications of the model improved the overall fit at each grade level: separating attitude into 2 dimensions (positive and negative), and adding a path from social norm to behavior. The theoretical and practical implications of these results are discussed.

Mulder, R. T. (2002). Alcoholism and personality. *Australian & New Zealand Journal of Psychiatry*, 36(1), 44-52.

Abstract: OBJECTIVE: The search for an alcoholic personality has been pursued with varying enthusiasm throughout the 20th century. This paper reviews the methodological issues, research designs and current theories relating alcoholism and personality. METHOD: A selected literature search using computerized databases was ordered via the four major research design strategies: cross sectional studies, high-risk studies, longitudinal studies and genetic epidemiology studies. RESULTS: Cross sectional studies have suggested that two broad bands of personality, impulsivity/novelty seeking and neuroticism/negative emotionality, are associated with alcoholism. Although high-risk studies have repeatedly shown that sons of male alcoholics are at increased risk of alcoholism, whether this risk is related to personality variables is unclear. Many authors believe that the presence of antisocial personality disorder is a confounder and that this may explain some of the contradictory findings. Longitudinal studies have consistently reported that antisocial behaviour and hyperactivity are related to later alcoholism. Negative emotionality seems to be less important and may largely be a consequence of the alcoholism itself. Genetic epidemiological studies suggest that personality measures play a modest but significant role in the genetic influence of alcoholism. The strongest relationships are with conduct disorder and antisocial behaviour. The postulated alcoholic subtypes (Type I, Type II or Type A/B) based on age of onset and personality style have been challenged by recent research. The most vulnerable to alcoholism may be those with both high impulsivity/high novelty seeking and high neuroticism/negative emotionality. CONCLUSION: Antisocial behaviour and hyperactivity are the most consistent behaviours associated with alcoholism. These behaviours are not specific for alcoholism and are associated with many other psychiatric conditions. Personality variables by themselves explain only a small proportion of the risk for alcohol dependence. There is no alcoholic personality nor are there personality measures which are specific to vulnerability to later alcohol dependence. Attempting to link alcoholism with theoretical, poorly validated models of personality is premature.

Murray, D. M., & Perry, C. L. (1985). The prevention of adolescent drug abuse: Implications of etiological, developmental, behavioral, and environmental models. *NIDA Res Monogr*, 56, 236-256.

Abstract: Nine models for the etiology of drug abuse have been examined. Problem behavior theory, domain theory, and Flay's developmental model suggest that drug use is a functional behavior for adolescents, and that prevention efforts should address this functionality and provide alternative behaviors for drug use rather than simply trying to suppress the underlying need or reason for use. These positions, together with the stages of drug use and stages of antisocial behavior models, place drug use in a developmental context, suggesting that the factors that influence drug use evolve as the child matures through adolescence, and that the developmental period of the adolescent should be considered in any prevention effort. They also suggest that drug use is common for many adolescents in today's culture. There is general support among the models to consider drug use as a part of a larger constellation of behaviors, whether labeled problem behaviors, antisocial behaviors, or by another name. This suggests that prevention programs must treat drug use in its behavioral context as well as its developmental and functional context. Finally, there is strong support for social-environmental factors such as modeling, availability of drugs, and social supports in the development of drug use. Though the various models often use different terminology, there are remarkable similarities in their implications for prevention efforts.

Muthen, B. O., Grant, B., & Hasin, D. (1993). The dimensionality of alcohol abuse and dependence: Factor analysis of DSM-III-R and proposed DSM-IV criteria in the 1988 National Health Interview Survey. *Addiction, 88*(8), 1079-1090.

Abstract: Decisions on the final version of the DSM-IV alcohol abuse and dependence criteria will be determined largely by the APA's substance abuse field trials, conducted primarily in treated, clinical samples. Among the major objectives of the field trials are to study the boundaries between abuse and dependence, and to identify specific criteria that define the abuse category. The decisions on revisions of the abuse and dependence criteria in DSM-IV should, however, be informed by data from non-treated or general population samples as well. The present study addresses the field trial objectives using recent data from a large general population survey, the 1988 National Health Interview Survey (NHIS88). The paper reports on factor analyses to assess the dimensions underlying the DSM-III-R and DSM-IV dependence and abuse criteria as operationalized in the NHIS88. The focus of the analyses is on whether models with more than one dimension are needed and if so, the correspondence of the dimensions to criteria sets defined in the DSM-III-R and DSM-IV. The analyses show that a two-dimensional model is required. The dimensions are interpreted as abuse and dependence, but the sets of criteria that define each of the dimensions show important deviations from the criteria sets used in the DSM definitions.

Newcomb, M. D., & Bentler, P. M. (1989). Substance use and abuse among children and teenagers. *Am Psychol, 44*(2), 242-248.

Abstract: During the past several years, there has been a renewed national concern about drug abuse, culminating in the current "war on drugs." In this review, we emphasize that even though child or teenage drug use is an individual behavior, it is embedded in a sociocultural context that strongly determines its character and manifestations. Our focus is on psychoactive substances both licit (cigarettes and alcohol) and illicit (e.g., cannabis and cocaine). We feel that it is critical to draw a distinction between use and abuse of drugs and to do so from a multidimensional perspective that includes aspects of the stimulus (drug), organism (individual), response, and consequences. Our selective review of substance use and abuse among children and adolescents covers epidemiology (patterns and extent of drug use), etiology (what generates substance use), prevention (how to limit drug use), treatment (interventions with drug users), and consequences (effects and outcomes of youthful drug use).

Pearson, G. (2001). Normal drug use: Ethnographic fieldwork among an adult network of recreational drug users in inner London. *Substance Use & Misuse, 36*(1-2), 167-200.

Abstract: A key debate in late 1990s Britain is the "normalization" of illicit drug use among young people. This qualitative research study explores recreational drug use (mainly cannabis and cocaine) among an adult friendship network in an inner London neighborhood. It finds that the use of these drugs is accepted as a normal and routine aspect of daily life. In addition to patterns of drug consumption and drug dealing, some aspects of risk perception are also described. Adults are neglected in current UK drug policy debates. "Normal" adult recreational drug use poses the need for a new public health policy agenda for the new century.

Petraitis, J., Flay, B. R., & Miller, Q. T. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117*(1), 67-86.

Abstract: This article reviews 14 multivariate theories of experimental substance use (e.g., alcohol and marijuana use) among adolescents, including those theories that emphasize (a) substance-specific cognitions, (b) social learning processes, (c) commitment to conventional values and attachment to families, and (d) intrapersonal processes. Important similarities and differences among these theories are addressed, as are the conceptual boundaries of each theory. In an attempt to integrate existing theories, a framework is proposed that organizes their central constructs into 3 distinct types of influence (viz., social, attitudinal, and intrapersonal) and 3 distinct levels of influence (viz., proximal, distal, and ultimate). Implications for future theory development are discussed.

Rozin, P., & Stoess, C. (1993). Is there a general tendency to become addicted? *Addict Behav*, 18(1), 81-87.

Abstract: The tendency to become addicted across a number of different substances or activities was determined for a sample of 573 subjects, including college students and their parents. Four components of addiction were defined: craving, tolerance, withdrawal and lack of control. Subjects rated the extent to which each of these components characterized their relationships to each of ten substance/activities: coffee, tea, cola beverages, favorite alcoholic beverage, chocolate, nonchocolate sweets, hot chili pepper on food, cigarettes, gambling and video games. An "addiction score" was computed for each subject and each substance/activity, by summing the scores on the four components. Correlations in addiction scores for almost all activities were positive, but low (between 0 and .30), with the exception of chocolate and nonchocolate sweets, where the correlation was higher. The results suggest, at best, a weak tendency to become addicted, across a wide range of substances or activities. Other explanations for the low positive correlations are available, besides the notion of a general tendency to become addicted. There were a few significant mother-father correlations in various addiction scores, but none between mid-parent and child values. Three of the four components of addiction (craving, lack of control and withdrawal), were highly correlated. We conclude that there is little basis for the assumption of a general tendency to become addicted, a conclusion which casts doubt on the derivative notion of an addictive personality.

Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol. Special Issue: College drinking, what it is, and what do to about it: Review of the state of the science* (Suppl. 14), 54-70.

Abstract: OBJECTIVE: This article offers a developmental perspective on college drinking by focusing on broad developmental themes during adolescence and the transition to young adulthood. METHOD: A literature review was conducted. RESULTS: The transition to college involves major individual and contextual change in every domain of life; at the same time, heavy drinking and associated problems increase during this transition. A developmental contextual perspective encourages the examination of alcohol use and heavy drinking in relation to normative developmental tasks and transitions and in the context of students' changing lives, focusing on interindividual variation in the course and consequences of drinking and on a wide range of proximal and distal influences. Links between developmental transitions and alcohol use and other health risks are discussed in light of five conceptual models: Overload, Developmental Mismatch, Increased Heterogeneity, Transition Catalyst and Heightened Vulnerability to Chance Events. We review normative developmental transitions of adolescence and young adulthood, focusing on the domains of physical and cognitive development, identity, affiliation and achievement. CONCLUSIONS: As shown in a selective review of empirical studies, these transitions offer important vantage points for examining increasing (and decreasing) alcohol and other drug use during adolescence and young adulthood. We conclude with a consideration of research and intervention implications.

Shaffer, H. J. (1997). The most important unresolved issue in the addictions: Conceptual chaos. *Subst Use Misuse*, 32 (11), 1573-1580.

Abstract: This article suggests that the field of addiction study and treatment remains in a state of conceptual chaos. The addictions is an emerging scientific field that lacks conceptual clarity. To develop the precision necessary for scientific advance, we must begin by developing improved definitions of substance use, abuse, dependence, and addiction. Complicating matters, psychoactive substance use is not a necessary and sufficient cause of addiction. For example, pathological gamblers experience addiction, including tolerance and withdrawal, often in the absence of any drug use. The neurobiology of subjective experience may be a more important factor in helping to explain addictive behaviors. Consequently, this article concludes that it is improper to consider drugs as the necessary precondition for addiction. Better operational definitions will advance addictions research.

Shaffer, H. J., & Howard, C. (1996). *The history, science and theories of addiction*. Billerica, Mass.: Harvard Medical School Division on Addictions and Billerica School System.

Abstract: In this section, we will review a sampling of the major theoretical models that have been offered to explain substance abuse and addictive behavior patterns. To understand these models fully, they will be presented in their cultural and historical context. An essential requirement for any type of investigation in the addictions is the recognition of the extent and type of biases present in the field. These biases, in part, are due to the “immaturity” of the addictions’ field as a scientific discipline. This immaturity is complicated by the high level of emotion associated with the topic, as well as the lack of conceptual clarity among workers and theorists in the field.

Tarter, R. E. (2002). Etiology of adolescent substance abuse: A developmental perspective. *Am J Addict, 11*(3), 171-191.

Abstract: Approximately 5% of adolescents in the U.S. qualify for a diagnosis of substance use disorder (SUD). Low affect and behavior self-regulation during child development interacting with family, peer and other ecological factors predisposes to substance use in adolescence. Maturation processes during adolescence, particularly involving the brain and reproductive system, exacerbate the low psychological self-regulation evidenced during childhood to promote initiation of alcohol, tobacco, and other drug (ATOD) consumption. This discussion examines the etiology of ATOD abuse and SUD from a developmental perspective. The ramifications of a developmental perspective for clinical practice and social policy are also considered.

Winters, K. C., Latimer, W., & Stinchfield, R. (1999). The DSM-IV criteria for adolescent alcohol and cannabis use disorders. *Journal of Studies on Alcohol, 60*, 337-344.

Abstract: OBJECTIVE: The aims of this study are to compare DSM-IV criteria for alcohol and cannabis use disorders with its predecessor, DSM-III-R, and to examine the validity of the new criteria in an adolescent drug clinic sample. METHOD: During evaluation, a sample of 772 adolescents (63% boys, 77% white) were administered a structured interview of diagnostic symptoms and additional problem severity measures. Independent staff ratings of problem severity and treatment referral were collected as well. RESULTS: Compared to its predecessor, DSM-III-R, application of the DSM-IV criteria for alcohol and cannabis users resulted in more abuse assignments and fewer dependence assignments. The shift in assignments appeared to be largely due to a lowering of the abuse threshold, rather than to a tightening of the dependence criteria. The external validity data generally supported the DSM-IV abuse and dependence distinction in adolescents, and the newer criteria were as valid as the older criteria. CONCLUSIONS: In contrast to DSM-III-R, the DSM-IV system yields more abuse cases and fewer dependence cases among adolescent alcohol and cannabis abusers. Validity evidence for the new criteria are defensible, yet the findings are seen as a starting point for discussing the need for tailoring substance use disorder criteria for adolescents.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality, 68*(6), 999-1029.

Abstract: The first part of this article describes a study of the relationships between personality and risk-taking in six areas: smoking, drinking, drugs, sex, driving, and gambling. The participants, 260 college students, were given self-report measures of risky behaviors in each of the six areas and the Zuckerman-Kuhlman five-factor personality questionnaire. Generalized risk-taking (across all six areas) was related to scales for impulsive sensation seeking, aggression, and sociability, but not to scales for neuroticism or activity. Gender differences on risk-taking were mediated by differences on impulsive sensation seeking. The second part discusses biological traits associated with both risk-taking and personality, particularly sensation seeking, such as the D4 dopamine receptor gene, the enzyme monoamine oxidase, and augmenting or reducing of the cortical evoked potential. Comparative studies show relationships between biological markers shared with other species and correlated behaviors similar to sensation seeking in humans. A biosocial model of the traits underlying risk-taking is presented.

5.2 Correlates

Abdelrahman, A. I., Rodriguez, G., Ryan, J. A., French, J. F., & Weinbaum, D. (1998). The epidemiology of substance use among middle school students: The impact of school, familial, community and individual risk factors. *Journal of Child and Adolescent Substance Abuse*, 8(1), 55-75.

Abstract: This paper examines the correlates of substance use among New Jersey Middle School students, using a representative sample. It employs an epidemiological perspective in which an individual's risk of using cigarettes, alcohol and drugs is predicted to increase in relation to the amount of vulnerability and/or risk an individual faces. Results support the multiple effects of community, school, family, individual, peer and background factors on substance use. Results show that family history of substance abuse treatment is a strong and consistent predictor of current substance use. Abilities of families to institute clear rules against alcohol and drug use have stronger inhabiting effects on substance use than do characteristics of family structure or family conflict. Academic failure and peer use of substances show the strongest and largest effects on current substance use. There are no observed sex differences in smoking or alcohol use but sex differences in drug use persist when all the risk factors were controlled for. The effects of the risk factors on substance use differ by the type of substance being used.

Acierno, R., Kilpatrick, D. G., Resnick, H., Saunders, B., De Arellano, M., & Best, C. (2000). Assault, PTSD, family substance use, and depression as risk factors for cigarette use in youth: Findings from the National Survey of Adolescents. *Journal of Traumatic Stress*, 13(3), 381-396.

Abstract: A national household probability sample of 4,023 adolescents aged 12 to 17 years was surveyed by telephone via structured clinical interview to determine the impact of familial substance use, sexual and physical assault, witnessed violence, depression and posttraumatic stress disorder (PTSD) on risk of smoking. Results indicated that familial substance use increased risk of smoking only for boys and sexual assault or depression increased risk of smoking only for girls. Age, Caucasian ethnicity, and experiencing physical assault or witnessing violence elevated risk of current cigarette use for both genders. By contrast, PTSD per se was not associated with increased risk of smoking, after the effects of other variables were controlled.

Adalbjarnardottir, S. (2002). Adolescent psychosocial maturity and alcohol use: Quantitative and qualitative analysis of longitudinal data. *Adolescence*, 37(145), 19-53.

Abstract: Based on a psychosocial developmental framework, this study used a mixed model design, including both quantitative and qualitative methods, to examine the relationship between adolescents' psychosocial maturity and their alcohol use. A sample of 1,198 10th-grade students (51% female) was surveyed and followed up two years later. Both concurrent and longitudinal findings indicated that the more psychosocially mature adolescents were less likely to drink heavily than those who showed less maturity. At age 15 this relationship was even stronger for those whose peers also drank. Further, at age 17, this linear relationship was more pronounced for those who drank less heavily at age 15. Of the three psychosocial competencies examined, the construct of personal meaning was more strongly related to adolescent alcohol use than were the constructs of interpersonal understanding and interpersonal skills. To illustrate this construct, two of the adolescents were interviewed, a girl and a boy, individually at the end of both school years. Thematic and developmental analyses of the interviews revealed individual variations in how the adolescents made meaning of their drinking; these encourage speculations that go beyond the general pattern found in the study.

Adalbjarnardottir, S., & Rafnsson, F. D. (2002). Adolescent antisocial behavior and substance use: Longitudinal analyses. *Addict Behav*, 27(2), 227-240.

Abstract: This study explores how antisocial behavior among adolescents at age 14 is related longitudinally to their daily smoking, heavy alcohol use, and illicit drug use (hashish and amphetamines) at age 17. The sample of 9th graders (n = 1,293) attending compulsory schools in Reykjavik, Iceland participated in the study and in the follow-up 3 years later. The focus is on a subgroup of 17-year-old adolescents who had not experimented with cigarette smoking, alcohol consumption, or illicit drug use at age 14. Even after eliminating from the study those who had experimented with smoking at age 14 and those whose peers smoked, the adolescents who showed more signs of antisocial behavior at age 14 were more likely to smoke daily at age 17. Similar findings were revealed for illicit drug use at age 17. Further, with regard to alcohol use, adolescents who had not experimented with alcohol but showed indications of antisocial behavior at age 14 were more likely to drink heavily at each episode at age 17 if their parents drank.

Alexander, C., Piazza, M., Mekos, D., & Valente, T. (2001). Peers, schools, and adolescent cigarette smoking. *Journal of Adolescent Health*, 29(1), 22-30.

Abstract: PURPOSE: To investigate the effects of popularity, best friend smoking, and cigarette smoking within the peer networks on current smoking of seventh- through 12th-grade students. These factors were examined for adolescents attending schools with varying rates of student cigarette smoking. METHODS: This study used data from the saturated school sample of National Longitudinal Study of Adolescent Health (Add Health), a nationally representative school-based sample. The sample for the present study was 2,525 adolescents in Grades 7-12 who completed an in-school questionnaire and an in-home interview. Information from the in-school questionnaire was used to construct measures of school smoking prevalence and popularity. Using peer nominations from the in-home interview, best friend smoking and peer network smoking exposure were constructed using the peers' own reports of their cigarette smoking. Multiple regression techniques were used to estimate the risk of current cigarette smoking as a function of popularity, best friend smoking, peer network smoking, and school smoking prevalence, and all first-order interactions between measures of peer and school smoking prevalence. RESULTS: Adjusting for age, gender, race/ethnicity, parent education, school, and availability of cigarettes in the home, the risk of current smoking was significantly associated with peer networks in which at least half of the members smoked [odds ratio (OR) = 1.91], one or two best friends smoked (OR = 2.00), and with increasing rates of school smoking prevalence (OR = 1.73). In addition, there was a significant interaction of popularity and school smoking prevalence such that risk of current smoking was somewhat greater among popular students in schools with high smoking prevalence than among popular students in schools with low smoking prevalence. CONCLUSION: Findings suggest that school environments are important contexts for understanding peer group influences on adolescent cigarette smoking.

Allen, M., Donohue, W. A., Griffin, A., Ryan, D., & Turner, M. M. M. (2003). Comparing the influence of parents and peers on the choice to use drugs. *Criminal Justice & Behavior*, 30(2), 163-186.

Abstract: This literature summary, using meta-analysis, compares the influence of parents versus peers on substance use. The data indicated that the average relationship for peer effects on substance use was larger than the effect for parental influence. Several moderating influences (such as youth age and type of substance) are considered. The findings indicate that the relative size of parental and peer influence varies with the age of the adolescent and the type of substance. The results indicate that both parents and peers influence decisions about substance use. Future educational interventions concerning substance use should consider how best to combine these two sources of influence.

Allison, K. W., Crawford, I., Leone, P. E., Trickett, E., Perez-Febles, A., Burton, L. M., & Le Blanc, R. (1999). Adolescent substance use: Preliminary examinations of school and neighborhood context. *Am J Community Psychol*, 27(2), 111-141.

Abstract: In considering the influences of microsystems on adolescent substance use, familial and peer contexts have received the most extensive attention in the research literature. School and neighborhood settings, however, are other developmental contexts that may exert specific influences on adolescent substance use. In many instances, school settings are organized to provide educational services to students who share similar educational abilities and behavioral repertoires. The resulting segregation of students into these settings may result in different school norms for substance use. Similarly, neighborhood resources, including models for substance use and drug sales involvement, may play an important role in adolescent substance use. We briefly review literature examining contextual influences on adolescent substance use, and present results from two preliminary studies examining the contribution of school and neighborhood context to adolescent substance use. In the first investigation, we examine the impact of familial, peer, and school contexts on adolescent substance use. Respondents were 283 students (ages 13 to 18) from regular and special education classrooms in six schools. Although peer and parental contexts were important predictors of substance use, school norms for drug use accounted for variance in adolescent use beyond that explained by peer and parental norms. Data from a second study of 114 adolescents (mean age = 15) examines neighborhood contributions to adolescent substance use. In this sample, neighborhood indices did not contribute to our understanding of adolescent substance use. Implications for prevention are presented.

Andersen, M. R., Leroux, B. G., Marek, P. M., Peterson, A. V. Jr., Kealey, K. A., Bricker, J., et al. (2002). Mothers' attitudes and concerns about their children smoking: Do they influence kids? *Preventive Medicine*, 34(2), 198-206.

Abstract: BACKGROUND: The effects of mothers' attitudes and concerns about tobacco use on whether their children take up smoking are largely unknown. This study examined the predictive effects of mothers' attitudes about tobacco and concerns about their children smoking. METHODS: Self-reported data from a large number of 12th-grade students (2,736) and their mothers were used. Mothers' attitudes and concerns were assessed when their children were 3rd graders (age 8), at the start of the smoking acquisition period; their children were then followed prospectively (with attrition of only 5%) for 9 years to the end of the period (12th grade) for the assessment of smoking behavior. RESULTS: In households in which both parents are nonsmokers, strong maternal antismoking attitudes are associated with a statistically significant approximately 50% reduction in the prevalence of smoking by adolescent children. In contrast, in households in which one or both parents are current smokers, there was no reduction in adolescent smoking associated with mothers' antismoking attitudes. CONCLUSIONS: Maternal antismoking attitudes when their children are young predict adolescents' adoption of smoking at 12th grade, but only when parental behavior is consistent with these attitudes.

Andrews, J. A., Tildesley, E., Hops, H., & Li, F. (2002). The influence of peers on young adult substance use. *Health Psychology*, 21(4), 349-357.

Abstract: Data collected from 294 young adults, ages 19 to 25, and both a same- and an opposite-gender best friend or mate across 3 annual assessments were analyzed to examine the similarity to and influence of the peer on the young adult's substance use. The authors found similarity across time between both peers and the young adult in cigarette use, alcohol use, binge drinking, and, in most cases, marijuana use. In prospective analyses, peer use predicted young adult cigarette use, binge drinking, and problem use by the young adults. Results were generally consistent across gender and for both same- and opposite-gender peers. Findings emphasize peer influence contribution to young adult substance use and suggest the design of interventions that involve both young adults and their peers.

Anteghini, M., Fonseca, H., Ireland, M., & Blum, R. W. (2001). Health risk behaviors and associated risk and protective factors among Brazilian adolescents in Santos, Brazil. *Journal of Adolescent Health, 28*(4), 295-302. **Abstract:** OBJECTIVE: To describe the prevalence of health risk behaviors and identify risk and protective factors that are associated with several health risk behaviors (cigarette smoking, drug use, onset of sexual intercourse before age 15, pregnancy, gun-carrying, suicidal ideation, and suicide attempts) among adolescents in Brazil, as well as to explore gender differences. METHODS: We estimated prevalence rates, evaluated bivariate associations, and explored multivariate analyses using logistic regression on data from a 1997 survey of adolescent health among 2,059 eighth- and 10th-grade students in Santos, Brazil. RESULTS: Youth in Santos, Brazil report high rates of gun-carrying, suicidal thoughts and attempts, sexual intercourse, and pregnancy. Factors associated with diminished involvement for nearly all health risk behaviors, for both boys and girls, included having good family relationships, and feeling liked by friends and teachers. Factors associated with increases in nearly all health risk behaviors were: gun-carrying and gun availability in the home, drug use, and sexual abuse. CONCLUSIONS: Factors that are associated with a wide range of health risk behaviors among adolescents in Brazil appear to parallel those found in industrialized countries: access to guns, substance use, and sexual abuse. Likewise, connectedness to family, school, and peers is consistently the protective factor associated with diminished risky behaviors.

Ariza-Cardenal, C., & Nebot-Adell, M. (2002). Factors associated with smoking progression among Spanish adolescents. *Health Educ Res, 17*(6), 750-760.

Abstract: Smoking onset takes place in the early years of adolescence, and can be seen as a progression through stages of preparation, trying, experimentation, regular smoking and nicotine dependence or addiction. The objective of this study is to identify 1-year predictors of smoking consolidation among occasional smokers (experimenters) and of cessation among all smokers. A questionnaire developed to monitor trends in smoking and other health-related behaviors was administered in the spring of 1992 and again 1 year later (1993). The survey was carried out in six large, private schools in Barcelona and Raimat, in the Lleida province, in Catalonia (Spain). In total, 1,460 schoolchildren aged 12-19 responded to both the baseline and follow-up questionnaires; 1,236 questionnaires (84.7%) were matched through a personal code and were used for the longitudinal study. At the baseline survey, 28% of the schoolchildren were regular smokers and 17.1 % were occasional smokers, with no differences by gender. At the follow-up survey, progression from occasional to regular smoking was observed in 42% of the girls and 22.7% of the boys. Other predictors of consolidation included drinking alcohol (OR = 3.1; 95% CI = 1.1-10.1) and reporting the intention to smoke in the future (OR = 2.5; 95% CI = 1.3-4.9). Among all the smokers at the baseline, predictors of cessation were smoking occasionally (versus regularly) (OR = 4.9; 95% CI = 2.8-8.6), negative attitudes regarding smoking (OR = 3.3; 95% CI = 1.9-5.4), reporting no intention to smoke in the future (OR = 2.2; 95% CI = 1.3-3.8), gender (OR for boys = 2.1; 95% CI = 1.2-3.6), receiving weekly pocket less than 1,000 ptas (OR = 1.7; 95% CI = 1.1-5.3) and age (OR for being 15 and younger = 1.6; 95% CI = 1.1-4.9). We conclude that consolidation of smoking is twice as likely among girls than among boys. Intention to smoke seems to be a good predictor of future behavior, while attitudes may predict cessation, but not consolidation. Available pocket money seems to be a strong risk factor for smoking at this age.

Armstrong, T. D., & Costello, E. J. (2002). Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. *Journal of Consulting & Clinical Psychology. Special Issue: Impact of Childhood Psychopathology Interventions on Subsequent Substance Abuse, 70*(6), 1224-1239.

Abstract: A literature review on community studies of adolescent substance use, abuse, or dependence (SU/A/D) and psychiatric comorbidity yielded 22 articles from 15 studies with information on rates, specificity, timing, and differential patterns of comorbidity by gender, race/ethnicity, and other factors. Results revealed that 60% of youths with SU/A/D had a comorbid diagnosis, and conduct disorder (CD) and oppositional defiant disorder (not attention-deficit/hyperactivity disorder) were most commonly associated with SU/A/D, followed by depression. Child psychopathology (particularly CD) was associated with early onset of substance use and abuse in later adolescence. The authors suggest that available data relevant to SU/A/D and psychiatric comorbidity can be used to better address such questions.

Ary, D. V., Duncan, T. E., Biglan, A., Metzler, C. W., Noell, J. W., & Smolkowski, K. (1999). Development of adolescent problem behavior. *Journal of Abnormal Child Psychology*, 27(2), 141-150.

Abstract: The developmental model of adolescent antisocial behavior advanced by Patterson and colleagues (e.g., Patterson, Reid, & Dishion, 1992) appears to generalize the development of a diverse set of problem behaviors. Structural equation modeling methods were applied to 18-month longitudinal data from 523 adolescents. The problem behavior construct included substance use, antisocial behavior, academic failure, and risky sexual behavior. Families with high levels of conflict were less likely to have high levels of parent-child involvement. Such family conditions resulted in less adequate parental monitoring of adolescent behavior, making associations with deviant peers more likely. Poor parental monitoring and associations with deviant peers were strong predictors of engagement in problem behavior. These constructs accounted for 46% of the variance in problem behavior. Although association with deviant peers was the most proximal social influence on problem behavior, parental monitoring and family factors (conflict and involvement) were key parenting practices that influenced this developmental process.

Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behaviour Research and Therapy*, 37(3), 217-230.

Abstract: This paper presents evidence that the Patterson et al. (1992) model of development of antisocial behavior in children generalizes to the development of a wide array of problem behaviors during later adolescence and that youth antisocial behavior, high-risk sexual behavior, academic failure and substance use form a single problem behavior construct. Structural equation modeling methods were applied to 24-month longitudinal data from 204 adolescents and parents. The model fit the data well, accounting for 52% of the variance in adolescent problem behavior. Specifically, families experiencing high levels of conflict were more likely to have low levels of parent-child involvement. These family conditions were related to poor parental monitoring and association with deviant peers one year later. Poor parental monitoring and associations with deviant peers were strong proximal predictors of engagement in an array of problem behaviors at two-year follow-up.

Atav, S., & Spencer, G. A. (2002). Health risk behaviors among adolescents attending rural, suburban, and urban schools: A comparative study. *Family & Community Health*, 25(2), 53-64.

Abstract: This study describes differences in health risk behaviors among 2,017 adolescents attending rural, suburban, and urban school districts in upstate New York. Differences in risk behaviors regarding use of tobacco, alcohol, and illegal substances; sexual activity; and carrying weapons were analyzed. A consistent pattern emerged from the analysis of the data, with rural students at most risk. The findings reinforce the need to focus on the relationship between residence and health risk behaviors, so that intervention programs specific to the needs of rural, suburban, and urban adolescents can be developed.

Atkins, L. A., Oman, R. F., Vesely, S. K., Aspy, C. B., & McLeroy, K. (2002). Adolescent tobacco use: The protective effects of developmental assets. *Am J Health Promot*, 16(4), 198-205.

Abstract: PURPOSE: To examine the effects of 10 youth developmental assets on adolescent tobacco use. DESIGN: Survey of a randomly selected sample using in-home interviewing methodology. SETTING: Inner-city areas of two midsized Midwestern cities. SUBJECTS: The researchers studied 1,350 teen-parent pairs. MEASURES: Demographic information, adolescent self-reported tobacco use, eight developmental asset Likert scales, and two one-item developmental asset measures. RESULTS: The response rate was 51%. Logistic regression results indicate that youth who possess nine of 10 developmental assets examined are significantly less likely to report tobacco use than youth with low levels of assets. Adjusting for youth age, race, gender, parental income and education, and family structure, significant odds ratios include the following: nonparental adult role model, 2.09 (95% confidence interval [CI] = 1.45, 3.02); peer role models, 2.48 (95% CI = 1.87, 3.29); family communication, 1.73 (95% CI = 1.29, 2.31); use of time (organized groups), 1.77 (95% CI = 1.28, 2.44); use of time (religion), 2.49 (95% CI = 1.86, 3.33); good health practices (exercise/nutrition), 1.61 (95% CI = 1.21, 2.14); community involvement, 1.66 (95% CI = 1.07, 2.58); future aspirations, 2.06 (95% CI = 1.42, 2.99); and responsible choices, 2.21 (95% CI = 1.55, 3.15). CONCLUSIONS: The findings of this study support the view that certain developmental assets may serve to protect youth from risk-taking behaviors, particularly tobacco use. Limitations include cross-sectional data and three scales with alphas below .7.

Ausems, M., Mesters, I., van Breukelen, G., & De Vries, H. (2003). Do Dutch 11-12 years olds who never smoke, smoke experimentally or smoke regularly have different demographic backgrounds and perceptions of smoking? *European Journal of Public Health, 13*(2), 160-167.

Abstract: BACKGROUND: Most adolescent smokers start smoking before the age of twelve. Little is known about the behavioural smoking determinants of Dutch primary school children. METHODS: A cross-sectional study was carried out on a sample of students from the final year of 143 Dutch primary schools. A total of 3,700 students (mean age = 11.6 years) completed a questionnaire based on the ASE model, measuring the attitude, social influences and self-efficacy expectations concerning smoking. RESULTS: Students were categorized as never smokers (64.3%), experimental smokers (28.0%), and regular smokers (7.8%). Multinomial logistic regression analyses showed that never smokers were younger, and were more often female, religious and from two-parent families than experimental smokers. Never smokers perceived more disadvantages, long-term physical consequences, more negative social norms, and less pressure regarding smoking, higher self-efficacy expectations towards non-smoking, and had fewer parents, siblings or best friends who smoked. Looking at differences between experimental and regular smokers showed that experimental smokers received less pocket money. They also perceived more disadvantages, fewer advantages, more negative social norms and less pressure towards smoking, higher self-efficacy expectations towards non-smoking, and were less likely to be surrounded by friends, peers, family or teachers who smoked. Generally, the low scores for physical consequences and risk perception regarding addiction were striking. CONCLUSIONS: Smoking prevention aimed at primary schoolchildren should consider the different smoking categories, with their specific motives and influences. For instance, the influences on smoking initiation of parents, siblings and best friends suggest more comprehensive programmes aimed at the entire family. Youngsters' ignorance of addiction needs more attention.

Austin, E. W., Pinkleton, B. E., & Fujioka, Y. (2000). The role of interpretation processes and parental discussion in the media's effects on adolescents' use of alcohol. *Pediatrics, 105*(2), 343-349.

Abstract: OBJECTIVE. The process that connects media use with alcohol-related beliefs and behaviors has not been well documented. To address this issue, we examined adolescents' viewing patterns, beliefs about alcohol and media messages, and parental discussion of media messages in the context of a theoretical model of message interpretation processes. Measures included the degree to which adolescents found portrayals desirable, realistic, and similar to their own lives; the degree to which they wanted to be like (identify with) the portrayals; and the degree to which they associated positive outcomes with drinking alcohol (expectancies). DESIGN. Cross-sectional survey. SETTING. Two public high schools in the California central coastal area that include a diverse population in terms of ethnic origin, income level, and education level. PARTICIPANTS. Ninth-grade students (n = 252) and 12th-grade students (n = 326). OUTCOME MEASURES. Students reported the number of days within the past week watching various genres of television content, along with perceptions of realism of content, desirability of portrayals, identification with portrayals, expectancies toward alcohol use, personal norms for alcohol use, desire for products with alcohol logos, current alcohol use, frequency of parental reinforcement, and counter-reinforcement of television messages. Associations were examined via hierarchical multiple regression analysis. RESULTS. Effects of media exposure on drinking behavior, controlling for grade level, ethnicity, gender, household income, and education levels were primarily positive and indirect, operating through a number of intervening beliefs, especially expectancies (beta = .59; r(2) = .33). Direct associations, primarily with exposure to late-night talk shows (beta = .12; r(2) = .01), were small. Parental discussion also affected behavior indirectly, operating through expectancies, identification, and perceived realism. The appeal of products with alcohol logos, which was higher among the younger students (t = 3.44) and predicted by expectancies (beta = .37; r(2) = .13), sports viewing (beta = .17; r(2) = .03) and late-night talk shows (beta = .10; r(2) = .01), predicted actual drinking behavior (beta = .22; r(2) = .04). Drinking behavior was higher among the older students (t = -2.515). CONCLUSIONS. Adolescents make drinking decisions using a progressive, logical decision-making process that can be overwhelmed by wishful thinking. The potential risk of frequent exposure to persuasive alcohol portrayals via late-night talk shows, sports, music videos, and prime-time television for underage drinking is moderated by parental reinforcement and counter-reinforcement of messages. Interventions need to acknowledge and counter the appeal of desirable and seemingly realistic alcohol portrayals in the media and alert parents to their potential for unintended adverse effects.

Avenevoli, S., & Merikangas, K. R. (2003). Familial influences on adolescent smoking. *Addiction, 98*(Suppl. 1), 1-20.

Abstract: The family unit is the primary source of transmission of basic social, cultural, genetic, and biological factors that may underlie individual differences in smoking. Existing information on the role of familial factors in tobacco use is characterized by two separate, but somewhat overlapping, lines of research: genetic epidemiological studies and risk-factor research. The present paper summarizes and evaluates studies assessing the association between adolescent smoking and parent and sibling smoking behaviors. A review of 87 studies reveals that methods are limited by a lack of standardized instruments, failure to measure important confounding and mediating factors, reliance on cross-sectional designs, and the use of inconsistent definitions of tobacco-related behavior and assessment procedures. Moreover, there are no systematic family studies of the acquisition and continuation of smoking that have employed contemporary methodological standards for examining familial aggregation of tobacco behaviors among adolescents. Findings across studies show weak and inconsistent associations between parent and adolescent smoking; inconsistent findings may be attributed to methodological issues or associated factors that may complicate the relation between parent and adolescent smoking. Sibling and peer smoking show greater associations with adolescent smoking. Suggestions for future research include contemporary family studies that delineate meaningful phenotypes of tobacco use and prospective work on the later stages of tobacco use and the timing of the influence and valence of parent and family factors. Integration of the risk factor approach within the family study design may enrich both approaches to elucidate familial influences on smoking.

Baker, J. R., & Yardley, J. K. (2002). Moderating effect of gender on the relationship between sensation seeking-impulsivity and substance use in adolescents. *Journal of Child & Adolescent Substance Abuse, 12*(1), 27-43.

Abstract: This study examined the moderating effect of gender on the predictive relationships between a measure of sensation seeking and impulsivity and four adolescent substance use outcomes (monthly alcohol, tobacco, and marijuana use and number of times drunk). Four hundred twenty Canadian secondary school students (mean age 15.5 yrs) participated in the current study. A series of moderated hierarchical multiple regression analyses was used to examine relationships among study variables. Main-effect relationships were consistently found for sensation seeking-impulsivity with each outcome, but not for gender. However, gender was found to moderate the relationship between sensation seeking-impulsivity and alcohol use, suggesting that these relationships are more complex than previous literature suggests.

Barkin, S. L., Smith, K. S., & DuRant, R. H. (2002). Social skills and attitudes associated with substance use behaviors among young adolescents. *Journal of Adolescent Health 30*(6), 448-454.

Abstract: **PURPOSE:** To examine how adolescents' attitudes and social skills affect current substance use and intentions to use substances in the future. **METHODS:** An anonymous questionnaire was administered to 2,646 seventh graders in their classrooms. The questionnaire was developed to measure the frequency of tobacco, alcohol, and other substance use, anticipated use, positive attitudes toward drug use, self-efficacy to say "no," decision-making skills, advertising-viewing skills, anxiety-reducing skills, communication skills, drug-resistance skills, perception of peer substance use, and weapon-carrying behavior. Ethnicity classified respondents as "white" or "students of color" and family structure indicated one vs. two-parent families. Data were analyzed with Spearman's r, analysis of variance, and multiple linear regression. **RESULTS:** Forty-one percent of students were minority, 50.6% female, over 90% were either 12- or 13-year-olds, and 69.9% lived in two-parent families. A multiple linear regression model demonstrated that self-efficacy to say "no," positive attitudes toward drug use, perception of peer substance use, male gender, weapon-carrying, and fighting accounted for 51% of the variation in the current use multiple substance scale. Anticipated substance use during the subsequent year was significantly associated with current substance use, positive attitudes toward drug use, self-efficacy to say "no," drug-resistance skills, weapon-carrying, and fighting behavior. This model accounted for 73.9% of the variance in anticipated substance use. **CONCLUSIONS:** In today's world, where drug use is common, building adolescents' drug-resistance skills and self-efficacy, while enhancing decision-making capacity, may reduce their use of illegal substances.

Barnes, G. M., Welte, J. W., & Hoffman, J. H. (2002). Relationship of alcohol use to delinquency and illicit drug use in adolescents: Gender, age, and racial/ethnic differences. *Journal of Drug Issues, 32*(1), 153-178.

Abstract: Alcohol use has been linked to other substance use and delinquency in adolescents. However, few studies have examined variations in these relationships in representative subsamples of gender, age and racial/ethnic groups. Respondents in this study were 19,321 New York State 7-12th grade students. After controlling for significant sociodemographic factors in a regression analysis, all of the alcohol measures remained strong predictors of both delinquency and illicit drug use. Significant interactions between alcohol measures and gender, age and racial/ethnic groups were also found. For example, the relationship between binge drinking and delinquency was stronger for males than females. The relationships between alcohol measures and both delinquency and illicit drug use were stronger for younger adolescents than older adolescents. American Indians showed an added risk over other groups of being delinquent and using illicit drugs if they began drinking at an early age. Prevention efforts to delay initiation into alcohol use are likely to have effects not only on alcohol misuse but also on the development of other substance use and delinquency.

Bauman, K. E., Carver, K., & Gleiter, K. (2001). Trends in parent and friend influence during adolescence: The case of adolescent cigarette smoking. *Addictive Behaviors, 26*(3), 349-361.

Abstract: A common characterization of adolescence is that parent influence decreases and friend influence increases as adolescents age. From that, we hypothesized that the association between parent and adolescent smoking decreases and the association between friend and adolescent smoking increases as adolescents become older. The hypothesis is tested with data from The National Longitudinal Study of Adolescent Health. Adolescent smoking is measured as progressions to more frequent smoking and as continuations from prior smoking levels. There is no support for the hypothesis, a finding consistent with the earlier panel study that tested it. The age-specific findings are discussed in the context of programs designed to influence adolescent cigarette smoking and why the hypothesis that drove this study was not confirmed. Among supplementary findings reported is that adolescent smoking is more influenced by friend smoking than by parent smoking.

Beal, A. C., Ausiello, J., & Perrin, J. M. (2001). Social influences on health-risk behaviors among minority middle school students. *J Adolesc Health, 28*(6), 474-480.

Abstract: **PURPOSE:** To determine whether parent social influences are associated with health-risk behaviors more than peer social influences among young minority adolescents. **METHODS:** We conducted a cross-sectional survey of seventh-grade students in a public urban magnet middle school using a survey instrument adapted from the Centers for Disease Control and Prevention Youth Risk Behavior Survey. The sample consisted of all seventh-grade students in the school, and the survey was part of a needs assessment for a school-based health education program. We measured four health-risk behaviors--use of (a) tobacco, (b) alcohol, (c) onset of sexual activity, and (d) marijuana use--and five social influences: (a) parent disapproval of health-risk behaviors, (b) parent modeling of health-risk behaviors, (c) parent monitoring of health-risks, (d) peer disapproval of health risks, and (e) peer modeling of health-risk behaviors. The analyses included measures of the prevalence of health-risk behaviors, bivariate analyses to evaluate relationships between health-risk behaviors and social influences, and regression analyses to determine the independent associations of the social influences with the four health-risk behaviors. **RESULTS:** Twenty percent of respondents reported using tobacco, over 50% used alcohol in the past year, 13.3% were sexually active, and 12% reported marijuana use. Parent influences were associated with differences in alcohol use, whereas peer influences were associated with differences in all measured health-risk behaviors: tobacco and alcohol use, sexual activity, and marijuana use. Regression analyses demonstrated that peer social influences were the only measures independently associated with abstinence from tobacco ($p < .05$), alcohol ($p < .01$), sexual activity ($p < .05$), and marijuana use ($p < .05$). In all analyses, peers emerged as the most consistent social influence on health-risk behavior. **CONCLUSION:** This study suggests peers and peer group behavior may be better predictors of adolescent health-risk behaviors than parental social influences among young adolescents.

Beauvais, F., & Oetting, E. R. (2002). Variances in the etiology of drug use among ethnic groups of adolescents. *Public Health Reports, 117*(Suppl. 1), S8-14.

Abstract: OBJECTIVE: This article reviews drug use trends among ethnic groups of adolescents. It identifies similarities and differences in general, and culturally specific variables in particular, that may account for the differences in drug use rates and the consequences of drug use. METHODS: The authors review trends in drug use among minority and nonminority adolescents over the past 25 years and propose an explanatory model for understanding the factors that affect adolescent drug use. Sources of variance examined include factors common to all adolescents, factors unique to certain ethnic groups, temporal influences, location and demographic variables, developmental and socialization factors, and individual characteristics. RESULTS: Most of the variance in adolescent drug use is due to factors that are common across ethnic groups. CONCLUSION: This finding should not overshadow the importance of addressing ethnocultural issues in designing prevention or treatment interventions, however. Although the major factors leading to drug use may be common across ethnic groups, unique elements within a culture can be used effectively in interventions. Interventions also need to address culturally specific issues in order to gain acceptance within a community.

Beitchman, J. H., Adlaf, E. M., Douglas, L., Atkinson, L., Young, A., Johnson, C., et al. (2001). Comorbidity of psychiatric and substance use disorders in late adolescence: A cluster analytic approach. *American Journal of Drug & Alcohol Abuse, 27*(3), 421-440.

Abstract: Cluster analysis was used to identify subgroups of youths with past-year substance and/or psychiatric disorders (N = 110, mean age 19.0 years). Data for this study came from a community-based, prospective longitudinal investigation of speech/language (S/L) impaired children and matched controls who participated in extensive diagnostic and psychosocial assessments at entry into the study at 5 years of age and again at follow-up. Clustering variables were based on five DSM diagnostic categories assessed at age 19 with the University of Michigan Composite International Diagnostic Interview. Using Ward's method, the five binary variables were entered into a hierarchical cluster analysis. An iterative clustering method (K-means) was then used to refine the Ward solution. Finally, a series of analyses of variance (ANOVAs) were run to analyze group differences between clusters on measures of Global Assessment of Functioning (GAF), criminal involvement, anxiety and depressive symptomatology, and frequency of drug use and heavy drinking. The analysis yielded eight replicable cluster groups, which were labeled as follows: (a) anxious (20.9%); (b) anxious drinkers (5.5%); (c) depressed (16.4%); (d) depressed drug abusers (10%); (e) antisocial (16.4%); (f) antisocial drinkers (10%); (g) drug abusers (8.2%); and (h) problem drinkers (12.7%). These groups were differentiated by external criteria, thus supporting the validity of our cluster solution. Cluster membership was associated with a history of S/L impairment: A large proportion of the depressed drug abusers and the antisocial cluster group had S/L impairment that was identified at age 5. Clarification of the developmental progress of the youths in these cluster groups can inform our approach to early intervention and treatment.

Belcher, H. M., & Shinitzky, H. E. (1998). Substance abuse in children: Prediction, protection, and prevention. *Arch Pediatr Adolesc Med*, 152(10), 952-960.

Abstract: OBJECTIVE: To review the latest studies on risk and protective factors for the development of substance abuse and the effectiveness of prevention interventions for the pediatric population. DATA SOURCES: Multiple bibliographic databases, including MEDLINE and ERIC, were used to develop a comprehensive review of the literature on substance abuse prevention during the last 10 years. Selected indexing terms included substance abuse prevention, risk factors, and protective factors. Research monographs from the National Institute on Drug Abuse and the Center for Substance Abuse Prevention were used, along with information from authors of prevention curricula. STUDY SELECTION: Study populations included children from birth through adolescence who were enrolled in controlled, prospective, and/or longitudinal studies of either protective or risk factors for the development of substance abuse or response to substance abuse prevention programs. Studies of adult patients that investigated predisposing risk factors for substance abuse (e.g., genetic implications) were also used. Care was taken to ensure studies included children from diverse racial and social backgrounds. DATA EXTRACTION: Information was abstracted and summarized from peer-reviewed publications. Controlled random-designed studies were used to determine prevention program efficacy. DATA SYNTHESIS: Main results of the review are summarized in a qualitative format. CONCLUSIONS: Factors that contribute to the emergence of substance abuse in the pediatric population are multifactorial. Behavioral, emotional, and environmental factors that place children at risk for the development of substance abuse may be remediated through prevention and intervention programs that use research-based, comprehensive, culturally relevant, social resistance skills training and normative education in an active school-based learning format.

Bell, N. J., Forthun, L. F., & Sun, S. W. (2000). Attachment, adolescent competencies, and substance use: Developmental considerations in the study of risk behaviors. *Substance Use & Misuse*, 35(9), 1177-1206.

Abstract: Social-control-based deviance theories highlight parental bonding as a protective factor for problem behaviors in that bonds are viewed as reflecting the adolescent's adoption of conventional societal attitudes and values. Developmental theory and research suggest an alternative conceptualization of the linkages between family bonding and adolescent risk behaviors. This conceptualization requires concurrent examination of a range of adolescent competencies as well as consideration of parent and peer contexts. Support is found for several hypotheses derived from a developmental approach proposing: (a) positive associations between adolescent-parent attachment and adolescent competencies--autonomy, peer relationship competency, and coping; (b) coherence in the pattern of negative associations between attachment/competencies and substance use problems; and (c) a disjunctive pattern of associations with substance use reflected by positive associations with peer competencies but not with parental attachment.

Beman, D. S. (1995). Risk factors leading to adolescent substance abuse. *Adolescence*, 30(117), 201-208.

Abstract: The risk factors leading to adolescent substance abuse were examined to provide greater understanding of their influence. The risk factors were divided into four major categories: demographic, social, behavioral, and individual. Each category was broken down into its respective components, among which are ages of susceptibility; gender differences; the influences of family, peers, and environment; the influence of past use of substances; the relationship between substance abuse and other problem behaviors; and the relationships between substance abuse and academic achievement, psychological variables, and student employment. Background information on the prevalence of adolescent substance abuse is also provided.

Best, D., Rawaf, S., Rowley, J., Floyd, K., Manning, V., & Strang, J. (2000). Drinking and smoking as concurrent predictors of illicit drug use and positive drug attitudes in adolescents. *Drug & Alcohol Dependence*, 60(3), 319-321.

Abstract: The study investigates the relationship between smoking and drinking, and the use of illicit drugs in a cohort of London adolescents. A high prevalence of drug experimentation and positive attitudes to illicit drug use were characteristic of those who both drank alcohol and smoked cigarettes on a regular basis. There was then a clear hierarchy in which lower prevalence of use and more negative attitudes marked those who only smoked, then those who only drank, while non-smokers and non-drinkers (the largest group) had lowest lifetime and recent drug use prevalence and the most negative attitudes about drug use.

Biederman, J., Faraone, S., Monuteaux, M. C., & Feighner, J. A. (2000). Patterns of alcohol and drug use in adolescents can be predicted by parental substance use disorders. *Pediatrics*, *106*(4), 792-797.

Abstract: OBJECTIVE: To examine the specificity of risk for alcohol or drug abuse or dependence (substance use disorders [SUDs]) in offspring exposed to particular subtypes of parental SUDs. METHODS: The original sample was derived from 2 groups of index children: 140 attention-deficit/hyperactivity disorder (ADHD) probands and 120 non-ADHD comparison probands. These groups had 174 and 129 biological siblings and 279 and 240 parents, respectively. RESULTS: Independent of familial risk, exposure to parental SUDs predicted SUDs in the offspring. Controlling for duration of exposure, we found that adolescence was a critical developmental period for exposure to parental SUDs. Because all our analyses controlled for social class, ADHD status, and parental lifetime history of SUDs, these results show that exposure to parental SUDs predicts offspring SUDs independently of these risk factors. CONCLUSIONS: These results support the critical importance of familial environmental risk factors for the development of SUDs in youth in general and particularly in those at high risk for these disorders. These results highlight adolescence as a critical period for the deleterious effects of exposure to parental SUDs, supporting the need to develop preventive and early intervention strategies targeted at adolescents at high risk for SUDs.

Biglan, A., Duncan, T. E., Ary, D. V., & Smolkowski, K. (1995). Peer and parental influences on adolescent tobacco use. *J Behav Med*, *18*(4), 315-330.

Abstract: Longitudinal models of the development of adolescent smoking and smokeless tobacco (ST) use were tested for a sample of 643 adolescents, age 14 to 17. The sample was assessed at three time points. Smoking, smokeless tobacco, and other problem behaviors formed a single problem behavior factor. Structural equation modeling indicated that inadequate parental monitoring and association with deviant peers at Time 2 predicted tobacco use at Time 3. When parental and peer smoking at Time 2 were added to the model, each accounted for significant variance in predicting Time 3 smoking, but inadequate parental monitoring and association with deviant peers still accounted for some of the variance in Time 3 smoking. In predicting boys' smokeless tobacco use, monitoring at Time 2 predicted smokeless tobacco use, but only when parental approval of ST use was not included. Fathers approval of ST use at Time 2 predicted ST use at Time 3, while maternal disapproval predicted its use.

Bjarnason, T., Andersson, B., Choquet, M., Elekes, Z., Morgan, M., & Rapinett, G. (2003). Alcohol culture, family structure and adolescent alcohol use: Multilevel modeling of frequency of heavy drinking among 15-16 year old students in 11 European countries. *Journal of Studies on Alcohol*, *64*(2), 200-208.

Abstract: Frequency of heavy alcohol use among adolescents is examined by family structure and propensity toward heavy alcohol use on the individual level, and by alcohol availability and drinking patterns among adolescents on the societal level. The analysis includes direct effects and moderating effects of societal-level indicators on individual-level associations between family structure and frequency of heavy alcohol use. Method: The study drew upon self-reports from 34,001 students (15-16 yrs old) in Cyprus, France, Hungary, Iceland, Ireland, Lithuania, Malta, the Slovak Republic, Slovenia, Sweden and the United Kingdom participating in the 1999 European School Survey Project on Alcohol and Other Drugs study. Distinctions were drawn between adolescents living with both parents, a single mother, a single father, a mother and stepfather, a father and stepmother, and neither biological parent. The multilevel analysis estimated the effects of societal-level factors on the intercepts and slopes of individual-level regression models.

Bjarnason, T., Davidaviciene, A. G., Miller, P., Nociar, A., Pavlakis, A., & Stergar, E. (2003). Family structure and adolescent cigarette smoking in eleven European countries. *Addiction, 98*(6), 815-824.

Abstract: Examined the relationships between different types of non-traditional family structures and adolescent cigarette smoking, and differences between various European countries. 33,978 students in Cyprus, France, Hungary, Iceland, Ireland, Lithuania, Malta, the Slovak Republic, Slovenia, Sweden, and the UK reported levels of cigarette smoking and family living situations. Results show that Ss living with both biological parents smoked less than those living with single mothers, who in turn smoked less than those living with single fathers, mothers and stepfathers, or with neither biological parent. Living with fathers and stepmothers did not differ from living with both biological parents or single mothers. The effects of living with single mothers, single fathers, or with neither biological parent were stronger in countries where such family types are less common. Differences in the strength of effects between countries become non-significant once the prevalence of each family type was taken into account. It is concluded that adolescents living with both biological parents smoke less than their counterparts in most other family types. The strength of this pattern varies inversely with the prevalence of such households in each country.

Blum, R. W., Beuhring, T., Shew, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health 90*(12), 1879-1884.

Abstract: OBJECTIVES: The study examined the unique and combined contributions of race/ethnicity, income, and family structure to adolescent cigarette smoking, alcohol use, involvement with violence, suicidal thoughts or attempts, and sexual intercourse. METHODS: Analyses were based on the National Longitudinal Study of Adolescent Health. A nationally representative sample of 7th to 12th graders participated in in-home interviews, as did a resident parent for 85.6% of the adolescent subjects. The final sample included 10,803 White, Black, and Hispanic 7th to 12th graders. RESULTS: White adolescents were more likely to smoke cigarettes, drink alcohol, and attempt suicide in the younger years than were Black and Hispanic youths. Black youths were more likely to have had sexual intercourse; both Black and Hispanic youths were more likely than White teens to engage in violence. Controlling for gender, race/ethnicity, income, and family structure together explained no more than 10% of the variance in each of the 5 risk behaviors among younger adolescents and no more than 7% among older youths. CONCLUSIONS: Findings suggest that when taken together, race/ethnicity, income, and family structure provide only limited understanding of adolescent risk behaviors.

Bonomo, Y. (2003). Adolescent alcohol and other substance use: Sharing the Australian experience. *Annals of the Academy of Medicine, Singapore, 32*(1), 29-35.

Abstract: Substance use is common among adolescents. Although substance use may be a manifestation of experimentation in adolescent development, it may have more serious implications. It may be an indicator of emotional disturbance, or may be associated with several other health risk behaviours in adolescence. Substance use may also progress to harmful levels that can have a significant impact on a young person's health. Health professionals are increasingly being exposed to teenagers who use alcohol and drugs. The following article aims to provide, based on clinical and research experience in a number of institutions in Melbourne, Australia, an overview of the epidemiology of adolescent drug use, a clinical approach to assess substance use in young people, and the principles of management of drug use in adolescence.

Booth-Butterfield, M., Anderson, R. H., & Booth-Butterfield, S. (2000). Adolescents' use of tobacco, health locus of control, and self-monitoring. *Health Communication, 12*(2), 137-148.

Abstract: This study examined the association of the traits, health locus of control, and self-monitoring with adolescents' tobacco uptake. Participants were 112 rural adolescents (12 to 19 years old, M = 15.3). Of that sample, 33% used tobacco. Tobacco users were found to score lower on the dimension of Internality and higher on the dimension of Chance, as compared with nonusers of tobacco, indicating a more external Health Locus of Control. In addition, tobacco users were lower self-monitors than were nonusers. These results suggest that adolescents who use tobacco feel less in control of their lives in relation to nonusers, believe that chance plays a larger role in their health, and believe they may be unable to monitor and adapt their communication to achieve positive outcomes.

Boys, A., Farrell, M., Taylor, C., Marsden, J., Goodman, R., Brugha, T., et al. (2003). Psychiatric morbidity and substance use in young people aged 13-15 years: Results from the child and adolescent survey of mental health. *British Journal of Psychiatry*, *182*(6), 509-517.

Abstract: Psychoactive substance use is strongly associated with psychiatric morbidity in both adults and adolescents. The aim of this study was to determine which of alcohol, nicotine and cannabis is most closely linked to psychiatric disorders in early adolescence. Data from 2,624 adolescents aged 13-15 years were drawn from a national mental health survey of children. The relationship between psychiatric morbidity and smoking, drinking, and cannabis use was examined by logistic regression analyses. Having a psychiatric disorder was associated with an increased risk of substance use. Greater involvement with any one substance increased the risk of other substance use. Analyses of the interactions between smoking, drinking and cannabis use indicated that the relationship between substance use and psychiatric morbidity was primarily explained by regular smoking and (to a lesser extent) regular cannabis use. In this sample, links between substance use and psychiatric disorders were primarily accounted for by smoking. The strong relationship is likely to be due to a combination of underlying individual constitutional factors and drug-specific effects resulting from consumption over the period of adolescent development and growth.

Bravender, T., & Knight, J. R. (1998). Recent patterns of use and associated risks of illicit drug use in adolescents. *Curr Opin Pediatr*, *10*(4), 344-349.

Abstract: Addressing adolescent substance abuse presents a tremendous challenge to the practicing clinician. Despite ongoing educational and preventive services, and despite increasing governmental interdiction, substance use by adolescents continues to be a major national problem. Although present rates of use are lower than the peak rates in the late 1970s, drug use among adolescents nearly doubled in the early 1990s and is a significant cause of morbidity and mortality. Patterns of use continue to evolve. Newer drugs make their way to the streets, and older drugs are rediscovered. Behavioral and environmental factors increase the risk for adolescent substance abuse. Identification of use patterns and familiarity with comorbid behaviors and social risks may help the clinician identify the adolescent at risk.

Bray, J. H., Adams, G. A., Getz, J. G., & McQueen, A. (2003). Individuation, peers and adolescent alcohol use: A latent growth analysis. *Journal of Consulting & Clinical Psychology*, *71*(3), 553-564.

Abstract: The study used latent growth modeling to investigate longitudinal relationships between individuation, peer alcohol use, and adolescent alcohol use among African American, Mexican American, and non-Hispanic White adolescents (N=6,048) from 7th, 8th, and 9th grades over a 3-year period. Initial levels of peer alcohol use were significantly related to changes in adolescents' alcohol use, whereas initial adolescent alcohol use also significantly related to changes in peers' alcohol use, suggesting a bidirectional relationship. Higher levels of intergenerational individuation were related to smaller increases in adolescent alcohol use and higher levels of separation were related to larger increases in youth drinking. The findings were similar across ethnic groups. Implications for development of prevention and intervention programs are discussed.

Bray, J. H., Adams, G. A., Getz, J. G., & Stovall, T. (2001). Interactive effects of individuation, family factors, and stress on adolescent alcohol use. *American Journal of Orthopsychiatry*, *71*(4), 436-449.

Abstract: A prospective, school-based study of increasing alcohol use in a multi-ethnic sample of 7,540 adolescents showed that the effects of stress, family conflict, and parental monitoring were differentially moderated by two modes of individuation. The effects of stress were moderated by ethnic status and individuation. Implications for prevention and intervention are discussed.

Brener, N. D., & Collins, J. L. (1998). Co-occurrence of health-risk behaviors among adolescents in the united states. *Journal of Adolescent Health, 22*(3), 209-213.

Abstract: Purpose: Although it is common for adolescents to experiment with several health-risk behaviors before reaching adulthood, little is known about the co-occurrence of these behaviors. The purposes of this study were to determine the co-occurrence of specific health-risk behaviors among a nationally representative sample of adolescents, and to examine whether the distribution of multiple risk behaviors varies by age, sex, and school enrollment status. Methods: This study analyzed survey data from a United States national probability sample (n = 10,645) of youth aged 12-21 years. Survey items measuring current seat belt use, weapon carrying, tobacco, alcohol, and other drug use, and sexual behavior were included in the analysis. Results: The majority of adolescents aged 12-17 years did not engage in multiple health-risk behaviors. However, the prevalence of multiple risk behaviors increased dramatically with age. While only 1 in 12 adolescents aged 12-13 years engaged in two or more of these behaviors, one-third of those aged 14-17 years and half of the college-aged youth (18-21 years) did so. Male respondents and out-of-school youth aged 14-17 years were more likely to engage in multiple health-risk behaviors than were other respondents. Conclusions: These results suggest that the likelihood that adolescents engage in multiple health-risk behaviors is related to age and that many adolescents engage in these behaviors serially rather than at the same time.

Brook, J. S., Brook, D. W., Arencibia-Mireles, O., Richter, L., & Whiteman, M. (2001). Risk factors for adolescent marijuana use across cultures and across time. *Journal of Genetic Psychology, 162*(3), 357-374.

Abstract: An integrated analysis of the data from 3 different studies was conducted to examine the early psychosocial predictors of later marijuana use among adolescents. Longitudinal analysis of interview data was performed. The data used in the analysis were derived from (a) a sample of 739 predominantly White adolescents representative of the northeastern United States, (b) a sample of 1,190 minority adolescents from the East Harlem section of New York City, and (c) a sample of 1,374 Colombian adolescents from two cities in Colombia, South America. In 2 of the samples, participants were interviewed in their homes, and in the 3rd study, participants were assessed in school. The predictors included a number of variables from (a) the personality domain, reflecting the adolescents' conventionality and intrapsychic functioning; (b) the family domain, representing the parent-child mutual attachment relationship and parental substance use; (c) the peer domain, reflecting the peer group's delinquency and substance use; and (d) the adolescents' own use of legal drugs. The dependent variable was adolescent marijuana use. The results of the analysis demonstrated remarkable consistency in the risk and protective factors for later marijuana use across the 3 samples, attesting to the robust nature of these predictors and their generalizability across gender, time, location, and ethnic/cultural background. These findings have important implications for designing intervention programs. Programs aimed at preventing adolescent marijuana use can be designed to incorporate universal features and still incorporate specific components that address the unique needs of adolescents from different groups.

Brook, J. S., Brook, D. W., de la Rosa, M., Duque, L. F., Rodriguez, E., Montoya, I. D., & Whiteman, M. (1998). Pathways to marijuana use among adolescents: Cultural/ecological, family, peer, and personality influences. *J Am Acad Child Adolesc Psychiatry, 37*(7), 759-766.

Abstract: OBJECTIVE: To examine the linkages, cultural/ecological factors, and major psychosocial risk factors as they relate to drug use in a sample from Colombia, South America. METHOD: The participants were 1,687 adolescents living in mixed urban-rural communities in Colombia, South America. An individual interview was administered to youths in their homes by Colombian interviewers. The scales used were based on item intercorrelations grouped into the following risk categories: (1) adolescent personality, (2) family traits, (3) peer factors, and (4) cultural/ecological variables. RESULTS: Pearson correlations were computed for each variable and the frequency of marijuana use. Results show that each of the domains was related to adolescent marijuana use, with some notable gender differences. As regards the interrelation of domains, a mediational model was operative. CONCLUSIONS: Findings support a family interactional theory. The domains of family, personality, and peer factors had a direct effect on the adolescents' marijuana use. Implications for prevention are also addressed.

- Brook, J. S., Nomura, C., & Cohen, P. (1989). A network of influences on adolescent drug involvement: Neighborhood, school, peer, and family. *Genet Soc Gen Psychol Monogr*, 115(1), 123-145.
Abstract: The interrelationship of neighborhood, school, peer, and family factors and adolescent drug involvement was investigated. Data were collected separately from 518 adolescents and their mothers when the children were between 9 and 18 years of age and again two years later. Neighborhood and school effects were not directly related to adolescent drug use. Neighborhood effects were mediated through the domains of school, peer, and family; school effects were mediated through the peer domain. Family and peer variables had a direct impact on adolescent drug involvement. Risk factors in the adolescents' peer environment can be ameliorated by protective factors in their school environment. Implications for the prevention of drug use are discussed.
- Brounstein, P. J., Zweig, J. M., & Gardener, S. E. (1999). *Understanding substance abuse prevention: Toward the 21st century: A primer for effective programs*. Rockville: U.S. Department of Health and Human Services Administration, Center for Substance Abuse Prevention, Division of Knowledge Development and Evaluation.
Abstract: Substance use is one of today's most challenging health and social problems. Further, it is more pervasive in the United States than in any other industrialized nation. Early involvement with any drug is a risk factor for later drug use and criminal activity, and the more severe the early involvement, the greater the risk that antisocial behavior will emerge in the future. Early use of alcohol, tobacco, or illicit drugs has been linked clearly to later substance abuse (Kandel, 1980, 1982; DuPont, 1989; cf. Catalano, Kosterman, Hawkins, Newcomb, & Abbott, 1996). Thus, young people, a particularly vulnerable at-risk population, are a key target for prevention efforts. It is because of their perceived vulnerability and malleability that youth have been the focus of most substance use prevention and intervention programs. In fact, focusing on young people from early childhood through adolescence has long been recognized as central to an effective substance abuse prevention strategy. Ever since the first major outbreak of substance use among youth in the 1960s, prevention programs directed at children and youth (and their families and schools) have been key elements in broader primary prevention efforts at Federal, State, and local levels. Youth-oriented prevention programs and initiatives have proliferated throughout the country, and several generations of programs, models, and theoretical frameworks for prevention have evolved.
- Brown, R. T. (2002). Risk factors for substance abuse in adolescents. *Pediatr Clin North Am*, 49(2), 247-255.
Abstract: Much is written of adolescents taking risks, including using drugs and alcohol, without a clear understanding of factors that promote or deter such behaviors. This article attempts to clarify these factors in order to help physicians understand why adolescents behave in these ways and to help physicians develop methods to prevent these risky behaviors.
- Bryant, A. L., Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (2000). Understanding the links among school misbehavior, academic achievement, and cigarette use: A national panel study of adolescents. *Prevention Science*, 1(2), 71-87.
Abstract: Relations among academic achievement, school bonding, school misbehavior, and cigarette use from 8th to 12th grade were examined in two national panel samples of youth (n = 3,056). A series of competing conceptual models developed a priori was tested using structural equation modeling (SEM). The findings suggest that during middle adolescence the predominant direction of influence is from school experiences to cigarette use. School misbehavior and low academic achievement contribute to increased cigarette use over time both directly and indirectly. Two-group SEM analyses involving two cohorts--gender and ethnicity--revealed that our findings are robust. In addition, comparisons between high school dropouts and nondropouts and between eighth-grade cigarette use initiators and nonusers revealed few differences in direction or magnitude of effects. Results suggest that prevention programs that attempt to reduce school misbehavior and academic failure, as well as to help students who misbehave and have difficulty in school constructively avoid negative school- and health-related outcomes, are likely to be effective in reducing adolescent cigarette use.

Bukstein, O. G. (2000). Disruptive behavior disorders and substance use disorders in adolescents. *J Psychoactive Drugs*, 32(1), 67-79.

Abstract: Disruptive behaviors disorders in the form of conduct disorder, oppositional defiant disorder and/or attention-deficit hyperactivity disorder are found in a majority of adolescents with substance use disorders. These disorders influence the risk for and the course of substance use disorders in adolescents and potentially provide important targets for intervention. Interventions such as family therapy and multisystemic therapy can focus on important environmental factors that help to produce and sustain substance use, related problems, and disruptive/deviant social behavior. Researchers and clinicians are increasingly utilizing multimodal approaches that use several psychosocial approaches in addition to medication, if indicated. This article reviews our current understanding of the relationship between disruptive behavior disorders and substance use disorders in adolescents, and the importance of this understanding in the prevention, assessment and treatment of adolescents with substance use disorders.

Bun, C. J. E., Stolwijk, A. M., & Raat, H. (1994). The relationship between the behavior, the opinion, and the attitude of parents and the behavior of adolescents in drinking, smoking, and gambling. *Tijdschrift Voor Alcohol*, 78-87.

Abstract: Studied the relationship between the drinking, smoking, and gambling behavior of Dutch adolescents and the drinking, smoking, and gambling behavior of their parents, including their parents' opinions about the harmfulness of these activities. Also assessed was the influence of parental opinions about their children's drinking, smoking, and gambling behavior. Ss were 1,564 secondary school students and their parents. The adolescent Ss completed questionnaires about their behavior. The adult Ss completed questionnaires about their behavior and opinions. The results were statistically analyzed. (English abstract)

Bushell, H. D., Crome, I., & Williams, R. (2002). How can risk be related to interventions for young people who misuse substances? *Current Opinion in Psychiatry*, 15(4), 355-360.

Abstract: The present review examines the available literature to consider the impact of risk factors on young people who use and misuse substances. We discuss the existing evidence to argue that social exclusion and psychiatric disorders constitute the important risk factors in the development of substance misuse. We examine the role that risk factors play by considering recent studies of prevention and treatment. Taken together with previous research on comorbidity of substance use and misuse with psychiatric disorders, there is now strong evidence for indices of deprivation and social exclusion co-occurring with both psychiatric disorders and substance misuse as a triad of interlocking experiences. Recent studies suggest that psychiatric disorders and social exclusion can significantly influence pathways not only to substance misuse but also to reduction in use and abstinence. However, long-term research is required to substantiate these findings. Studies reviewed include those conducted in Norway, Holland, US, UK, Ireland and Australia. The link between risk factors and effective intervention is clear; only treatments that take into account the diversity of influences on the development of substance use and misuse together with psychiatric disorders are likely to be effective.

Carlini-Marlatt, B., Gazal-Carvalho, C., Gouveia, N., & Souza, M. (2003). Drinking practices and other health-related behaviors among adolescents of Sao Paulo City, Brazil. *Subst Use Misuse, 38*(7), 905-932.

Abstract: PURPOSE: (a) detect possible demographic and behavioral differences among young episodic heavy drinkers and other young drinkers; (b) investigate the association of youth drinking patterns with other health-compromising behaviors. METHODS: The data presented are part of a health behavior survey, which used a modified version of the Youth Health Risk Behavior Survey (YHRBS) questionnaire. Students from public (n = 993) and private schools (n = 815), from 7th to 11th grades, were investigated in Sao Paulo city. Multivariate logistic regression analyses were employed to investigate the association among different drinking practices and the various health-compromising behaviors, controlling for age group, gender, and school system. Odds Ratios (OR) and their 95% Confidence Intervals (CI) were calculated. Episodic Heavy Drinking was defined as having five or more drinks in a 2-hour interval, at least once in the last 30 days. RESULTS: Episodic Heavy Drinkers (EHDs) tend to be older and males, and prefer to drink with friends at commercial facilities instead of drinking with their relatives at home. EHDs also reported higher percentages of adverse consequences, such as physical fights, accidents, and school absenteeism after drinking. EHDs are more likely to engage in other high-risk behaviors. In the public schools, they were more likely to carry guns (OR = 17.0; CI = 3.9-74.8), get involved in physical fights (OR = 8.9; CI = 4.4-18.0), attempt suicide (OR = 4.2; CI = 2.0-8.7), and use inhalants (OR = 2.7; CI = 1.3-5.7) than abstainers. They are also more likely to use marijuana (OR = 4.7; CI = 2.2-9.9) and smoke cigarettes (OR = 5.3; CI = 2.7-10.4) than moderate drinkers. The results were similar for private schools, with even higher ratios of inhalant use (OR = 15.2; CI = 6.2-37.1), when EHDs were compared with abstainers and cigarette (OR = 64.5; CI = 8.6-481.0) and marijuana use (OR = 6.5; CI = 4.3-9.7), when EHDs were compared with moderate drinkers. CONCLUSIONS: EHDs display different drinking habits than other adolescents who drink. Also, they are at increased risk for a range of health-compromising behaviors, when compared with both abstainers and moderate drinkers.

Carvajal, S. C., Wiatrek, D. E., Evans, R. I., Knee, C. R., & Nash, S. G. (2000). Psychosocial determinants of the onset and escalation of smoking: Cross-sectional and prospective findings in multiethnic middle school samples. *Journal of Adolescent Health, 27*(4), 255-265.

Abstract: PURPOSE: To investigate a broad range of social influence-related and global determinants of smoking to aid in the design of comprehensive multiethnic interventions by testing the most important factors of initiation and escalation of smoking across various subgroups. METHODS: Cross-sectional (N = 2,546) and cohort (N = 736) samples of multiethnic middle school students near a large Southwestern metropolis were surveyed through self-report questionnaires. The confidential questionnaires included information on demographics, risk factors, and smoking behavior and were administered in class by trained data collectors. Multivariable logistic regression analysis was used to examine the statistical significance and strength of the factors. RESULTS: Those lower in self-esteem and higher in social assertiveness appeared to be most at risk for the onset of smoking, whereas those low in optimism appeared to be the most at risk for the escalation of smoking. Attitudes, friends' norms, parents' norms, perceived behavioral control, and perceived prevalence were consistent predictors of all smoking status outcomes. CONCLUSIONS: The behavioral-specific determinants of smoking appear to be important predictors of smoking status outcomes in all demographic subgroups. The relationships of the global determinants were more dependent on the smoking outcome variable and subgroup examined. The findings may serve to help facilitate the targeting of comprehensive interventions aimed at reducing adolescent smoking in multiethnic and ethnic group-specific populations.

Castrucci, B. C., Gerlach, K. K., Kaufman, N. J., & Orleans, C. T. (2002). The association among adolescents' tobacco use, their beliefs and attitudes, and friends' and parents' opinions of smoking. *Maternal & Child Health Journal*, 6(3), 159-167.

Abstract: OBJECTIVE: To examine adolescents' attitudes toward smoking, the presence of a false consensus effect, and the influence of peer and parental attitudes about smoking choices on being a susceptible, never smoker; an experimenter; and a current smoker. METHODS: Data from The Robert Wood Johnson Foundation's 1996 National Study of Tobacco Price Sensitivity, Behavior, and Attitudes Among Teenagers and Young Adults (RWJF survey) were used to produce national estimates of the tobacco use behaviors and attitudes of adolescents enrolled in high school. Three logistic regression models were estimated to examine which psychosocial variables were associated with three different stages of smoking uptake. RESULTS: Positive attitudes toward tobacco use were associated with a greater likelihood of being a susceptible, never smoker (OR = 1.50), an experimenter (OR = 1.27), and a current smoker (OR = 2.96). Those respondents who believed that 50% or more of all adolescents smoked were more likely to be current smokers (OR = 1.45). The importance of the opinions of one's friends and parents about his/her choice to smoke was also found to be associated with smoking behavior. CONCLUSIONS: Preventing the initiation and continuation of smoking among adolescents will require interventions that address individual attitudes with respect to tobacco and will also need to present a clear picture of adolescent smoking. In addition, prevention and intervention messages should emphasize the importance of parental opinions on youth tobacco use regardless of parental tobacco use behavior.

Chaloupka, F. J. (2003). Contextual factors and youth tobacco use: Policy linkages. *Addiction*, 98(Suppl. 1), 147-149.

Abstract: This paper provides a short commentary on the set of papers contained in this special issue that discuss various contextual factors that affect youth smoking. It highlights the interrelationships between the economic and policy factors, media influences, community factors, peer influences and familial factors that impact on youth smoking. Particular emphasis is given to the direct effects of prices and policies on youth smoking, and to the indirect effects of these factors as they work through the other contextual factors.

Chassin, L., Presson, C. C., Pitts, S. C., & Sherman, S. J. (2000). The natural history of cigarette smoking from adolescence to adulthood in a Midwestern community sample: Multiple trajectories and their psychosocial correlates. *Health Psychology*, 19(3), 223-231.

Abstract: Previous research on the natural history of smoking has focused on overall group trajectories without considering the possibility of risk subgroup variation. To address this limitation, the authors of the present study aimed to identify subgroups with varying trajectories of smoking behavior. The authors accomplished this within a cohort-sequential study of a large community sample (N = 8,556) with measurements spanning ages 11-31. After removing 2 a priori groups (abstainers and erratics), the authors empirically identified 4 trajectory groups--early stable smokers, late stable smokers, experimenters, and quitters--and psychosocial variables from adolescence and young adulthood were significantly distinguished among them. Given recent advances in quantitative methods, it is now feasible to consider subgroups of trajectories within an overall longitudinal design.

Chen, K., & Kandel, D. (1995). The natural history of drug use from adolescence to the mid-thirties in a general population sample. *American Journal of Public Health*, 85, 41-47.

Abstract: OBJECTIVES. This study sought to describe patterns of initiation, persistence, and cessation in drug use in individuals from their late 20s to their mid-30s, within a broad perspective that spans 19 years from adolescence to adulthood. METHODS. A fourth wave of personal interviews was conducted at ages 34-35 with a cohort of men and women (n = 1,160) representative of adolescents formerly enrolled in New York State public secondary high schools. A school survey was administered at ages 15-16, and personal interviews with participants and school absentees were conducted at ages 24-25 and 28-29. Retrospective continuous histories of 12 drug classes were obtained at each follow-up. RESULTS. There was no initiation into alcohol and cigarettes and hardly any initiation into illicit drugs after age 29, the age at which most use ceased. The largest proportion of new users was observed for prescribed psychoactives. Periods of highest use since adolescence based on relative and absolute criteria were delineated. Among daily users, the proportions of heavy users declined for alcohol and marijuana but not for cigarettes. CONCLUSIONS. Cigarettes are the most persistent of any drug used. Drug-focused interventions must target adolescents and young adults.

Chen, M., Grube, J. W., & Madden, P. A. (1994). Alcohol expectancies and adolescent drinking: Differential prediction of frequency, quantity, and intoxication. *Addictive Behaviors, 19*(5), 521-529.

Abstract: Although alcohol expectancies have been shown to be consistently related to drinking and problematic drinking among underage youth, some studies suggest that they are more predictive of quantity than of frequency of drinking. However, this hypothesis has not been formally tested. This study examines the differential prediction hypothesis using a sample of 1,781 high school students from the San Francisco Bay Area. Measures included yearly and monthly frequency of drinking and intoxication and usual quantity consumed per drinking occasion. Alcohol expectancies were measured with 11 items asking about the likelihood that having 2 or 3 whole drinks of alcohol would lead to specific personal consequences. Structural equations analyses indicated that expectancies were better predictors of quantity than of frequency or intoxication. The results also show that positive and negative expectancy subscales were differentially associated with the drinking measures and the patterns were somewhat different for males and females.

Chen, P. H., White, H. R., & Pandina, R. J. (2001). Predictors of smoking cessation from adolescence into young adulthood. *Addict Behav, 26*(4), 517-529.

Abstract: Although smoking cigarettes is hazardous to health and cessation has positive health benefits, few smokers are able to successfully quit. The purpose of this study was to examine the predictors of smoking cessation in a nonclinical sample of 134 male and 190 female, young adult, regular (daily) smokers within a social learning and maturing-out framework. Four waves of prospective, longitudinal data from a community sample followed from adolescence into young adulthood were analyzed. Logistic regression analyses were used to test the effects of differential associations, definitions, differential reinforcement, and changes in adult role status on smoking cessation in young adulthood. Becoming married to a nonsmoker and decreases in the proportion of friends who smoked were significant predictors of cessation. Current smokers and stoppers did not differ significantly in terms of prior intensity of cigarette use or alcohol abuse/dependence. They also did not differ in terms of psychological characteristics, including depression and prior coping use of cigarettes. Social networks were more important than social roles for predicting cessation in young adulthood. Thus, smoking cessation programs should focus on social learning processes.

Chen, X., Unger, J. B., Palmer, P., Weiner, M. D., Johnson, C. A., Wong, M. M., et al. (2002). Prior cigarette smoking initiation predicting current alcohol use: Evidence for a gateway drug effect among California adolescents from eleven ethnic groups. *Addictive Behaviors, 27*(5), 799-817.

Abstract: Gateway drug theory provides a useful framework for understanding drug use among adolescent populations. Studies have reported a gateway effect of cigarette smoking on alcohol use among adolescents, but there is a lack of knowledge regarding ethnic differences in this effect. Using data from a cross-sectional survey in California, 11,239 subjects (46.3% male) from 31 high schools with at least 25% of total enrollment of Asian and at least 200 students with Asian ancestry entered the analysis. Among them, 6,016 were 9th graders (mean age=14.3 yrs) and 5,223 were 12th graders (mean age=17.3 yrs). Comparison of the 11 ethnic groups indicated that adolescents from different ethnic groups but with similar cultural background had a similar risk level; such patterns existed after controlling for acculturation, parents' monitoring, and school performance. The risk ratio did not differ by gender and grade. There is an association between prior cigarette smoking initiation and current alcohol use among adolescents from different ethnic backgrounds, including those of multi-ethnicity, which supports the generalizability of gateway drug effect of cigarette smoking on alcohol use. Studies should be conducted to investigate factors attributable to the ethnic variations of this association.

Chung, T., Martin, C. S., Armstrong, T. D., & Labouvie, E. W. (2002). Prevalence of DSM-IV alcohol diagnoses and symptoms in adolescent community and clinical samples. *Journal of the American Academy of Child & Adolescent Psychiatry, 41*(5), 546-554.

Abstract: Examined cross-study consistency in the relative prevalence of DSM-IV alcohol symptoms, the ratio of alcohol abuse to dependence diagnoses, the prevalence of the physiological dependence subtype, and the proportion of subthreshold cases of dependence. DSM-IV alcohol diagnosis and symptom prevalence data were obtained from 5 community and 4 clinical adolescent samples (all subjects were aged 12-19 yrs). There was a moderate level of cross-study agreement on the relative prevalence of alcohol symptoms. The most common symptoms were dependence criteria: tolerance and drinking more or longer than intended. A relatively high degree of variability in the ratio of abuse to dependence diagnoses and the proportion with physiological dependence was observed. All samples included a significant proportion of subthreshold cases of dependence: up to 12% in community and up to 34% in clinical samples. It is concluded that alcohol dependence symptoms of tolerance and drinking more or longer than intended have relatively high prevalence among adolescents. These high prevalence symptoms affect the ratio of abuse to dependence diagnoses in some studies, the prevalence of the physiological dependence subtype, and the proportion of subthreshold cases of dependence.

Chung, T., Martin, C. S., Grella, C. E., Winters, K. C., Abrantes, A. M., & Brown, S. A. (2003). Course of alcohol problems in treated adolescents. *Alcoholism-Clinical and Experimental Research, 27*(2), 253-261.

Abstract: Knowledge of the clinical course in treated adolescents is fundamental to determining the influence of treatment on long-term functioning and the factors associated with change in the severity of alcohol problems over time. This symposium, held at the 2002 annual Research Society on Alcoholism meeting and organized by Tammy Chung and Christopher S. Martin, presented research on the course of alcohol-related problems in treated adolescents who were followed prospectively for 1 to 8 years. Presentations included (1) Alcohol use outcomes at 1 year among adolescents in the drug abuse treatment outcomes studies (DATOS-A), by Christine E. Grella; (2) Pathways and predictors of the course of adolescent alcohol problems across 1- and 3-year follow-ups, by Tammy Chung; (3) Young adult outcomes of an adolescent clinical sample at 5-year follow-up, by Ken C. Winters; and (4) Trajectories of alcohol involvement following addiction treatment through 8-year follow-up in adolescents, by Ana M. Abrantes, Denis M. McCarthy, Gregory A. Aarons, and Sandra A. Brown. Sandra A. Brown, discussant, commented on the presentations. Results from these studies indicate multiple pathways of change, distinguished by fluctuations in the chronicity and severity of alcohol problems. Across studies, most adolescents showed reductions in alcohol use and problems after treatment, with concurrent improvements in psychosocial functioning. Findings highlight the influence of other drug use on post-treatment patterns of alcohol involvement and the need to consider the effect of normative developmental transitions on the course of adolescent-onset substance use disorders.

Clark, D. B., Bukstein, O., & Cornelius, J. (2002). Alcohol use disorders in adolescents: Epidemiology, diagnosis, psychosocial interventions, and pharmacological treatment. *Paediatric Drugs, 4*(8), 493-502.

Abstract: Alcohol (ethanol) abuse and dependence are the most common substance use disorders among adolescents. Binge drinking occurs in up to one-third of adolescents, and alcohol use disorders occur in about 6% of this age group. Adolescents with alcohol use disorders also typically have problems with other substances and comorbid mental disorders. Validated measures are available for the clinical detection and diagnosis of adolescent alcohol use disorders and related problems. Psychosocial interventions promoting abstinence are the most common treatments for alcohol use disorders, with empirical support particularly strong for family-based approaches. Pharmacological interventions may diminish the effects of alcohol withdrawal, prevent a return to alcohol consumption, or treat comorbid mental disorders. In this population, pharmacological interventions require further investigation and, where indicated, are generally considered to be supplementary to psychosocial approaches.

Clark, D. B., De Bellis, M. D., Lynch, K. G., Cornelius, J. R., & Martin, C. S. (2003). Physical and sexual abuse, depression and alcohol use disorders in adolescents: Onsets and outcomes. *Drug & Alcohol Dependence*, 69(1), 51-60.

Abstract: This study examined the relationships among physical and sexual abuse (PS Abuse), major depressive disorder (MDD), and alcohol use disorders (AUD) in adolescence, as well as related young adult outcomes. Adolescents (mean age: 16.4 years; range: 14-18 years) were recruited from clinical and community sources and classified into four groups: (1) AUD+PS Abuse (n=154), (2) AUD only (n=255), (3) PS Abuse only (n=74), and (4) Controls (n=268). Subjects were longitudinally assessed through young adulthood (age 19 years or older). Measures included interview assessments of DSM-IV AUD and MDD, classified as "primary" or "secondary", and questionnaire measures of alcohol consumption and depression. Primary MDD preceded AUD whereas secondary MDD had a later onset than AUD. PS Abuse accelerated the onsets of primary MDD, secondary MDD and AUD. While affected adolescents had typically improved in both alcohol consumption and depression at the young adult assessment, the majority of those with adolescent AUD had AUDs in young adulthood, and MDD remained common in those with a history of PS Abuse. These results indicate that MDD among adolescents with AUD may be partly attributable to PS Abuse.

Cleveland, H. H., & Wiebe, R. P. (2003). The moderation of genetic and shared-environmental influences on adolescent drinking by levels of parental drinking. *Journal of Studies on Alcohol*, 64(2), 182-194.

Abstract: OBJECTIVE: Research has consistently shown an association between levels of parental drinking and adolescent alcohol use. Different mechanisms offered to explain this association include environmental mechanisms such as social learning and biological mechanisms such as genetic transmission. To integrate these perspectives, this study examines the moderation of environmental and genetic influences on adolescent alcohol use by parental drinking behaviors. METHOD: The data used were 1,833 pairs drawn from the National Longitudinal Study of Adolescent Health's monozygotic twins, dizygotic twins, full-sibling and half-sibling pairs. Analyses used Defries-Fulker (DF) models to estimate genetic and shared environmental influences and to evaluate the potential moderation of these influences by household parental drinking. RESULTS: Full sample results revealed that genetic influences ($h^2 = 0.46$, $p < .05$) were significant but that shared environmental influences ($c^2 = 0.10$, $p > .05$) were not. Separate DF analyses for male, female and mixed-gender pairs found the magnitude of genetic and shared environmental influences on adolescents to be similar across male and female pairs. Results for mixed-gender pairs, however, were ambiguous. Extended DF models examining interactions between parental drinking and the expression of genetic and shared environmental influences found parental drinking was associated with a higher expression of genetic influences among male pairs but not among female or mixed-gender pairs. CONCLUSIONS: The main inferences to be drawn are that, at least for male adolescents, genetic influences on drinking appear to be potentiated by exposure to parental drinking.

Coffey, C., Carlin, J. B., Lynskey, M., Li, N., & Patton, G. C. (2003). Adolescent precursors of cannabis dependence: Findings from the Victorian Adolescent Health Cohort Study. *British Journal of Psychiatry*, 182, 330-336.

Abstract: BACKGROUND: Dependence increases the likelihood of adverse consequences of cannabis use, but its aetiology is poorly understood. AIMS: To examine adolescent precursors of young-adult cannabis dependence. METHOD: Putative risk factors were measured in a representative sample (n=2,032) of secondary students in the State of Victoria, Australia, six times between 1992 and 1995. Cannabis dependence was assessed in 1998, at age 20-21 years. RESULTS: Of 1,601 young adults, 115 met criteria for cannabis dependence. Male gender (OR=2.6, $P < 0.01$), regular cannabis use (weekly: OR=4.9; daily: OR=4.6, $P=0.02$), persistent antisocial behaviour (linear effect $P=0.03$) and persistent cigarette smoking (linear effect $P=0.02$) independently predicted cannabis dependence. Neither smoking severity ($P=0.83$) nor persistent psychiatric morbidity (linear effect $P=0.26$) independently predicted dependence. Regular cannabis use increased risk only in the absence of persistent problematic alcohol use. CONCLUSIONS: Weekly cannabis use marks a threshold for increased risk of later dependence, with selection of cannabis in preference to alcohol possibly indicating an early addiction process.

Cohen, E. S., & Fromme, K. (2002). Differential determinants of young adult substance use and high-risk sexual behavior. *Journal of Applied Social Psychology, 32*(6), 1124-1150.

Abstract: Evaluated how personality traits, self-efficacy, and outcome expectancies differentially relate to young adult substance use and high-risk sex. Exps 1 (N=481) and 2 (N=73) report the development of a new questionnaire to assess self-efficacy for substance use and sexual behavior. Exp 3 (N=375) tested self-efficacy, outcome expectancies, and trait measures of social conformity and sensation seeking as correlates of substance use and high-risk sex. Using structural equation modeling, cross-sectional analyses revealed that positive outcome expectancies had the largest association with substance use, whereas self-efficacy had the largest association with sexual behavior. Further, personality traits were related to substance use and sexual behavior indirectly through outcome expectancies, with social conformity also having a direct effect on behavior. When examined longitudinally, past alcohol and drug use served as the final pathway by which expectancies and personality impacted substance use, whereas past behavior, self-efficacy, and social conformity all contributed to high-risk sex. Results support the utility of different models for explaining, and possibly preventing, young adult substance use and high-risk sex.

Colby, S. M., Tiffany, S. T., Shiffman, S., & Niaura, R. S. (2000). Are adolescent smokers dependent on nicotine? A review of the evidence. *Drug Alcohol Depend, 59*(Suppl. 1), S83-95.

Abstract: This paper reviews the empirical literature on adolescent nicotine dependence, withdrawal, and their associated features. Data documenting nicotine dependence scores, diagnoses, and individual features among adolescents are reviewed in detail and compared to observations based on adult smokers. These data are derived from a broad variety of sources, including national surveys, school-based surveys, and smoking cessation studies. Overall, results indicate that one to three out of five adolescent smokers is dependent on nicotine, with some adolescent groups clearly at higher risk for dependence (those who are incarcerated, in vocational schools, daily smokers, and/or heavy smokers). Across studies, data consistently indicate that a large majority (two-thirds or more) of adolescent smokers report experiencing withdrawal symptoms during attempts to quit or reduce their smoking. Craving or strong desire to smoke was the most commonly reported withdrawal symptom in every study reviewed. Although analyses of concurrent validity generally support the dependence and withdrawal findings among adolescents, data on the predictive validity of measures used are needed. Moreover, studies of adolescent tobacco withdrawal rely almost exclusively on retrospective self-report data. Recommendations for enhancing methodology and advancing our understanding of adolescent nicotine dependence and withdrawal are offered.

Colder, C. R., Campbell, R. T., Ruel, E., Richardson, J. L., & Flay, B. R. (2002). A finite mixture model of growth trajectories of adolescent alcohol use: Predictors and consequences. *Journal of Consulting & Clinical Psychology, 70*(4), 976-985.

Abstract: The current study sought to identify classes of growth trajectories of adolescent alcohol use and to examine the predictors and outcomes associated with the classes. Alcohol use was assessed from Grades 7 to 12 in a school-based sample. Latent growth mixture modeling was used, and results indicated 5 discrete longitudinal drinking patterns. The 2 most common drinking patterns included occasional very light drinking from Grades 7 to 12 and moderate escalation in both quantity and frequency of alcohol use. One group drank infrequently but at high levels throughout the study period. Another group exhibited rapid escalation in both quantity and frequency. The final group started at high levels of frequency and quantity in Grade 7 and showed rapid de-escalation in frequency. Emotional distress and risk taking distinguished the classes, and all classes, particularly rapid escalators, showed elevated levels of alcohol-related problems relative to occasional very light drinkers.

Comeau, N., Stewart, S. H., & Loba, P. (2001). The relations of trait anxiety, anxiety sensitivity, and sensation seeking to adolescents' motivations for alcohol, cigarette, and marijuana use. *Addictive Behaviors, 26*(6), 803-25.

Abstract: The present study investigated relations of anxiety sensitivity and other theoretically relevant personality factors to Copper's [Psychological Assessment 6 (1994) 117.] four categories of substance use motivations as applied to teens' use of alcohol, cigarettes, and marijuana. A sample of 508 adolescents (238 females, 270 males; mean age = 15.1 years) completed the Trait subscale of the State-Trait Anxiety Inventory for Children, the Childhood Anxiety Sensitivity Index (CASI), and the Intensity and Novelty subscales of the Arnett Inventory of Sensation Seeking. Users of each substance also completed the Drinking Motives Questionnaire-Revised (DMQ-R) and/or author-compiled measures for assessing motives for cigarette smoking and marijuana use, respectively. Multiple regression analyses revealed that, in the case of each drug, the block of personality variables predicted "risky" substance use motives (i.e., coping, enhancement, and/or conformity motives) over-and-above demographics. High intensity seeking and low anxiety sensitivity predicted enhancement motives for alcohol use, high anxiety sensitivity predicted conformity motives for alcohol and marijuana use, and high trait anxiety predicted coping motives for alcohol and cigarette use. Moreover, anxiety sensitivity moderated the relation between trait anxiety and coping motives for alcohol and cigarette use: the trait anxiety-coping motives relation was stronger for high, than for low, anxiety sensitive individuals. Implications of the findings for improving substance abuse prevention efforts for youth will be discussed.

Coogan, P. F., Adams, M., Geller, A. C., Brooks, D., Miller, D. R., Lew, R. A., et al. (1998). Factors associated with smoking among children and adolescents in Connecticut. *American Journal of Preventive Medicine, 15*(1), 17-24.

Abstract: Introduction: The age of smoking initiation has dropped over the past four decades. Since behaviors and attitudes adopted in late childhood or early adolescence predict future smoking, it is important to understand the smoking and other risk-taking behaviors and attitudes of children aged 12 and younger. The goal of the analyses presented here was to describe behavioral and attitudinal factors associated with smoking among elementary school (grades 4-6), middle school (grades 7-8), and high school (grades 9-12) students in Connecticut. Methods: We have used data from 8 years (1988-1996) of an anonymous, self-administered health risk appraisal survey given to children and adolescents in self-selected public and private schools. We compared the proportion of smokers and nonsmokers who reported various behaviors and attitudes and compared them with the chi-square test. Results: Fifteen percent (n = 4,884) of the total population (n = 31,861) were current smokers. At all grade levels, current smokers were more likely than nonsmokers to engage in risk-taking behaviors, and to report more stress and depression. Indicators of risk-taking and stress were also associated with the intent to smoke among children in grades 4-6. Conclusions: Smoking occurs within the context of other risk-taking behavior and psychological distress, among both children and older adolescents. Our data provide support for the idea of early identification and targeting of children at high risk of smoking in elementary school, possibly as early as grade four.

Costa, F. M., Jessor, R., & Turbin, M. S. (1999). Transition into adolescent problem drinking: The role of psychosocial risk and protective factors. *Journal of Studies on Alcohol*, 60(4), 480-490.

Abstract: Objective: To establish the role of psychosocial risk and protective factors in cross-sectional variation in adolescent problem drinking, and in the transition into problem drinking over time. Method: The data were from a four-wave (1989-1992) longitudinal study of 1,591 adolescents in a large, urban school district. School district officials selected schools for the study with an aim toward maximizing representation of minority students from inner-city areas. At Wave 1, all students in Grades 7, 8, and 9 were asked to participate. Results: Both psychosocial risk factors (such as low expectations for success, peer models for substance use, and poor school performance) and psychosocial protective factors (such as intolerance of deviance, peer models for conventional behavior, and involvement in prosocial activities) account for significant cross-sectional variation in adolescents' involvement in problem drinking, as indicated by more frequent drunkenness and more numerous instances of alcohol-related problems. They also account for significant variation in the timing of transition into problem drinking during adolescence. Higher risk and lower protection are each associated with greater problem use of alcohol. Among adolescents who are not problem drinkers, higher risk and lower protection accelerate the likelihood of becoming a problem drinker in subsequent years. Protection also moderates the impact of risk in the cross-sectional account of involvement in problem drinking, but protective factors appear not to play a moderating role in the longitudinal account of the transition into problem drinking. Findings were similar for males and females and among white, black and Hispanic adolescents. Conclusions: Protective factors play an independent role in accounting for adolescent involvement in problem drinking and in the transition into problem drinking in adolescence. Intervention efforts to enhance protection, especially for adolescents who are exposed to risk, should supplement efforts to reduce risk.

Costello, E. J., Erkanli, A., Federman, E., & Angold, A. (1999). Development of psychiatric comorbidity with substance abuse in adolescents: Effects of timing and sex. *J Clin Child Psychol*, 28(3), 298-311.

Abstract: Examined the impact of childhood psychiatric disorders on the prevalence and timing of substance use and abuse and tested for sex differences. A representative population sample of 1,420 children, ages 9, 11, and 13 at intake, were interviewed annually. American Indians and youth with behavioral problems were over sampled; data were weighted back to population levels for analysis. By age 16, more than half the sample reported substance use, and 6% had abuse or dependence. Alcohol use began by age 9, and smoking in the 13th year. Mean onset of dependence was 14.8 years, and mean onset of abuse was 15.1 years. Substance use began earlier in boys, but not girls, who later developed abuse or dependence. Disruptive behavior disorders and depression were associated with a higher rate and earlier onset of substance use and abuse in both sexes, but anxiety predicted later onset of smoking. Family drug problems were the strongest correlate of early onset. Despite differences in prevalence of psychopathology, boys and girls showed more similarities than differences in the course of early substance use and abuse, and its associations with psychopathology.

Dakof, G. A. (2000). Understanding gender differences in adolescent drug abuse: Issues of comorbidity and family functioning. *Journal of Psychoactive Drugs*, 32(1), 25-32.

Abstract: Female adolescent drug use has increased dramatically in the last 30 years, and there is a growing consensus that the syndrome of female adolescent substance abuse is different from the well-recognized male pattern. Gender differences in patterns of comorbidity and family functioning were investigated in a sample of 95 youths (42 girls and 53 boys) referred for substance abuse treatment. The findings indicate that male and female adolescent substance users differ in several clinically meaningful ways. The results from a discriminant function analysis indicate that substance-using adolescents referred to treatment are distinguished especially by the greater degree to which girls have internalizing symptoms and family dysfunction. The clinical implications of these gender differences are articulated.

Dalton, M. A., Sargent, J. D., Beach, M. L., Titus-Ernstoff, L., Gibson, J. J., Ahrens, M. B., et al. (2003). Effect of viewing smoking in movies on adolescent smoking initiation: A Cohort Study. *Lancet*, *362*(9377), 281-285.

Abstract: Exposure to smoking in movies has been linked with adolescent smoking initiation in cross-sectional studies. We undertook a prospective study to ascertain whether exposure to smoking in movies predicts smoking initiation. We assessed exposure to smoking shown in movies in 3,547 adolescents, aged 10-14 yrs, who reported in a baseline survey that they had never tried smoking. Exposure to smoking in movies was estimated for individual respondents on the basis of the number of smoking occurrences viewed in unique samples of 50 movies, which were randomly selected from a larger sample pool of popular contemporary movies. We successfully re-contacted 2,603 (73%) students 13-26 months later for a follow-up interview to determine whether they had initiated smoking. Overall, 10% of students initiated smoking during the follow-up period. In the highest quartile of exposure to movie smoking, 17% of students had initiated smoking, compared with only 3% in the lowest quartile. After controlling for baseline characteristics, adolescents in the highest quartile of exposure to movie smoking were 2.71 times more likely to initiate smoking compared with those in the lowest quartile. The effect of exposure was stronger in adolescents with non-smoking parents than in those whose parent smoked.

Dawes, M. A., Antelman, S. M., Vanyukov, M. M., Giancola, P., Tarter, R. E., Susman, E. J., et al. (2000).

Developmental sources of variation in liability to adolescent substance use disorders. *Drug Alcohol Depend*, *61*(1), 3-14.

Abstract: This review provides a synthesis of the literature on the complex sequence of maturational, psychosocial, and neuroadaptive processes that lead to substance use disorders (SUD) in adolescence. A brief overview introduces the concepts of liability to SUD and epigenesis. A theory is presented explaining how affective, cognitive, and behavioral dysregulation in late childhood is exacerbated during early and middle adolescence by family and peer factors, as well as puberty, leading to substance use. Continued exacerbation of the three components of dysregulation by drug and non-drug stressors during late adolescence is posited to result in neuroadaptations that increase the likelihood of developing SUD, particularly in high-risk individuals. Implications for etiologic research as well as clinical and preventive interventions are discussed.

Dembo, R., Wothke, W., Seeberger, W., Shemwell, M., Pacheco, K., Rollie, M., et al. (2000). Testing a model of the influence of family problem factors on high-risk youths' troubled behavior: A three-wave longitudinal study. *Journal of Psychoactive Drugs*, *32*(1), 55-65.

Abstract: Using data collected in a study of arrested youths processed at a juvenile assessment center who entered a home-based family intervention project, the authors test a three-stage longitudinal model. The model reflects a developmental damage view of the relationships of the youths' family problems (including their physical abuse and sexual victimization experiences) to their drug use and delinquent behavior over time. The hypothesized model is supported by the data. Research, theoretical, and policy implications of the results are drawn.

Derzon, J. H., & Lipsey, M. W. (1999). Predicting tobacco use to age 18: A synthesis of longitudinal research. *Addiction, 94*(7), 995-1006.

Abstract: AIMS: To synthesize the available evidence on predictors of adolescent tobacco use. DESIGN: Meta-analysis was conducted on the empirical findings of published and unpublished studies of the natural development of tobacco use that used prospective multi-wave panel designs. PARTICIPANTS: The research literature that was analyzed included 106 reports on 64 studies representing data from a total of 145,750 study subjects; 1,261 prospective and cross-sectional effect sizes were computed from these studies and used in the meta-analysis. MEASUREMENTS: Product-moment correlations were analyzed examining the strength of the relationships between predictor variables and current and later tobacco use. In addition, findings reported as 2 x 2 contingency tables were analyzed to examine conditional relations and estimate the positive predicted values (PPV) and sensitivity indices for the predictive relationships. FINDINGS: The mean correlations for 17 different categories of predictors and current or later tobacco use ranged from -0.08 for race to 0.52 for prior tobacco use and were significant and positive except for race. Analysis of the conditional relationships showed that PPV for tobacco use ranged from a mean of 0.18 for predictors related to personal skills and knowledge (i.e. 82% of those 'at risk' on this construct did not use tobacco) to 0.70 for use of tobacco or other substances by parents. CONCLUSIONS: Current use of tobacco and other substances by youths, and use among their peers, showed stronger relationships with later tobacco use than other examined predictors. Combined with other predictive risk factors, these relationships are sufficiently strong to be useful in identifying for intervention those children most likely to become habitual tobacco users.

Dielman, T. E., Butchart, A. T., Shope, J. T., & Miller, M. (1990). Environmental correlates of adolescent substance use and misuse: Implications for prevention programs. *International Journal of Addiction, 25*(7A-8A), 855-880.

Abstract: The research in the areas of peer, family and community environmental effects on adolescent substance use and misuse clearly and consistently shows that peer substance use behavior is the primary predictor of adolescent alcohol use. Peer norms, however, are more important in the prediction of adolescent alcohol misuse. Parental norms and monitoring are secondary to the peer variables, but still of significance in the prediction of adolescent alcohol use and misuse. The intrapersonal construct of susceptibility to peer pressure is as important as the peer and parent variables in the prediction of both alcohol use and misuse in adolescence.

Dishion, T. J., & Owen, L. D. (2002). A longitudinal analysis of friendships and substance use: Bidirectional influence from adolescence to adulthood. *Dev Psychol, 38*(4), 480-491.

Abstract: The reciprocal relation between deviant friendships and substance use was examined from early adolescence (age 13-14) to young adulthood (age 22-23). Deviance within friendships was studied using direct observations of videotaped friendship interaction and global reports of deviant interactions with friends as well as time spent with friends. Substance use was assessed through youth self-report at all time points. Multivariate modeling revealed that substance use in young adulthood is a joint outcome of friendship influence and selection processes. In addition, substance use appears to influence the selection of friends in late adolescence. Findings suggest that effective preventions should target peer ecologies conducive to substance use and that treatment should address both the interpersonal underpinnings and addiction processes intrinsic to chronic use, dependence, and abuse.

Dobkin, P. L., Tremblay, R. E., Masse, L. C., & Vitaro, F. (1995). Individual and peer characteristics in predicting boys early onset of substance-abuse: A 7-year longitudinal-study. *Child Development, 66*(4), 1198-1214.

Abstract: Early onset of substance abuse is a clear marker for future maladjustment in adolescents. The present study employed data originating from 755 6-year-old boys from low SES neighborhoods, who were followed through age 13, to predict this marker. 3 models were tested using LISREL analyses to determine whether individual characteristics and/or peer influences were linked to subsequent substance abuse. Individual characteristics consisted of fighting, hyperactivity, oppositional behaviors, and likeability. Peer influences referred to mutual friends' characteristics (aggressiveness and likeability). Data were obtained from 3 different sources: teacher ratings, peer ratings, and self-reports. Results were replicated at ages 10, 11, and 12 years with 3 subsamples of the original sample and indicated that individual characteristics, more than friends' deviance, are pivotal in the development of substance abuse. This finding is consistent with results from other longitudinal studies involving children from a variety of cultural backgrounds. It suggests that prevention programs should target individual characteristics and begin at an early age.

Donovan, J. E., Jessor, R., & Costa, F. M. (1999). Adolescent problem drinking: Stability of psychosocial and behavioral correlates across a generation. *Journal of Studies on Alcohol*, 60(3), 352-361.

Abstract: Objective: Research conducted in the 1970s demonstrated that Problem Behavior Theory could account for approximately 40% of the variance in problem drinking in both local and national sample studies. The present analyses sought to determine whether the personality, perceived environment, and behavior variables of the framework continue to contribute to the explanation of problem drinking among contemporary American youth. Method: Correlational and multiple regression analyses were performed on six separate databases collected at different times between 1972 and 1992. Due to sociodemographic differences among the samples, separate analyses were performed for male and female adolescents, and age, ethnicity and socioeconomic status were statistically controlled. Results: There was considerable consistency across the samples in both the partial correlations and the partial multiple correlations, and this result held for both genders. Not only did the framework account for the same percentage of the variance (40%) in problem drinking in the 1992 data as it did in the 1972 data, but the results for the intervening years were consistent as well. Conclusions: The consistency of results over a 20-year period confirms that the social-psychological meaning of adolescent involvement in problem drinking has remained stable despite changes in the larger sociohistorical context.

Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2000). Risk and protective factors influencing adolescent problem behavior: A multivariate latent growth curve analysis. *Annals of Behavioral Medicine*, 22(2), 103-109.

Abstract: This study examined the dynamic relations between adolescent problem behaviors (alcohol, marijuana, deviance, academic failure) over time and predictors of these behaviors. Data from the National Youth Survey (1) included 1,044 adolescents (53.5% male; mean age at year 1 = 13.20). Dependent measures were adolescent alcohol use, marijuana use, deviance, and academic failure, assessed annually over 4 years. Independent measures included age, gender, marital status, income, family time, family support, time with friends, friend deviance, knowledge of friends, activities, and neighborhood problems. An associative latent growth modeling (LGM) analysis showed significant increases and relations between the four behaviors in both initial status and development. Second-order multivariate LGM analyses indicated that the four behaviors could be modeled by a higher-order problem behavior construct. Significant effects on the common problem behavior intercept or slope included time with friends, deviant friends, age, marital status, family time, and support. Additional effects were found to be specific to the initial status and slopes of individual problem behaviors. Overall, results indicate the importance of assessing the relations between adolescent problem behaviors as they change over time and identifying the risk and protective factors that have both common and individual influences on these behaviors.

DuRant, R. H., Smith, J. A., Kreiter, S. R., & Krowchuk, D. P. (1999). The relationship between early age of onset of initial substance use and engaging in multiple health risk behaviors among young adolescents. *Archives of Pediatric Adolescent Medicine*, 153(3), 286-291.

Abstract: BACKGROUND: Previous research based on problem-behavior theory has found that early age of onset of substance use is associated with engaging in multiple health risk behaviors among high school students. It is unknown whether these relationships begin during early adolescence. OBJECTIVE: To examine the relationships between early age of onset of cigarette, alcohol, marijuana, and cocaine use and engaging in multiple risk behaviors among middle school students. METHODS: A modified version of the Centers for Disease Control and Prevention Youth Risk Behavior Survey was administered to 2,227 sixth through eighth grade students attending 53 randomly selected middle schools in North Carolina. A Health Risk Behavior Scale was constructed from 16 behaviors, including indicators of violence and weapon carrying; current substance use; nonuse of helmets when biking, in-line skating or skateboarding; not wearing a seat belt; riding with a driver who had been drinking; and suicide plans. Among this sample of middle school students, the scale had a mean (SD) of 4.1 (2.7) (range=0-15), and had a high internal reliability coefficient ($\alpha=0.74$). The independent variables included first time use of cigarettes, alcohol, marijuana, and cocaine at age 11 years or earlier; actual age of onset of each substance; race and ethnicity; family composition; sex; school grade; academic ranking; and older age for school grade. These data were analyzed with analysis of variance, Spearman r, and multiple linear regression. RESULTS: All the independent variables were found to be associated ($P<0.05$) with the Health Risk Behavior Scale during the bivariate analyses. When each of these significant variables were entered into a multiple regression model, having smoked at age 11 years or younger accounted for 21.9% of the variation in the Health Risk Behavior Scale. Male sex, early marijuana or cocaine use, older age, lower academic rank, white race, and living in a 1-parent family explained an additional 19.1% of variation in the model (adjusted $R^2=0.41$, $P<0.001$). When the actual ages of onset of the use of substances were analyzed, in order of magnitude: age of onset of smoking; male sex; age of onset of alcohol and marijuana use; age; lower academic ranking; age of onset of cocaine use; white race; and lower academic rating accounted for 52.8% ($P<0.001$) of the variation in the Health Risk Behavior Scale. CONCLUSION: Even when considering sociodemographic factors, early age of onset of cigarette use was the strongest correlate of the number of health risk behaviors in which these young adolescents had engaged. Early onset of use of other substances was also associated with a clustering of health risk behaviors among this sample of middle school students. The findings suggest that screening for early experimentation with tobacco and other substance use will help identify young adolescents at increased risk for engaging in multiple health risk behaviors.

Ellickson, P. L., Perlman, M., & Klein, D. J. (2003). Explaining racial/ethnic differences in smoking during the transition to adulthood. *Addictive Behaviors*, 28(5), 915-931.

Abstract: Using data from a longitudinal panel of nearly 3,000 adolescents to predict current smoking among young adults, we test whether adding variables that tap prior social bonds and influences to the model eliminates race/ethnicity as a significant predictor of current smoking. At age 23, African Americans and Asians exhibited substantially lower rates of current smoking than Whites and Hispanics. Controlling for social influences during high school, particularly exposure to siblings and friends who smoked plus parental disapproval of smoking, accounted for these differences. Social bonding variables, in contrast, had a limited mediating effect. Interventions aimed at decreasing adolescent vulnerability to prosmoking influences, reducing overall levels of peer cigarette use, and helping parents better convey their disapproval of smoking should help curb young adult smoking and diminish racial/ethnic differences in tobacco use.

Ellickson, S. L., Tucker, J. S., Klein, D. J., & McGuigan, K. A. (2001). Prospective risk factors for alcohol misuse in late adolescence. *J Stud Alcohol*, 62(6), 773-782.

Abstract: OBJECTIVE: This longitudinal study investigated Grade-7 and Grade-10 risk factors for alcohol misuse at Grade 12. Alcohol misuse was conceptualized as problem-related drinking (e.g., missing school), high-risk drinking (e.g., drunk driving) and high consumption. METHOD: Prospective analyses using two-part models predicted any alcohol misuse and the amount of misuse (given that some has occurred) for over 4,200 (52% male) participants in the RAND Adolescent Panel Study. Predictor variables were demographics, substance use and exposure, prodrug attitudes, rebelliousness and deviant behavior, self-esteem, family structure and relations, and grades. RESULTS: Grade-7 predictors of alcohol misuse 5 years later included early drinking onset, parental drinking, future intentions to drink, cigarette offers, difficulty resisting pressures to smoke, being white, being male, having an older sibling, deviant behavior and poor grades. By Grade 10, predictors of alcohol misuse 2 years later included drinking and marijuana use by self and peers, future intentions to drink, difficulty resisting pressures to drink and use marijuana, being male, coming from a disrupted family and deviant behavior. Somewhat different predictors were identified for problem-related, high-risk and high consumption drinking, emphasizing the importance of investigating multiple dimensions of misuse. CONCLUSIONS: The high social acceptability of alcohol use makes prevention difficult. Curbing alcohol misuse may be a more attainable goal than preventing any use. These results indicate that predictors of misuse in late adolescence can be identified by Grade 7 and are generally visible and modifiable. Prevention efforts should begin by early adolescence, address both familial and peer influences to drink and use other substances, and take into account problems that predict alcohol misuse (e.g., poor academic performance and early deviant behavior).

Ennett, S. T., Bauman, K. E., Foshee, V. A., Pemberton, M., & Hicks, K. A. (2001). Parent-child communication about adolescent tobacco and alcohol use: What do parents say and does it affect youth behavior? *Journal of Marriage and the Family*, 63(1), 48-62.

Abstract: Parent-child communication about tobacco and alcohol use is assumed to be critical to child use of these substances, but it rarely has been systematically described and related to adolescent use. This study included a national sample of 537 adolescent-parent pairs interviewed by telephone at baseline and again 1 year later. Factor analysis of parent reports of communication identified 3 domains: rules and discipline, consequences and circumstances, and media influences. Communication in these domains varied by family characteristics, including parents' substance use and mother's education level. Contrary to assumptions, parent-child communication was not related to initiation of smoking or drinking. Additional analyses suggested, however, that parent-child communication about rules and discipline predicted escalation of use.

Enoch, M. A., & Goldman, D. (1999). Genetics of alcoholism and substance abuse. *Psychiatr Clin North Am*, 22(2), 289-299, viii.

Abstract: Twin studies have demonstrated that addictive disorders are genetically and environmentally influenced. Our knowledge of behavioral differences predisposing to addiction is advancing rapidly, particularly in alcoholism but also in the other addictions, through studies on animals and humans. Recently, linkage analyses in humans and rodents have pointed to genomic regions harboring genes which influence addiction or drug-associated behaviors. There is increasing evidence that the addictions have common as well as distinct neurobiological pathways. These advances in the understanding of the genetics of addictive disorders should facilitate the development of specific pharmacotherapies and the more accurate targeting of therapies using molecular diagnostic approaches.

Epstein, J. A., Botvin, G. J., & Spoth, R. (2003). Predicting smoking among rural adolescents: Social and cognitive processes. *Nicotine and Tobacco Research*, 5(4), 485-491.

Abstract: Although considerable literature can be found concerning the etiology of cigarette smoking, a major gap exists pertaining to predictors of adolescent smoking for rural populations in the United States. To address this gap in the literature, the present study focused on rural adolescents and investigated a model of social and cognitive cross-sectional predictors of smoking. Gender-specific differences in etiology were examined by testing the same model separately for boys and girls. Seventh graders (N=1,673) residing in northeastern Iowa self-reported smoking, peer smoking norms, adult smoking norms, drug refusal assertiveness, drug refusal techniques, life skills, prosmoking attitudes, risk-taking tendency, and family management practices. Data were collected during a class period in 36 junior high schools. Peer smoking norms, adult smoking norms, drug refusal assertiveness, drug refusal techniques, prosmoking attitudes, and risk-taking tendency were associated cross-sectionally with smoking. As for gender-specific effects, family management skills, life skills, and risk-taking tendency were concurrently related to smoking for girls only. Based on the results of the present study and on prevention research, it would appear that smoking prevention programs for rural adolescents would benefit from incorporating normative education, drug refusal training, parent skills training, and competence enhancement skills training.

Estroff, T. W. (2001). Routes of abuse and specific drugs. In T. W. Estroff (Ed.), *Manual of adolescent substance abuse treatment* (pp. 35-50). Washington, DC, US: American Psychiatric Publishing, Inc.

Abstract: In introduction, the author notes that adolescents are not as sophisticated or knowledgeable about drug abuse as are adults. They are less discriminating in choosing a drug, are more likely to experiment with drugs of different classes, more responsive to price and availability, and more likely to use simultaneous use of different substances. The most typical combinations are marijuana, cocaine, inhalants, or hallucinogens in combination with alcohol. The chapter reviews the major routes of administration, and then briefly provides an overview of the usual ways adolescents use individual drugs, and on the unusual and dangerous ways these drugs can affect the adolescent drug abuser. Those discussed include inhalants (volatile hydrocarbons, amyl nitrate, and nitric oxide); cannabis products, both marijuana and hashish; alcohol; PCP; sedatives, benzodiazepines, barbiturates, and methaqualone; "look-alike drugs"; amphetamines and other stimulants (amphetamine, methamphetamine and ecstasy); cocaine; heroin and other opiates; and hallucinogens. There is also mention of what the author describes as "questionable" addictions, based on repetitive and compulsive use. These include anabolic steroids, GHB (gamma-hydroxybutyrate), as well as gambling, compulsive sexual activity, and food and eating disorders.

Everett, S. A., Malarcher, A. M., Sharp, D. J., Husten, C. G., & Giovino, G. A. (2000). Relationship between cigarette, smokeless tobacco, and cigar use, and other health risk behaviors among U.S. high school students. *Journal of School Health*, 70(6), 234-240.

Abstract: This study examined relationships between tobacco use and use of other substances, intentional injury risk behaviors, and sexual risk behaviors among US high school students. Data about tobacco use and other health risk behaviors were analyzed from the 1997 national Youth Risk Behavior Survey implemented by the Centers for Disease Control and Prevention. One-fourth of students (24%) reported current use of a single tobacco product (i.e., cigarettes, smokeless tobacco, or cigars during the 30 days preceding the survey), and 19.5% reported currently using more than one tobacco product. Generally, students who reported current tobacco use also reported engaging in other substance use, intentional injury risk behaviors, and sexual risk behaviors. For many risk behaviors, these results were especially pronounced among students who reported using two or all three tobacco products. Programs designed to prevent tobacco use should consider that such use often occurs concomitantly with other health risk behaviors.

Flisher, A. J., Kramer, R. A., Hoven, C. W., King, R. A., Bird, H. R., Davies, M., et al. (2000). Risk behavior in a community sample of children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(7), 881-887.

Abstract: OBJECTIVES: First, to investigate whether there is covariation between risk behaviors, including suicidality, in a community probability sample of children and adolescents; and second, to investigate whether risk behavior is associated with selected potential correlates. METHOD: A sample of 9- to 17-year-old youths (N = 1,285) and their caretakers were interviewed in the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study. The risk behaviors were marijuana smoking, alcohol use, intercourse, fighting, cigarette smoking, and suicidal ideation/attempts. Relationships between the risk behaviors were described using odds ratios. Linear regression analyses of an index of risk behavior on the selected potential correlates of risk behavior were conducted. RESULTS: There were significant relationships between all pairs of risk behaviors. The score on the index of risk behavior was associated with stressors, lack of resources, family psychiatric disorder, psychopathology, and functional impairment. CONCLUSIONS: Clinicians should be alerted to the possibility of risk behaviors, especially in children and adolescents engaging in other risk behaviors and those with inadequate resources, stressors, functional impairment, or psychopathology.

Friedman, A. S., & Glassman, K. (2000). Family risk factors versus peer risk factors for drug abuse. A longitudinal study of an African American urban community sample. *J Subst Abuse Treat*, 18(3), 267-275.

Abstract: This study compared the influence of family problems with influence of deviant and delinquent social behavior and peer relationships up to the time of the 16th birthday as risk factors for substance use, for lifetime up to age 26. Control variables for the analysis were available from the National Collaborative project's longitudinal data file, collected from time of birth, on the African American community study sample (N = 380). A key finding was that the social behavior and peer relationship problems accounted for 18.8% of the additional variance in later degree of substance use, whereas the family problems accounted for only 5.1% of the additional variance in later degree of substance use.

Frohlich, K. L., Potvin, L., Gauvin, L., & Chabot, P. (2002). Youth smoking initiation: Disentangling context from composition. *Health & Place*, 8(3), 155-166.

Abstract: This paper examines the relative contributions of compositional and contextual effects on the one hand, and behavioural and material factors on the other, to help explain smoking initiation. We present results from a cross-sectional, multi-level analysis linking data from pre-adolescents, their households, and their neighbourhoods across Quebec, Canada. Results show a significant geographical area variation in youth smoking initiation. The variation is explained not only by individual characteristics (parents' smoking status, parents' education, and pre-adolescents' age), but also by aspects of the social structure at the neighbourhood level. When both the individual level and territory level predictors are entered in the model, only 2.66% of the between-territory variance in smoking initiation remain unexplained.

Geckova, A., van Dijk, J. P., van Ittersum-Gritter, T., Groothoff, J. W., & Post, D. (2002). Determinants of adolescents' smoking behaviour: A literature review. *Central European Journal of Public Health*, 10(3), 79-87.

Abstract: A review of studies focused on determinants of adolescents' smoking behaviour (ASB) published between 1990-2000 is presented. Determinants were divided into three groups: individual factors, social factors and societal factors. Individual factors include knowledge, intentions, attitudes, health-related behaviour, personality characteristics and school-related variables. Social factors include smoking behaviour of parents, siblings, peers and significant adults, but also family characteristics, social support, and socio-economic status. Societal factors include restrictions on smoking, tobacco advertisement, and smoking behaviour of adolescents' role model.

Gil, A. G., Vega, W. A., & Turner, R. J. (2002). Early and mid-adolescence risk factors for later substance abuse by African Americans and European Americans. *Public Health Reports, 117* (Suppl. 1), S15-29.

Abstract: OBJECTIVE: This study examines the relationship between risk factors experienced during adolescence by African Americans and European Americans and DSM-IV alcohol dependence and marijuana abuse or dependence in early adulthood. METHODS: The authors followed a cohort of adolescents from 1990-91 (grades 6 and 7) to 1998-2000 (ages 19-21), evaluating risk factors during early adolescence as predictors of DSM-IV alcohol dependence and marijuana abuse and dependence. RESULTS: African Americans had higher exposure to school, family structure, delinquency, and psychosocial factors. School factors and drug-use modeling of peers and family were the most important risk factors for marijuana abuse or dependence for both European and African Americans. CONCLUSION: Personal, familial, and social context factors during early adolescence affect adult drug-use problems, particularly for African Americans. Levels of drug use are lower among African Americans, but exposure to risks is higher and there are clear differences in the long-range impact of risk factors. These findings highlight the importance of developing and timing appropriate prevention efforts.

Gilvarry, E. (2000). Substance abuse in young people. *J Child Psychol Psychiatry, 41*(1), 55-80.

Abstract: Adolescent substance abuse, with its heterogeneity, its complexity and its association with behavioural, physical and mental health problems is of increasing interest to many; the politician, the economist, clinicians and researchers, families and young people themselves. Data concerning the prevalence and trends in use of a range of substances in different countries, cultures and different groups are reviewed. The influence of associated mental and physical health problems, the multiple definitions applied to use and abuse, and the confounding effect of different ideologies and cultural differences are considered. There is now much interest in the understanding of risk and protective influences, including multi- focused prevention programmes among vulnerable young people. Some positive effects of universal prevention programmes are reported, although too often they lack thoroughness in programme implementation, data collection and follow up. Indeed, compared to the adult addiction literature, there is a dearth of research on adolescent treatment outcomes. Research needs to address treatment and cost effectiveness in different settings with different groups. The evidence tends to support multi- faceted interventions for high risk youths. However, the use of evidence based programmes with a scientific basis should be supported and implemented.

Golub, A., Labouvie, E., & Johnson, B. D. (2000). Response reliability and the study of adolescent substance use progression. *Journal of Drug Issues, 30*(1), 103-118.

Abstract: Studies of adolescent substance use progression typically infer a sequence of initiation from self-reported ages at first use of alcohol, tobacco, marijuana, and hard drugs. This paper examines the reliability of this procedure for a sample of 892 New Jersey youths interviewed on two occasions separated by three years. Individual responses on the second occasion differed substantially from those provided on the first. However, the inferred sequences were consistent as long as 1) first use of alcohol and/or tobacco was considered a single stage, and 2) cases in which individuals initiated the use of two substances in the same year were considered as ambiguous regarding order. The sequences reported were also consistent with the gateway theory that suggests alcohol/tobacco precedes any possible use of marijuana and hard drugs.

Goodman, E., & Huang, B. (2002). Socioeconomic status, depressive symptoms, and adolescent substance use. *Arch Pediatr Adolesc Med*, 156(5), 448-453.

Abstract: OBJECTIVE: To determine the relationships among socioeconomic status (SES), depression, and substance use among teenagers. We hypothesized that, among teenagers, substance use was associated with SES in a graded fashion and that depression is a mechanism through which SES affects substance use behaviors. DESIGN: Linear regression analyses of cross-sectional data from Wave I of the National Longitudinal Study of Adolescent Health (1995). PARTICIPANTS: Fifteen thousand one hundred twelve adolescents whose parents answered questions assessing household income and parental education. MAIN OUTCOME MEASURES: Use of cigarettes, alcohol, marijuana, and cocaine. RESULTS: For all 4 substances, frequency of use varied by SES. In the total population, inverse SES gradients were present for cigarette use (education, mean change = -0.052; 95% confidence interval [CI], -0.081 to -0.023; income, mean change = -0.038; 95% CI, -0.069 to -0.007) and alcohol use (income, mean change = 0.044; 95% CI, 0.016-0.071). The relationship between marijuana use and education was also significant but inverse-U-shaped, not linear. This relationship was only present among nonwhite teenagers. Race/ethnicity also moderated the relationships between SES and cigarette use and SES and cocaine use. For cigarette use, stratification by race/ethnicity revealed an inverse graded relationship among white non-Hispanic teenagers and a direct, graded relationship among nonwhite teenagers (i.e., mean change for education among white non-Hispanic teenagers, -0.012; 95% CI, -0.016 to -0.075; mean change for education among nonwhite teenagers, 0.040; 95% CI, 0.014-0.072). For cocaine use, a weak, inverse linear relationship existed only between education and cocaine use among white non-Hispanic teenagers (mean change for education, -0.013; 95% CI, -0.026 to -0.0004). The relationship between the SES indicator and substance use weakened when depressive symptoms were entered into the model for the SES-cigarette use relationship (23% decrease in mean change associated with a 1-unit change in both education and income) and for the association between education and cocaine use among white non-Hispanic teenagers (31% decrease). CONCLUSIONS: Socioeconomic status is associated with substance use among teenagers but the nature of the relationship is not consistent across SES indicators or across race/ethnicity groups. Depressive symptoms are a mechanism through which SES affects cigarette and cocaine use behaviors among teenagers. However, these data indicate that interventions targeted toward decreasing depressive symptoms will not have a strong impact on the effects of SES on teenage substance use.

Gosselin, C., Larocque, D., Vitaro, F., & Gagnon, C. (2000). Identification of factors linked to cigarette, alcohol and drug consumption during adolescence. *International Journal of Psychology*, 35(1), 46-59.

Abstract: The goal of this study was to identify protective and risk factors linked to substance use during adolescence. A sample of 1000 subjects participated in a four-wave data collection. Results showed that precocious substance use is likely to be persistent. Moreover, school inadaptation, lack of parental supervision, and positive self-perception in relationships with peers have been identified as risk factors predictive of cigarette, alcohol and drug use. Protective factors were associated with high moral qualities and negative reaction to mother's use of cigarettes and alcohol. Findings are discussed in terms of developmental trajectories which might lead to substance use and abuse through adult life.

Griffin, K. W., Botvin, G. J., Scheier, L. M., Doyle, M. M., & Williams, C. (2003). Common predictors of cigarette smoking, alcohol use, aggression, and delinquency among inner-city minority youth. *Addictive Behaviors*, 28(6), 1141-1148.

Abstract: The present study examined the prevalence rates and common predictors of substance use, aggression, and delinquency among inner-city minority youth entering middle school. A survey was administered to sixth grade students (N= 5,442) from 42 New York City schools. Aggressive behaviors were reported most frequently, followed by delinquent behaviors, alcohol use, and cigarette smoking. Across all behavioral outcomes, social and environmental influences explained the largest proportion of variance, followed by individual characteristics and skills, bonding to conventional institutions, and demographic variables. For the majority of predictor variables, there was substantial overlap in patterns of prediction across outcomes. These findings indicate that several factors that correspond to the predominant psychosocial theories of adolescent development explain variation across different problem behavior outcomes among inner-city minority youth.

- Grunbaum, J. A., Kann, L., Kinchen, S. A., Williams, B., Ross, J. G., Lowry, R., et al. (2002). Youth risk behavior surveillance--United States, 2001. *Morbidity & Mortality Weekly Report. Surveillance Summaries*, 51(4), 1-62. **Abstract:** PROBLEM/CONDITION: Priority health-risk behaviors, which contribute to the leading causes of mortality and morbidity among youth and adults, often are established during youth, extend into adulthood, are interrelated, and are preventable. REPORTING PERIOD COVERED: This report covers data during February-December 2001. DESCRIPTION OF SYSTEM: The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults; these behaviors contribute to unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV) infection; unhealthy dietary behaviors; and physical inactivity. The YRBSS includes a national school-based survey conducted by CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies. This report summarizes results from the national survey, 34 state surveys, and 18 local surveys conducted among students in grades 9-12 during February-December 2001. RESULTS: In the United States, approximately three fourths of all deaths among persons aged 10-24 years result from only four causes: motor-vehicle crashes, other unintentional injuries, homicide, and suicide. Results from the 2001 national Youth Risk Behavior Survey demonstrated that numerous high school students engage in behaviors that increase their likelihood of death from these four causes: 14.1% had rarely or never worn a seat belt during the 30 days preceding the survey; 30.7% had ridden with a driver who had been drinking alcohol; 17.4% had carried a weapon during the 30 days preceding the survey; 47.1% had drunk alcohol during the 30 days preceding the survey; 23.9% had used marijuana during the 30 days preceding the survey; and 8.8% had attempted suicide during the 12 months preceding the survey. Substantial morbidity and social problems among young persons also result from unintended pregnancies and STDs, including HIV infection. In 2001, 45.6% of high school students had ever had sexual intercourse; 42.1% of sexually active students had not used a condom at last sexual intercourse; and 2.3% had ever injected an illegal drug. Two thirds of all deaths among persons aged ≥ 25 years result from only two causes: cardiovascular disease and cancer. The majority of risk behaviors associated with these two causes of death are initiated during adolescence. In 2001, 28.5% of high school students had smoked cigarettes during the 30 days preceding the survey; 78.6% had not eaten ≥ 5 servings per day of fruits and vegetables during the 7 days preceding the survey; 10.5% were overweight; and 67.8% did not attend physical education class daily. PUBLIC HEALTH ACTIONS: Health and education officials at national, state, and local levels are using these YRBSS data to analyze and improve policies and programs to reduce priority health-risk behaviors among youth. The YRBSS data also are being used to measure progress toward achieving 16 national health objectives for 2010 and 3 of the 10 leading health indicators.
- Guo, J., Collins, L. M., Hill, K. G., & Hawkins, J. D. (2000). Developmental pathways to alcohol abuse and dependence in young adulthood. *Journal of Studies on Alcohol*, 61(6), 799-808. **Abstract:** Objective: To determine if people who were diagnosed with alcohol abuse or dependence (AAD) at age 21 had different developmental patterns of alcohol use in adolescence than non-AAD individuals. Method: An ethnically diverse urban sample of 808 children was surveyed at age 10 in 1985 and followed prospectively to age 21 in 1996. AAD at age 21 was assessed following DSM-IV criteria. Latent Transition Analysis (LTA) was used to identify four statuses of alcohol use (nonuse, initiation only, current use only, heavy episodic drinking), as well as transition probabilities between these four statuses from elementary school to middle school and from middle school to high school among the AAD and non-AAD group. Results: The prevalence of alcohol use statuses during elementary school was similar in the two groups. Differences in alcohol use emerged in middle school and became more pronounced in high school. In middle school, AAD individuals were more likely to have initiated or been current drinkers than non-AAD individuals. However, the two groups did not differ in the prevalence of heavy episodic drinking in middle school. In high school, most AAD individuals were in the heavy episodic drinking status (54%), while most non-AAD individuals were in the initiation only (33%) or current use only (34%) statuses. Conclusions: These findings suggest preventive intervention targets for different developmental periods. Alcohol abuse and dependence at age 21 may be prevented by delaying alcohol initiation, by reducing current use in middle school and by reducing heavy episodic drinking in high school.

Guo, J., Hawkins, J. D., Hill, K. G., & Abbott, R. D. (2001). Childhood and adolescent predictors of alcohol abuse and dependence in young adulthood. *J Stud Alchoh*, 62(6), 754-762.

Abstract: OBJECTIVE: To provide a comprehensive examination of childhood and adolescent predictors of alcohol abuse and dependence at age 21, theoretically guided by the social development model. METHOD: Data were taken from an ethnically diverse urban sample of 808 students (51% male), surveyed at age 10 and followed prospectively to age 21 in 1996. Potential predictors of alcohol abuse and dependence at age 21 were measured at ages 10, 14 and 16. Relationships between these predictors and alcohol abuse and dependence were examined at each age, to assess changes in their patterns of prediction over time. RESULTS: Strong bonding to school, close parental monitoring of children and clearly defined family rules for behavior, appropriate parental rewards for good behaviors, high level of refusal skills and strong belief in the moral order predicted a lower risk for alcohol abuse and dependence at age 21. Of these, strong bonding to school consistently predicted lower alcohol abuse and dependence from all three ages (10, 14 and 16). By contrast, youths who had a higher risk of alcohol abuse and dependence at age 21 engaged in more problem behaviors, had more opportunities to be involved with antisocial individuals and spent more time with and were more bonded to those individuals, viewed fewer negative consequences from antisocial behaviors and held more favorable views on alcohol use. Of these, prior problem behaviors and antisocial opportunities and involvements at ages 10, 14 and 16 consistently predicted alcohol abuse and dependence at age 21. CONCLUSIONS: These important malleable predictors, identifiable as early as age 10, provide potential intervention targets for the prevention of alcohol abuse and dependence in early adulthood.

Hallfors, D., Vevea, J. L., Iritani, B., Cho, H., Khatapoush, S., & Saxe, L. (2002). Truancy, grade point average, and sexual activity: A meta-analysis of risk indicators for youth substance use. *Journal of School Health*, 72(5), 205-211.

Abstract: Society increasingly holds schools responsible for the effectiveness of health promotion activities, such as drug abuse prevention efforts funded through the federal Safe and Drug-Free Schools program. Consequently, school districts use student surveys as a method for assessing trends and evaluating effects of programs on behavior. Because cost and practical concerns often preclude consistent population-based school survey sampling, risk indicators can provide an essential tool in analyzing needs assessment and program evaluation data. In this paper, three risk measures associated with substance use were selected from among commonly used school surveys. These measures--truancy, grade point average, and recent sexual intercourse--were compared, using meta-analysis techniques, to assess the reliability of risk measures across different survey instruments, different communities, and different points in time. Truancy was judged superior, because of its strong predictive value, particularly among younger students, and because rates can be compared to school records to assess sampling validity over time.

Hanna, E. Z., Yi, H. Y., Dufour, M. C., & Whitmore, C. C. (2001). The relationship of early-onset regular smoking to alcohol use, depression, illicit drug use, and other risky behaviors during early adolescence: Results from the youth supplement to the third national health and nutrition examination survey. *Journal of Substance Abuse, 13*(3), 265-282.

Abstract: PURPOSE: Recently we found that the early onset of regular tobacco use is as predictive of lifetime drug use and depressive disorders as it is of alcohol use disorders [Alcohol.: Clin. Exp. Res. 23 (1999) 513.]. This finding, which paralleled findings regarding early onset of alcohol use [J. Subst. Abuse 10 (1998) 59.], suggested that early regular use of any drug might simply be an indicator of risk for a constellation of problem behaviors. The purpose of the present study is to test this hypothesis as well as to study the strength and patterns of associations among these problem behaviors already present among youth. The results will permit description of more precise profiles to identify groups of children at risk. METHODS: Using data for respondents aged 12-16 from the Third National Health and Nutrition Examination Survey (NHANES III), descriptive statistics were calculated and logistic regression models were estimated. RESULTS: Descriptive analyses indicated that in comparison with those who never smoked, or who simply experimented, early-onset regular smokers, both those who began at age 13 or younger and those who did so between 14 and 16, were those most likely to use alcohol and other drugs as well as have school problems and early sexual experiences culminating in pregnancy. Multivariate logistic regression analyses were conducted to assess the associations among these high-risk behaviors. IMPLICATIONS: These results support the hypothesis that early onset of smoking is but an indicator of a syndrome of problem behaviors already in place during childhood. They also suggest that the significance of an age onset variable may differ depending on the age of the sample used. As follow-up data are collected, we expect to learn much about the natural course of the distinct risk groups identified in the analyses by studying longitudinally this nationally representative group of early adolescents.

Harrier, L. K., Lambert, P. L., & Ramos, V. (2001). Indicators of adolescent drug users in a clinical population. *Journal of Child & Adolescent Substance Abuse, 10*(3), 71-87.

Abstract: Examined the effects of gender, ethnicity, various forms of maltreatment (including family violence), and parental use of drugs and alcohol on adolescent drug use. A logistic regression analysis performed on county mental health archival data of 1,867 12-19 yr olds indicates that a combination of physical abuse, sexual abuse, history of familial drug use, family violence, ethnicity, and a history of familial violence were significant in differentiating substance abusers from non-abusers. A Principle Components Analysis indicates that the significant variables grouped among 3 dimensions: violence, history of parental drug use, and ethnicity. Implications for a multidimensional approach to intervention are discussed.

Hoffman, J. H., Welte, J. W., & Barnes, G. M. (2001). Co-occurrence of alcohol and cigarette use among adolescents. *Addictive Behaviors, 26*(1), 63-78.

Abstract: Concurrent use of alcohol and cigarettes among adolescents is a serious public health issue. Trends in concurrent use of alcohol and cigarettes were determined using data from three comparable large statewide samples of 7-12th-grade students in New York State, from surveys conducted in 1983, 1990, and 1994. The prevalence of use of alcohol and cigarettes decreased from 1983 (23%) to 1990 (19%), and increased by 1994 (22%). Logistic regression analysis showed that these trends are highly significant, and that the probability of use of alcohol and cigarettes is higher for females than males, increases with age, and is lower for most ethnic minorities than for Whites. In the 1990s, Blacks, Hispanics, and Asians increased in their probability of concurrent use more than did Whites. Users of both alcohol and cigarettes are at increased risk of personal and social problems, as well as increased risk of delinquency. Drinking and smoking show synergistic effects on illicit drug use and drug problems.

Hoffmann, J. P., & Cerbone, F. G. (2002). Parental substance use disorder and the risk of adolescent drug abuse: An event history analysis. *Drug & Alcohol Dependence*, 66(3), 255-264.

Abstract: Children of drug-dependent parents are at significantly heightened risk of adolescent drug use, abuse, and dependence. Several psychological and interpersonal factors may affect the association between parents' psychoactive substance use disorder (PSUD) and drug use risks among adolescents. This paper explores these potential relationships using longitudinal data from a study that has followed 3 cohorts of adolescents (aged 11-17 yrs) and their families over a 7-yr period. The cohorts are defined by parental diagnoses of PSUD, affective disorders, or no diagnosable disorder. The results indicate that PSUD is positively associated with adolescent drug abuse, yet this association is attenuated by strong family cohesion. Affective disorders among parents are associated with a higher risk of alcohol, but not drug, abuse. The associations are stronger in the presence of lower stress and higher self-esteem. PSUD is also associated more strongly with offspring drug and alcohol abuse when levels of use are lower. Hence, some unobserved mechanism that may involve physiological sensitivities to drugs and alcohol appears to put children of parents with drug problems at particular risk of drug and alcohol abuse.

Hopfer, C. J., Stallings, M. C., Hewitt, J. K., & Crowley, T. J. (2003). Family transmission of marijuana use, abuse, and dependence. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(7), 834-841.

Abstract: OBJECTIVE: To examine the familial aggregation of marijuana use, abuse, and dependence. METHOD: Adolescents recruited from residential and day treatment programs for youths with conduct and substance problems, matched controls, and all available family members were interviewed with structured research instruments. A total of 2,546 individuals from 781 families were interviewed. Risk ratios of relatives of clinical cases were calculated, compared with controls, for marijuana use, abuse, or dependence. Spousal, parent-offspring, and sibling correlations and the proportion of variance attributable to parent-offspring transmission were estimated using structural equation modeling. RESULTS: For all three measures, the risk ratios were elevated in the family members of clinical probands, with estimates ranging from 1.5 to 3.3. Spousal correlations ranged from 0.33 to 0.70. Parent-offspring correlations ranged from 0.17 to 0.30. Sibling correlations ranged from 0.34 to 0.44. The proportion of variance attributable to factors transmitted from parents to children ranged between 25% and 44%. CONCLUSIONS: Familial aggregation of marijuana use, abuse, and dependence is present for all three measures. The results suggest significant parent-offspring transmission of risk, sibling environmental influences, and assortative mating for all three levels of marijuana use.

Hussong, A. M. (2002). Differentiating peer contexts and risk for adolescent substance use. *Journal of Youth & Adolescence*, 31(3), 207-220.

Abstract: The peer context is perhaps the most salient, robust predictor of an adolescent's substance use. However, in previous studies, the peer context is often poorly defined. The current study examined 3 models to understand how substance use within best friendships, peer cliques, and social crowds predicts adolescents' substance involvement. A sample of 377 high school juniors and seniors completed surveys assessing substance use and peer relationships. Results suggest that each of these 3 dimensions of the peer context uniquely predict adolescent substance use. Moreover, these peer contexts interacted in the prediction of adolescents' substance use such that adolescents who were more highly embedded in substance-using peer contexts showed greater risk for substance use whereas adolescents with substance-using best friends showed a reduced risk for substance use if they had other close friends who were less involved with substances.

Hussong, A. M., & Hicks, R. E. (2003). Affect and peer context interactively impact adolescent substance use. *Journal of Abnormal Child Psychology*, 31(4), 413-426.

Abstract: Risk factors, such as emotional distress and peer substance involvement, are often tested as competing influences on adolescent substance use. However, the current study examined how affect (both positive and negative) and peers (both in terms of relationship quality and substance involvement) are interactive influences on adolescent substance use. A sample of 398 high school juniors and seniors completed surveys assessing each of these domains. Results of hierarchical regression analyses showed strong associations between an adolescent's and his or her best friend's substance use. Complex interactions supported the study hypothesis in that relations between affect and adolescent substance use were context dependent, with some peer contexts enhancing risk for substance use and others dampening this risk. Implications of these findings for interventions and preventions concerning adolescent substance use are discussed.

- Jackson, K. M., Sher, K. J., Cooper, M. L., & Wood, P. K. (2002). Adolescent alcohol and tobacco use: Onset, persistence and trajectories of use across two samples. *Addiction, 97*(5), 517-531.
- Abstract:** AIMS: We examined the alcohol-tobacco relationship using two prospective, ethnically diverse samples. Trajectories of alcohol and tobacco use are portrayed overall and by sex and ethnicity. Using prospective analyses, we examine directional influences between alcohol and tobacco use, and we characterize initiation versus persistence of drinking and smoking as a function of use of the other substance. DESIGN, SETTING: Data were from the National Longitudinal Study of Adolescent Health (AddHealth) and the Adolescent Health Risk Study (AHRS). Follow-up intervals for AddHealth and AHRS were 1 and 5 years, respectively. PARTICIPANTS: AddHealth respondents (n = 4,831) were on average 14.8 years old (48% male, 23% black, 61% white) and AHRS respondents (n = 1,814) were on average 16.7 years old (47% male, 44% black, 49% white). MEASUREMENTS: Two alcohol consumption variables and two smoking variables were used: drinking frequency and heavy drinking frequency, and regular (current) smoking and daily number of cigarettes. FINDINGS: Alcohol and tobacco use exhibited monotonic increases over adolescence and young adulthood. Men and white respondents reported more use than women and black respondents. Alcohol and tobacco were moderately associated at both times. Analyses revealed that prior alcohol use predicted tobacco use more strongly than the converse. Initiation of smoking was a function of prior drinking; to a lesser extent, initiation of drinking was a function of prior smoking. Persistence of smoking was a function of prior drinking and persistence of drinking was a function of prior smoking. CONCLUSIONS: Provisional support exists for the claim that alcohol use predicts tobacco use more strongly than the converse. For both drinking and smoking, onset and persistence are predicted by prior use of the other substance, and these associations were robust across sex and ethnicity.
- Jessor, R., Turbin, M. S., Costa, F. M., Dong, Q., Zhang, H., & Wang, C. (2003). Adolescent problem behavior in China and the United States: A cross-national study of psychosocial protective factors. *Journal of Research on Adolescence, 13*(3), 329-360.
- Abstract:** An explanatory model of adolescent problem behavior (problem drinking, cigarette smoking, and general delinquency) based on protective and risk factors in the individual and in 4 social contexts (family, peer group, school, and neighborhood) is employed in school-based samples from the People's Republic of China (N = 1,739) and the United States (N = 1,596). Despite lower prevalence of the problem behaviors in the Chinese sample, especially for girls, a substantial account of problem behavior is provided by the same protective and risk factors in both countries and for both genders. Protection is generally higher in the Chinese sample than in the U.S. sample, but in both samples protection also moderates the impact of risk. Despite mean differences in psychosocial protective and risk factors, as well as in problem behavior, in the 2 samples--differences that may reflect societal variation--the explanatory model has, to a large extent, cross-national generality.
- Johnson, J. L., Bottorff, J. L., Moffat, B., Ratner, P. A., Shoveller, J. A., & Lovato, C. Y. (2003). Tobacco dependence: Adolescents' perspectives on the need to smoke. *Social Science & Medicine, 56*, (7), 1481-1492.
- Abstract:** To address the need for a better understanding of the perspective of Canadian youths on tobacco dependence, a qualitative study using ethnographic techniques was conducted to describe the patterns of language that they use to describe tobacco dependence and the meaning that it has for them. The study was comprised of three inter-related phases: (1) A secondary analysis of 47 individual unstructured interviews with adolescents was completed to identify the words and phrases they use to explain tobacco dependence; (2) contrast and structural questions focusing on tobacco dependence were developed and used in open-ended interviews with 13 adolescents. Data analysis of the transcribed interviews resulted in a set of 60 key phrases that represented the primary ways youths describe the need to smoke; and (3) interviews were conducted with 14 adolescents that involved an open card sort using the set of 60 key phrases. All card sorts and transcribed interview data were analyzed to identify domains representing types of tobacco dependence and sub-types within each domain. From their descriptions about the need to smoke, five aspects of tobacco dependence were identified: social, pleasurable, empowering, emotional, and full-fledged. This study provides a step in elucidating the construct of tobacco dependence among the young. Further research is required to extend this understanding and to develop appropriate measures.

Kaminer, Y. (1999). Addictive disorders in adolescents. *Psychiatr Clin North Am*, 22(2), 275-288.

Abstract: Physicians should recognize the importance of individual differences in the etiologic pathway to drug abuse. Drug use in most adolescents subsides or stops by adulthood; however, adolescents with behavioral or affective dysregulation, poor social skills, a limited social network, and substance abuse during late adolescence are at increased risk for substance dependence in adulthood. Research is needed, however, to clarify the developmental emergence and interaction between individual and contextual risk factors. Understanding person-environment processes within a developmental perspective not only yields a better understanding of the causes but also informs about taxonomy, prevention, and readiness to change and compliance in treatment and after-care. Treatment outcome research suggests that (1) relapse is likely to occur within the first 3 months after treatment completion and, to a lesser extent, over the year following treatment completion; (2) relapse is more likely in adolescents who have comorbid psychiatric disorders and other problems, such as high stress, low social skills, lack of involvement in productive activities or active leisure, and no follow-up intervention; (3) continued after-care treatment may maintain treatment gains; (4) the effectiveness of treatment and aftercare is likely to vary by the amount, mode, and the consistency with which it is delivered; (5) gender differences might have an impact on treatment outcome; and (6) adolescents presenting for treatment are likely to respond well to interventions based on family therapy and CBT approaches.

Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Grunbaum, J. A., & Kolbe, L. J. (2000). Youth Risk Behavior Surveillance--United States, 1999. State and local YRBSS Coordinators. *J Sch Health*, 70(7), 271-285.

Abstract: Priority health-risk behaviors, which contribute to the leading causes of mortality and morbidity among youth and adults, often are established during youth, extend into adulthood, are interrelated, and are preventable. The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults--behaviors that contribute to unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs) (including human immunodeficiency virus [HIV] infection); unhealthy dietary behaviors; and physical inactivity. The YRBSS includes a national school-based survey conducted by CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies. This report summarizes results from the national survey, 33 state surveys, and 16 local surveys conducted among high school students during February through May 1999. In the United States, approximately three fourths of all deaths among persons aged 10-24 years result from only four causes: motor-vehicle crashes, other unintentional injuries, homicide, and suicide. Results from the 1999 national Youth Risk Behavior Survey demonstrate that numerous high school students engage in behaviors that increase their likelihood of death from these four causes--16.4% had rarely or never worn a seat belt; during the 30 days preceding the survey, 33.1% had ridden with a driver who had been drinking alcohol; 17.3% had carried a weapon during the 30 days preceding the survey; 50.0% had drunk alcohol during the 30 days preceding the survey; 26.7% had used marijuana during the 30 days preceding the survey; and 7.8% had attempted suicide during the 12 months preceding the survey. Substantial morbidity and social problems among young persons also result from unintended pregnancies and STDs, including HIV infection. In 1999, nationwide, 49.9% of high school students had ever had sexual intercourse; 42.0% of sexually active students had not used a condom at last sexual intercourse; and 1.8% had ever injected an illegal drug. Two thirds of all deaths among persons aged > or = 25 years result from only two causes--cardiovascular disease and cancer. The majority of risk behaviors associated with these two causes of death are initiated during adolescence. In 1999, 34.8% of high school students had smoked cigarettes during the 30 days preceding the survey; 76.1% had not eaten > or = 5 servings/day of fruits and vegetables during the 7 days preceding the survey; 16.0% were at risk for becoming overweight; and 70.9% did not attend physical education class daily. These YRBSS data are already being used by health and education officials at national, state, and local levels to analyze and improve policies and programs to reduce priority health-risk behaviors among youth. The YRBSS data also are being used to measure progress toward achieving 16 national health objectives for 2010 and 3 of the 10 leading health indicators.

- Kilpatrick, D. G., Acierno, R., Saunders, B., Resnick, H. S., Best, C. L., & Schnurr, P. P. (2000). Risk factors for adolescent substance abuse and dependence: Data from a national sample. *J Consult Clin Psychol*, *68*(1), 19-30. **Abstract:** A national household probability sample of 4,023 adolescents aged 12 to 17 years was interviewed by telephone about substance use, victimization experiences, familial substance use, and posttraumatic reactions to identify risk factors for Diagnostic and Statistical Manual of Mental Disorders--(4th ed.; American Psychiatric Association, 1994) defined substance abuse/dependence. Age and ethnicity data were available for 3,907 participants. Major findings were (a) adolescents who had been physically assaulted, who had been sexually assaulted, who had witnessed violence, or who had family members with alcohol or drug use problems had increased risk for current substance abuse/dependence; (b) posttraumatic stress disorder independently increased risk of marijuana and hard drug abuse/dependence; and (c) when effects of other variables were controlled, African Americans, but not Hispanics or Native Americans, were at approximately 1/3 the risk of substance abuse/dependence as Caucasians.
- Kirkcaldy, B. D., Siefen, G., Surall, D., & Bischoff, R. J. (2004). Predictors of drug and alcohol abuse among children and adolescents. *Personality & Individual Differences*, *36*(2), 247-265. **Abstract:** Almost 1000 children and adolescents participated in a survey examining alcohol and drug use and the influence of personality and socioeconomic variables. One of the most consistent findings was the contribution of the personality construct "addiction" (a composite of psychoticism, neuroticism and introversion) in predicting drug and alcohol usage among adolescents: self-perceived physical ill-health was a significant predictor of tobacco, alcohol and cannabis usage, but not cocaine and solvent use. Adolescents reporting inferior self-image were less likely to use the illicit drugs, cannabis or cocaine. The implications of these findings for social policy making are discussed.
- Kobus, K. (2003). Peers and adolescent smoking. *Addiction*, *98*(Suppl. 1), 37-55. **Abstract:** There is a considerable body of empirical research that has identified adolescent peer relationships as a primary factor involved in adolescent cigarette smoking. Despite this large research base, many questions remain unanswered about the mechanisms by which peers affect youths' smoking behavior. Understanding these processes of influence is key to the development of prevention and intervention programs designed to address adolescent smoking as a significant public health concern. In this paper, theoretical frameworks and empirical findings are reviewed critically which inform the current state of knowledge regarding peer influences on teenage smoking. Specifically, social learning theory, primary socialization theory, social identity theory and social network theory are discussed. Empirical findings regarding peer influence and selection, as well as multiple reference points in adolescent friendships, including best friendships, romantic relationships, peer groups and social crowds, are also reviewed. Review of this work reveals the contribution that peers have in adolescents' use of tobacco, in some cases promoting use, and in other cases deterring it. This review also suggests that peer influences on smoking are more subtle than commonly thought and need to be examined more carefully, including consideration of larger social contexts, e.g. the family, neighborhood, and media. Recommendations for future investigations are made, as well as suggestions for specific methodological approaches that offer promise for advancing our knowledge of the contribution of peers to adolescent tobacco use.
- Kodjo, C. M., & Klein, J. D. (2002). Prevention and risk of adolescent substance abuse. The role of adolescents, families, and communities. *Pediatr Clin North Am*, *49*(2), 257-268. **Abstract:** Adolescents as young as 12 to 14 years of age are engaging in substance use. Those who use substances are at risk for immediate and future consequences that affect morbidity and mortality. The theoretical models of substance use in adolescents provide a framework for understanding risk and protective factors. These risk and protective factors are pertinent to all contexts, including the individual traits, interpersonal relationships, and greater society. Knowledge of these factors should help the clinician in assessment of the individual adolescent. Knowledge of these factors also should help the clinician provide appropriate interventions. In the case of primary prevention, clinicians can advocate for families and communities to teach children how to be more goal-oriented, insightful, and in tune with their cultures and beliefs. Parents also can be encouraged to set clear limits, monitor their adolescents' behaviors, be good role models, and provide a loving and supportive environment. Advocacy to address some of the societal factors that are less easily changed also has its place. Addressing media portrayal of drug use, availability of substances, and poverty would have a broad impact on the problem of adolescent substance use and would help to improve the health status of many adolescents in the United States.

Komro, K. A., McCarty, M. C., Forster, J. L., Blaine, T. M., & Chen, V. (2003). Parental, family, and home characteristics associated with cigarette smoking among adolescents. *American Journal of Health Promotion, 17*(5), 291-299.

Abstract: PURPOSE: This study examines the relationship between smoking-related parental, family, and home factors with adolescents' cigarette use. DESIGN: Cross-sectional surveys of adolescents, via a self-administered questionnaire in classrooms, and their parents, via a telephone interview, were conducted. SETTING: Fifteen suburban and rural communities within Minnesota. SUBJECTS: The study sample included 8th, 9th, and 10th grade public school students and their parents. MEASURES: The dependent variable was monthly tobacco use among students. The independent measures were parental, family, and home smoking-related characteristics. There were 1,343 parent-child dyads with completed surveys. RESULTS: The final, multivariate logistic regression model found the following variables to be independently related to higher smoking rates among adolescents: child's grade (odds ratio [OR] = 3.03 for 10th vs. 8th), parents' permissiveness of adult smoking (OR = 1.80), parents' having higher normative estimates of how many people smoke (OR = 1.70), parents' decreased likelihood of punishing their teenager for smoking (OR = 1.65), smoking by an adult living in the home (OR = 1.99), and sibling smoking (OR = 8.95). Lack of communication about consequences for breaking family smoking rules was associated with lower smoking rates among adolescents (OR = .49). CONCLUSION: The results of this study highlight the importance of parental smoking norms and attitudes and smoking role models in the home. It is important that smoking prevention strategies target and include the entire family. Limitations of the study are its cross-sectional design and that the sample was primarily white.

Kosterman, R., Hawkins, J. D., Guo, J., Catalano, R. F., & Abbott, R. D. (2000). The dynamics of alcohol and marijuana initiation: Patterns and predictors of first use in adolescence. *American Journal of Public Health, 90*(3), 360-366.

Abstract: OBJECTIVES: This study, guided by the social development model, examined the dynamic patterns and predictors of alcohol and marijuana use onset. METHODS: Survival analysis and complementary log-log regression were used to model hazard rates and etiology of initiation with time-varying covariates. The sample was derived from a longitudinal study of 808 youth interviewed annually from 10 to 16 years of age and at 18 years of age. RESULTS: Alcohol initiation rose steeply up to the age of 13 years and then increased more gradually; most participants had initiated by 13 years of age. Marijuana initiation showed a different pattern, with more participants initiating after the age of 13 years. CONCLUSIONS: This study showed that: (1) the risk of initiation spans the entire course of adolescent development; (2) young people exposed to others who use substances are at higher risk for early initiation; (3) proactive parents can help delay initiation; and (4) clear family standards and proactive family management are important in delaying alcohol and marijuana use, regardless of how closely bonded a child is to his or her mother.

Kulbok, P. A., & Cox, C. L. (2002). Dimensions of adolescent health behavior. *J Adolesc Health, 31*(5), 394-400.

Abstract: PURPOSE: To determine dimensions of healthy and unhealthy behaviors of young people aged 12 to 21 years to better inform measures of adolescent health behavior and assist in targeting appropriate strategies to promote health. METHODS: The study sample (N = 8,730), derived from a U.S. national probability sample; 52.3% were female, 67% white, 15% African-American, 18% Hispanic, 22.2% aged 12-13 years, 38.4% aged 14-17 years, and 39.4% aged 18-21 years. Principal components analysis was done to examine the covariance structure of 42 healthy and unhealthy behaviors selected from the behavioral questions of the Youth Risk Behavior Survey (YRBS). RESULTS: A four-factor oblique rotation, comprised of 18 variables with factor loadings of .50 or greater, resulted in interpretable and meaningful health behavior factors. Sexual activity, substance use (e.g., alcohol, marijuana, and other drugs), smoking, and exercise factors accounted for 74% of the variance in the composite of healthy and unhealthy behaviors. These four factors were subsequently reproduced on random samples as well as on samples defined by age (12-13 years [excluding sexual activity variables], 14-17 years, 18-21 years), gender, and race (white, African-American, Hispanic). CONCLUSIONS: These results provide new information about the consistent structure of sexual activities and exercise behaviors across subgroups defined by age, gender, and racial/ethnic origins, and about differences in clusters of substance use behaviors across ethnic groups. Further study of diverse population-based samples and multiple health-promoting and health-negating behaviors should profile developmental variations and health protective factors in adolescents.

Kuperman, S., Schlosser, S. S., Kramer, J. R., Bucholz, K., Hesselbrock, V., Reich, T., et al. (2001). Developmental sequence from disruptive behavior diagnosis to adolescent alcohol dependence. *American Journal of Psychiatry*, 158(12), 2022-2026.

Abstract: Objective: The authors sought to clinically describe the relationship of disruptive behavior disorders with both alcohol dependence and the use of a variety of substances. Method: The Child Semi-Structured Assessment for the Genetics of Alcoholism was used to collect data on 54 adolescents with a diagnosis of alcohol dependence. The frequency and age at onset of the disruptive behavior disorder diagnoses were examined as well as age at first use of alcohol, tobacco, marijuana, and other street drugs. Results: Nearly three-quarters of the alcohol-dependent adolescents had at least one disruptive behavior disorder diagnosis. Attention deficit hyperactivity disorder (ADHD) typically occurred first, followed by conduct disorder. Substance use began with alcohol or tobacco, followed by marijuana and then other street drugs. Alcohol dependence began significantly later than the onset of either ADHD or conduct disorder and significantly later than the first use of tobacco. Conclusions: Disruptive behavior diagnoses, particularly conduct disorder, typically precede the initiation of use of a variety of substances that, in turn, precede the diagnosis of alcohol dependence in adolescents.

Kuther, T. L., & Higgins-D'Alessandro, A. (2003). Attitudinal and normative predictors of alcohol use by older adolescents and young adults. *Journal of Drug Education*, 33(1), 71-90.

Abstract: A model of alcohol use based on the theory of planned behavior, expectancy theory, and the developmental literature on the influence of parents and peers was examined with 87 eleventh grade students, 105 college freshmen, and 107 college juniors. Specifically, the influence of attitudes about the positive and negative consequences of drinking, perceived parental and peer norms about alcohol consumption, and perceived control over drinking predicted self-reported alcohol use. The results suggest that, during adolescence, decisions to consume alcohol are rational, based on the consideration of the positive consequences of alcohol use and perceptions of control over drinking; however, the negative consequences of alcohol use are discounted. While perceived peer norms predicted alcohol consumption in all three age groups, the influence of perceived parental norms varied such that they predicted alcohol use only among the college juniors. Implications and avenues for future research are discussed.

Leeming, D., Hanley, M., & Lyttle, S. (2002). Young people's images of cigarettes, alcohol and drugs. *Drugs: Education*, 169-185.

Abstract: The present study used a word association methodology to explore adolescents' (aged 11-14 yrs) impressions of cigarette smoking, drinking alcohol and taking a range of illegal drugs. In total, 3,571 images were generated which were placed into 24 categories on the basis of content analysis. The predominance of negative imagery was of note, particularly for cigarette smoking and drug taking and there was little evidence of a simplistic generic attitude to substance use. Images of alcohol, especially alcopops, were markedly more positive and were much less likely to contain reference to specific health problems than the images of cigarette smoking. However, there was less differentiation between 'hard' and 'soft' illegal drugs than has been found with older adolescents in other studies and many of the images relating to illegal drugs were poorly defined, revealing vague notions of danger and risk. The present methodology is proposed as a useful tool for assessing attitudes both prior to and following prevention programmes and it is suggested, based on the wide variation in images elicited, that successful prevention dialogues with young people may need to vary their message according to the particular substance targeted.

Lewinsohn, P. M., Brown, R. A., Seeley, J. R., & Ramsey, S. E. (2000). Psychosocial correlates of cigarette smoking abstinence, experimentation, persistence and frequency during adolescence. *Nicotine & Tobacco Research, 2*(2), 121-131.

Abstract: The purpose of this cross-sectional study was to examine and to compare the psychosocial characteristics associated with four dimensions of smoking: abstinence (never vs. ever), experimentation, frequency (daily vs. non-daily), and persistence (former vs. current). Persistent smokers (1 or more years) were contrasted with those who had been able to stop smoking for 1 year or more. From a sample of high school students who were assessed on two occasions (n = 1,507), six smoking groups were defined: never smokers (n = 862), experimenters (n = 235), former non-daily (n = 80), current non-daily (n = 73), former daily (n = 71), and current daily (n = 110). The association between the four smoking dimensions and demographic, psychopathology, and psychosocial variables were examined. Differences between the never smokers and the experimenters were relatively small; albeit even minimal use of cigarettes is associated with some level of problems. As found in previous studies, smokers compared to never-smokers had substantially higher scores on most indices of dysfunction. Both frequent and persistent smoking was associated with higher lifetime prevalence of drug abuse/dependence and having more friends who smoke. Smoking persistence was uniquely related to greater conflict with parents and more problematic academic behavior. Smoking frequency was uniquely associated with higher impulsiveness. Gender did not significantly moderate the associations between smoking status and the psychosocial functioning. To the extent that there were differences between the characteristics associated with frequency and persistence, the results have implications for the design of interventions aimed at these dimensions.

Li, C., Pentz, M. A., & Chou, C. (2002). Parental substance use as a modifier of adolescent substance use risk. *Addiction, 97*(12), 1537-1550.

Abstract: Examined whether parents act as gatekeepers by testing the moderator effects of parents' substance use on the relationships of friends' substance use to adolescent substance use (cigarettes, alcohol and marijuana) in a longitudinal school-based trial for prevention of substance use in adolescents. 1,807 entering middle school students from 57 schools were surveyed prospectively at baseline, 6 months and 18 months. A self-reported survey was used to measure behaviors, attitudes and social influences related to adolescent substance use. Results of logistic regression analyses and multiple group structural equation modeling showed that increasing numbers of parents and friends using substances were associated with greater risk of adolescent substance use, as were more substance offers and lower levels of refusal self-efficacy. Additionally, refusal self-efficacy mediated the effects of baseline use and substance offers on subsequent use. However, non-using parents had a buffering effect on friends' influences to use substances, such that friends' use did not affect adolescent use when parents were non-users, and the effects of substance offers on refusal self-efficacy were weaker.

Lindberg, L. D., Boggess, S., Porter, L., & Williams, S. (2000). *Teen risk-taking: A statistical portrait*. Washington, DC: Urban Institute.

Abstract: The most serious threats to the health and safety of adolescents and young adults are preventable. They result from such risk-taking behaviors as fighting, substance abuse, suicide, and sexual activity rather than from illnesses. These behaviors have harmful, even deadly, consequences. Changes in teen participation in specific risk behaviors have been well documented. What is less well known, and of growing concern, is how overall teen risk-taking has changed. In addition, information is lacking about the nuances in the behavior of adolescents who engage in more than one of these risks at a time. Teens who participate in multiple risks increase the chance of damaging their health. This booklet provides a statistical portrait of teen participation in 10 of the most prevalent risk behaviors. It focuses on the overall participation in each behavior and in multiple risk-taking. The booklet presents the overall incidence and patterns of teen involvement in the following risk behaviors: regular alcohol use, regular binge drinking, regular tobacco use, marijuana use, other illegal drug use, fighting, weapon carrying, suicidal thoughts, suicide attempts, and risky sexual activity.

Lintonen, T. P., & Konu, A. I. (2003). Adolescent alcohol beverage type choices reflect their substance use patterns and attitudes. *Journal of Youth & Adolescence*, 32(4), 279-289.

Abstract: Alcoholic beverage type choices were studied in relation to adolescents' substance use patterns and attitudes towards substance use, utilizing the national 1999 Adolescent Health and Lifestyle Survey data (N = 4,943) collected among Finns aged 14 and 16 years by mail. Frequencies of drinking, drunkenness and smoking, and chewing tobacco use as well as attitudes towards substance use and exposure to other drugs were all strongly related to beverage type choices. The amount of alcohol consumed was associated with the beverage choice. The relationships between beverage choices and substance use patterns were partly mediated through amounts drunk. Beverage type choices seemed to reflect substance use patterns and attitudes more generally. Wine and cider appeared to be beverages related to moderation and control in relation to substance use, but beer drinking may be interpreted as a sign of initiation into a substance use pattern favoring smoking and heavier use of alcohol and other drugs.

Lo, C. C. (2000). Timing of drinking initiation: A trend study predicting drug use among high school seniors. *Journal of Drug Issues*, 30(3), 525-554.

Abstract: A trend study was undertaken to evaluate the relationship between onset age of drinking and the use of drugs. Despite the fact that drinking is illegal for teenagers, general acceptance of alcohol use in mid-adolescence prompts many underage individuals to drink. However, an early start in drinking not only suggests a general tolerance for deviance, it also indicates a violation of role definitions. As explained by problem behavior theory, individuals' tolerance of drug use--or the lack of it--may exert an impact on lifetime and on current drug-using behavior. It was hypothesized that the younger individuals are when they start to drink, the more frequently they will engage in drinking and also in illegal drug use. Using the repeat survey data collected in the "Monitoring the Future" project, the present study offered a new method of partially evaluating the generality of the deviance hypothesis. By comparing 21 years of trends seen in the effects of onset age of drinking on the use of different drugs, this study derived some support for the generality of deviance.

Lonczak, H. S., Huang, B., Catalano, R. F., Hawkins, J. D., Hill, K. G., Abbott, R. D., et al. (2001). The social predictors of adolescent alcohol misuse: A test of the social development model. *Journal of Studies on Alcohol*, 62(2), 179-189.

Abstract: **OBJECTIVE:** This study was conducted to investigate the ability of the social development model (SDM) to predict alcohol misuse at age 16 and to investigate the ability of the SDM to mediate the effects of alcohol use at age 14 on alcohol misuse at age 16. **METHOD:** The sample of 807 (411 males) is from the longitudinal panel of the Seattle Social Development Project which, in 1985, surveyed all consenting fifth-grade students from 18 elementary schools serving high-crime neighborhoods in Seattle, Washington. Alcohol use was measured at age 14, predictors of alcohol misuse were measured at age 15, and alcohol misuse was measured at age 16. Structural equation modeling was used to examine the fit of the model to the data. **RESULTS:** All factor loadings were highly significant and the measurement model achieved a good fit with the data (Comparative Fit Index [CFI] = 0.93). A second-order structural model fit the data well (CFI = 0.91) and also explained 45% of the variance in alcohol misuse at age 16. The SDM partially and significantly mediated the direct effect of age-14 alcohol use on age-16 alcohol misuse. **CONCLUSIONS:** The risk and protective processes specified by the SDM serve as potential targets for the prevention or reduction of adolescent alcohol misuse.

Malone, S. M., Iacono, W. G., & McGue, M. (2002). Drinks of the father: Father's maximum number of drinks consumed predicts externalizing disorders, substance use, and substance use disorders in preadolescent and adolescent offspring. *Alcoholism: Clinical & Experimental Research*, *26*(12), 1823-1832.

Abstract: The maximum number of drinks consumed in 24 hours seems to be an interesting phenotype related to alcoholism. This study determined in an epidemiologic sample whether this measure of drinking history in fathers predicted externalizing behavioral disorders, substance use, and substance abuse in preadolescent and adolescent offspring and whether any such associations would be independent of paternal alcohol dependence diagnoses. Ss were male and female twins, approximately 11 or 17 years of age. In both age cohorts, diagnoses of conduct disorder, oppositional defiant disorder, and attention-deficit/hyperactivity disorder served as outcome measures. In addition, measures of lifetime substance use and of the presence of symptoms of substance abuse were derived for the 11-year-old cohort when subjects were approximately 14 years old and diagnoses of substance abuse were derived for the older cohort at age 17. Paternal maximum alcohol consumption was consistently associated with conduct disorder, substance use, and substance abuse or dependence in male and female offspring. These associations were not mediated by a primary effect of paternal alcoholism. This phenotype might supplement DSM diagnoses of alcohol dependence to reduce the number of false positives in genetic research.

Maney, D. W., Higham-Gardill, D. A., & Mahoney, B. S. (2002). The alcohol-related psychosocial and behavioral risks of a nationally representative sample of adolescents. *J Sch Health*, *72*(4), 157-163.

Abstract: This study, a secondary analysis of the National Longitudinal Study of Adolescent Health, used a representative sample of 7th-through 12th-grade students enrolled in US public schools between April and December 1995. Data were collected in respondents' homes using trained interviewers. A subset of 4,485 adolescents aged 12-17 were surveyed with regard to alcohol-use practices and related health-risk behavior, interpersonal problems, and demographic characteristics. Results showed adolescent males as significantly more likely to drink at high risk than adolescent females. Among those who drank one or more times in the past year, older adolescents were significantly more likely to report high-risk drinking than younger adolescents. Significantly more high-risk adolescents reported having a hangover, vomiting, regretting a behavior, having trouble with parents, regretting a sexual activity, having dating problems, fighting, having trouble with friends, and experiencing school trouble than did low-risk adolescents. These findings underscore the long-range significance of a coordinated school health program; in particular, school health services, school health instruction, and school health environment. Implications for school-based and community-based prevention and intervention programs are presented.

Martin, C. A., Kelly, T. H., Rayens, M., Brogli, B. R., Brenzel, A., Smith, W. J., et al. (2002). Sensation seeking, puberty, and nicotine, alcohol, and marijuana use in adolescence. *J Am Acad Child Adolesc Psychiatry*, *41*(12), 1495-1502.

Abstract: **OBJECTIVE:** To examine the relationship among nicotine, alcohol, and marijuana use; level of sensation seeking (SS); and pubertal development. **METHOD:** Subjects were early and middle adolescent males and females recruited from a psychiatric clinic (n = 77) and two general pediatric clinics (n = 131). SS was measured by using the Sensation Seeking Scale for Children. Pubertal development was measured with a modified Pubertal Development Scale that was completed by the adolescent and his/her parent about the adolescent. Adolescent self-reports of nicotine, alcohol, and marijuana use were also obtained using questionnaires. **RESULTS:** SS was higher in males and females who reported nicotine and alcohol use and in males who reported marijuana use. SS was positively associated with pubertal development in males and females, even when controlling for age. Furthermore, SS mediated the relationship of pubertal development and drug use in males and females. **CONCLUSIONS:** The observation that SS mediates the relationship between pubertal development and drug use in males and females may contribute to understanding changes in drug use that are seen during adolescence. In addition, SS is associated with drug use and is easily measured in a variety of clinical settings.

Mason, W. A., & Windle, M. (2001). Family, religious, school and peer influences on adolescent alcohol use: A longitudinal study. *Journal of Studies on Alcohol*, 62(1), 44-53.

Abstract: Objective: In this study, the cross-temporal relationship between family social support and adolescent alcohol use was examined. A primary aim was to investigate the mechanisms through which family social support affects drinking among youth. Another aim was to examine reciprocal relationships among the study variables. Method: Four-wave (with 6-month intervals) panel survey data collected from 840 middle adolescent boys (n = 443) and girls (n = 397) attending a suburban school district in western New York were analyzed using structural equation modeling with maximum likelihood estimation. Results: Analyses revealed that family social support was indirectly associated with decreased alcohol consumption among the respondents, primarily through variables measuring religiosity, school grades and peer alcohol use. In addition, adolescent alcohol use was directly associated with subsequent increases in peer alcohol use and later decreases in school performance. Results also showed that receiving good grades in school predicted moderate increases in family social support. Conclusions: The findings of this study are discussed in terms of the interrelationships that exist among multiple socializing influences and alcohol use among adolescents.

Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth & Adolescence*, 31(4), 267-277.

Abstract: This longitudinal project examined peer influence across five risk behaviors: cigarette smoking, alcohol consumption, marijuana use, tobacco chewing, and sexual debut. A total of 1,969 adolescents aged 12-18 years completed two waves of data collection. Each respondent matched behavior data for at least one friend. Results found that a random same sex peer predicts a teen's risk behavior initiation; there is influence only to initiate cigarette and marijuana use; and that there is influence to initiate and stop alcohol and chewing tobacco use. This finding suggests that friends may protect adolescents from risk activities. The study has implications for understanding how peer influence, expressed as social norms, may be used in public health campaigns that target teen behavior.

McBride, N., Farrington, F., & Midford, R. (2000). What harms do young Australians experience in alcohol-use situations? *Australian & New Zealand Journal of Public Health*, 24(1), 54-59.

Abstract: OBJECTIVE: An insight into the alcohol-related experiences of young students in Perth, Western Australia, with particular emphasis to alcohol-related harm. METHOD: The sample of 2,329 students (female: n = 1,089, male: n = 1,240) is a school-based group selected using cluster sampling, with stratification by socio-economic area and represents 11 to 12 year olds' experiences with alcohol and alcohol-related harm. The SHAHRP survey instrument was developed and pre-tested to measure students' knowledge, attitudes, patterns and context of use, harms associated with the students' own alcohol consumption and harms associated with other people's use of alcohol and incorporates the students' perceptions of alcohol-related harm. RESULTS: Nearly two-thirds of all young people consumed alcohol under adult supervision; nearly 40% of all young males and 34% of all young females drink alcohol in unsupervised situations; and a fifth of young males consumed alcohol alone. Young males start drinking younger and consumed alcohol more regularly than young females, and consumed more alcohol per occasion. In the past 12 months, young males experienced more than five and young females more than three alcohol-related harms associated with their own alcohol consumption. They experienced a similar number of harms associated with other people's use of alcohol. Unsupervised drinkers were nearly seven times more likely to experience alcohol-related harm than supervised drinkers and nearly 13 times more likely to experience alcohol-related harm than non-drinkers. CONCLUSION AND IMPLICATIONS: The results can help inform the development of alcohol education programs for young people.

- Molina, B. S. G., & Pelham, W. E. Jr., (2003). Childhood predictors of adolescent substance use in a longitudinal study of children with ADHD. *Journal of Abnormal Psychology, 112*(3), 497-507.
Abstract: Children diagnosed with attention-deficit hyperactivity disorder (ADHD; n=142) were prospectively monitored into adolescence (13-18 years old) to evaluate their risk for elevated substance use relative to same-aged adolescents without ADHD (n=100). Probands reported higher levels of alcohol, tobacco, and illicit drug use than did controls. Group differences were apparent for alcohol symptom scores but not for alcohol or marijuana disorder diagnoses. Within probands, severity of childhood inattention symptoms predicted multiple substance use outcomes; childhood oppositional defiant disorder/conduct disorder (ODD/CD) symptoms predicted illicit drug use and CD symptoms. Persistence of ADHD and adolescent CD were each associated with elevated substance use behaviors relative to controls. Further study of the mediating mechanisms that explain risk for early substance use and abuse in children with ADHD is warranted.
- Musher-Eizenman, D. R., Holub, S. C., & Arnett, M. (2003). Attitude and peer influences on adolescent substance use: The moderating effect of age, sex, and substance. *Journal of Drug Education, 33*(1), 1-23.
Abstract: Many studies have suggested the importance of peer influence and personal attitudes (e.g., expectancies, resistance self-efficacy, and perceived harm) in predicting adolescent use of illegal substances. The present study examined these variables in relation to self-reported use of alcohol, cigarettes, and marijuana for 213 younger adolescents (12-15 years old) and 219 older adolescents (18-22 years old). A series of logistic regressions was performed to assess variables relating to use of each substance by age group and gender. Friends' use was significantly related to substance use for both age groups, both sexes, and all substances examined in this study. Perceived harm was not significantly related to use for any group. Finally, outcome expectancies and resistance self-efficacy were differentially related to use depending on age, gender, and substance. The implications of these findings for prevention programming and future research are also discussed.
- Mustanski, B. S., Viken, R. J., Kaprio, J., & Rose, R. J. (2003). Genetic influences on the association between personality risk factors and alcohol use and abuse. *Journal of Abnormal Psychology, 112*(2), 282-289.
Abstract: The authors assessed the association of 2 personality dimensions with use and abuse of alcohol in 1,320 twin pairs concordantly reporting non-abstinence at age 18.5 years. The 2 alcohol outcomes differentially relate to the 2 personality dimensions: Alcohol-related problems correlate more highly with social deviance than with excitement seeking (ES), and alcohol consumption correlates more highly with ES than with social deviance. Biometric models fit to the data identified similar patterns in genetic covariance, although differences were more evident in genetic correlations between social deviance and alcohol outcomes than in those for ES. Results suggest that genetic influences underlie the association of personality with alcohol use and subsequent problems and illustrate the utility of informative twin analyses in exploring links between genes, personality, and behavior disorder.
- Neumark-Sztainer, D., Story, M., French, S. A., & Resnick, M. D. (1997). Psychosocial correlates of health compromising behaviors among adolescents. *Health Educ Res, 12*(1), 37-52.
Abstract: The objective of the present study was to examine psychosocial correlates of diverse health-compromising behaviors among adolescents of different ages. The study population included 123,132 adolescents in sixth, ninth and 12th grades. Psychosocial correlates of substance abuse, delinquency, suicide risk, sexual activity and unhealthy weight loss behaviors were examined. Risk-taking disposition was significantly associated with nearly every behavior across age and gender groups. Other consistent correlates included sexual abuse and family connectedness. Correlates of health-compromising behaviors tended to be consistent across age groups. However, stronger associations were noted between sexual abuse and substance use for younger adolescents, and risk-taking disposition and school achievement were stronger correlates for older youth. The results suggest the presence of both common and unique etiological factors for different health-compromising behaviors among youth. The results emphasize the importance of focusing on positive 'risk-taking' experiences for youth in prevention programs; being sensitive to possible sexual abuse experiences among both female and male adolescents in health-care consultations; integrating strategies for improved family connectedness into health promotion efforts; and making school relevant for all adolescents.

Olsson, C. A., Coffey, C., Toumbourou, J. W., Bond, L., Thomas, L., & Patton, G. (2003). Family risk factors for cannabis use: A population-based survey of Australian secondary school students. *Drug and Alcohol Review*, 22(2), 143-152.

Abstract: The objective of this study was to investigate relationships between adolescent cannabis use and indices of parent-child attachment, family functioning and parent attitudes to drugs and delinquency. A total of 2,848 year 9 and 2,363 year 11 students participated in the Victorian Adolescent Health and Well-Being Survey (1999). The study was a school-based random sample of 535 metropolitan and rural, government and non-government secondary schools throughout Victoria, Australia. Cannabis use was defined as 'any' and 'weekly' use in the last 30 days. Multivariate logistic regression was used to identify independent associations between cannabis use and parent-child attachment, family functioning and parent attitudes to drugs and delinquency. Cannabis use in year 9 was associated with permissive parent attitudes to drugs and delinquency (any use: adjusted odds ratio (OR) = 8.1; weekly use: adjusted OR = 7.6), and was particularly sensitive to small changes in the quality of the parent-child relationship with risk increasing threefold for those describing their attachment as 'good' compared with 'very good' (any use: adjusted OR = 2.8, weekly use adjusted OR = 2.9). A similar, but more moderate pattern association was evident in year 11. After adjusting for other family and background factors, poor family functioning showed minimal association with level of cannabis use at both year levels. Results suggest that intervention efforts might sensibly target strengthening parent-children relationships and promoting less permissive parent attitudes to drug use.

Paavola, M., Vartiainen, E., & Puska, P. (2001). Smoking cessation between teenage years and adulthood. *Health Education Research*, 16(1), 49-57.

Abstract: Most smokers begin smoking in adolescence. It is less well known how young people quit smoking and the factors that are associated with this process. A 15-year follow-up study on the North Karelia Youth Project has made it possible to assess these factors using a longitudinal study design. The project began in 1978 with students in Grade 7 of junior high school (age 13 years) and concluded in 1980 when the students reached Grade 9 (age 15 years). The follow-up study included four additional surveys. The present analyses are based on the data collected at ages 15, 21 and 28. The original sample comprised 903 students and the response rate of the last survey was 71%. A quarter (26%) of daily smokers and about half (46%) of occasional smokers at age of 15 had quit by the age of 28. The cessation rate was higher among females than males. The cessation rate was higher among married, employed and white-collar workers. Cessation was less prevalent among those who had friends and family members who smoked. The cessation rate was lower among those who consumed fatty milk, had less leisure-time physical activity and consumed more alcohol. One-third of all teenage smokers stop smoking before the age of 28, averaging a 2.3% annual decline. Cessation is greater among occasional than daily smokers and greater overall among females.

Patterson, G. R., Dishion, T. J., & Yoerger, K. (2000). Adolescent growth in new forms of problem behavior: Macro- and micro-peer dynamics. *Prevention Science*, 1(1), 3-13.

Abstract: Longitudinal data from an at-risk sample were used to analyze individual linear trend scores for each of three new forms of problem behavior that emerges during the interval from age 10 through 18 years. Growth in substance use, health-risking sexual behavior, and police arrests defined a latent construct for growth in adolescent problem behavior. A structural equation model (SEM) showed a significant path from early involvement with deviant peers to a latent construct for growth in new forms of antisocial behavior. A second SEM showed that the contribution of early involvement to later growth was mediated by a latent construct for deviancy training assessed at age 14 years. The relative rates of reinforcement for deviancy, amount of time spent with deviant peers, and deviancy level of the peer network defined a deviancy training construct that accounted for 53% of the variance in later growth in new forms.

Peretti-Watel, P. (2003). Neutralization theory and the denial of risk: Some evidence from cannabis use among French adolescents. *Br J Sociol*, 54(1), 21-42.

Abstract: In contemporary societies, risk culture and risk profiling lead to the stigmatization of unhealthy behaviours as 'risky'. Risk denial theory refers to a cognitive way to deal with risky behaviours and can be considered as an updated variant of Sykes and Matza's neutralization theory. People neutralize the 'risky' label using specific techniques that must be added to those previously enlisted by Sykes and Matza. This paper introduces and discusses three techniques of risk denial: scapegoating, self-confidence and comparison between risks. As it is usually defined and studied as a 'risky behaviour', cannabis use provides a relevant example to illustrate these types of risk denial, thanks to various ethnographic studies (including Becker's seminal work on marijuana smokers) and quantitative French data from the 1999 European School Survey on Alcohol and Other Drugs (ESPAD). In order to deny the 'risky' label, cannabis users scapegoat 'hard drugs' users, they emphasize their own ability to control their consumption personally, or they compare cannabis and alcohol risks. The paper concludes with suggestions for further analyses of risk denial.

Perry, C. L., Komro, K. A., Jones, R. M., Munson, K., Williams, C. L., & Jason, L. (2002). The measurement of wisdom and its relationship to adolescent substance use and problem behaviors. *Journal of Child & Adolescent Substance Abuse*, 12(1), 45-63.

Abstract: The objective of this study was to create an Adolescent Wisdom Scale, based on the Functional Value Scale of L. A. Jason et al (in press). The Adolescent Wisdom Scale is a self-rating of 23 attributes that have been shown to be associated with people who are perceived to have wisdom. The sample of 2,027 high school seniors, from 20 school districts in northeastern Minnesota, were administered a survey in spring 1998, as part of an ongoing alcohol use prevention program. The scale was found to have high internal consistency and three subscales which were significantly associated with less involvement with alcohol use, cigarette use and violent behaviors.

Petraitis, J., Flay, B. R., Miller, T. Q., Torpy, E. J., & Greiner, B. (1998). Illicit substance use among adolescents: A matrix of prospective predictors. *Subst Use Misuse*, 33(13), 2561-2604.

Abstract: This paper reviews findings from 58 prospective studies of illicit substance use (ISU) among adolescents. It arranges 384 findings according to three types of influence (viz., social, attitudinal, and intrapersonal) and four levels of influence (viz., ultimate, distal, proximal, and immediate). The bulk of evidence reconfirms the importance of several predictors of ISU (e.g., intentions and prior substance-related behavior, friendship patterns and peer behaviors, absence of supportive parents, psychological temperament), reveals that a few variables thought to be well-established predictors may not be (e.g., parental behaviors, parental permissiveness, depression, low self-esteem), and uncovers several variables where findings were either sparse or inconsistent (e.g., the role of public policies concerning ISU, mass media depictions of ISU, certain parenting styles, affective states, perceptions of parental disapproval for ISU, and substance-specific refusal skills). Directions for future research are discussed.

Pletcher, J. R., & Schwarz, D. F. (2000). Current concepts in adolescent smoking. *Current Opinion in Pediatrics*, 12(5), 444-449.

Abstract: This review discusses important research findings regarding adolescent tobacco use reported from April 1999 to March 2000. Although the vast majority of adult smokers began before 18 years of age, a significant number of college students seem to be initiating smoking behaviors. Recent literature reviews pointed to cultural as well as neurochemical factors that lead to increased tobacco consumption while creating barriers to quitting. Psychosocial and behavioral correlates of cigarette smoking revealed the role that tobacco use plays in coping with cultural, social, and intrapsychic demands. In addition to understanding why and how adolescents initiate and maintain cigarette smoking, recent studies also attempted to uncover the correlates of quitting behavior. However, recent reports of school-based intervention trials revealed that reproducible, long-term success rates may not be achievable with a single program or approach. Finally, several recent studies explored the role that health care providers play in prevention and intervention, as well as the pitfalls of well-meaning office interventions.

Prinstein, M. J., Boergers, J., & Spirito, A. (2001). Adolescents' and their friends' health-risk behavior: Factors that alter or add to peer influence. *J Pediatr Psychol*, 26(5), 287-298.

Abstract: OBJECTIVE: To examine models of risk for adolescent health-risk behavior, including family dysfunction, social acceptance, and depression as factors that may compound or mitigate the associations between adolescents' and peers' risk behavior. METHODS: Participants were 527 adolescents in grades 9-12. Adolescents reported on their substance use (cigarette and marijuana use, heavy episodic drinking), violent behavior (weapon carrying, physical fighting), suicidality (suicidal ideation and attempts), and the health-risk behavior of their friends. RESULTS: Adolescents' substance use, violence, and suicidal behavior were related to their friends' substance use, deviance, and suicidal behaviors, respectively. Friends' prosocial behavior was negatively associated with adolescent violence and substance use. Family dysfunction, social acceptance, and depression altered the magnitude of association between peers' and adolescents' risk behavior. In cumulative risk factor models, rates of adolescent health-risk behavior increased twofold with each added risk factor. CONCLUSIONS: Results supported both additive and multiplicative models of risk. Implications for intervention and primary prevention are discussed.

Riglietta, M., & Campana, M. (2002). Prevalence lifetime of substance use and other addictive behaviours in high school students. (Meeting abstract). *European Psychiatry*, 17(Suppl. 1), 137.

Abstract: The prevalence of lifetime substance use and other addictive behaviors of high school students was studied using a self-administered questionnaire. The research sample included 458 female and 153 male students with an average age of 16.4 years, who lived close to the Milan, Italy metropolitan area. Data about use of difference substances, attitudes toward gambling, and other risk-seeking behaviors were obtained. The following results of the study were seen: (1) higher cocaine use (9 percent) than that seen in other European studies, where the lowest prevalence was 0.2 percent in Finland and 4.3 percent in Spain; (2) varying THC use from 3 percent in Greece to 41 percent in the UK with a mean score of 18.7 percent in the European Union; (3) use of MDMA ranging from 0.2 percent in Finland to 9 percent in Ireland; (4) high rate of use of MDMA in this Italian study, especially in females (41 percent); (5) high rate of smoking in females (40.8 percent), especially compared to males; (6) rate of alcohol use comparable to that seen in Europe; and (7) difficulties in comparing gambling attitude and risk-seeking behaviors. The authors conclude that there is a need to pay greater attention to the new trends in addiction (in gambling and risk-seeking behaviors) to clearly understand the real prevalence of the pathological aspects of these phenomena.

Rohde, P., Lewinsohn, P. M., Brown, R. A., Gau, J. M., & Kahler, C. W. (2003). Psychiatric disorders, familial factors and cigarette smoking: I. Associations with smoking initiation. *Nicotine & Tobacco Research*, 5(1), 85-98.

Abstract: The aims of this study were to examine associations between smoking initiation and lifetime psychopathology, regular smoking by family members, and psychopathology in family members; to describe the degree to which the onset of the disorder precedes or follows smoking initiation; and to examine whether smoking initiators differ as a function of age of smoking onset. Nine hundred and forty-one participants were interviewed at three time points, beginning in high school and most recently at age 24. Biological parents and full siblings were interviewed for lifetime psychopathology and regular smoking. Most measures of lifetime psychopathology were associated with smoking initiation. Rates of initiation were especially elevated in participants with multiple disorders. Regular smoking by mother and a sibling was associated significantly with smoking initiation, as were two of four measures of psychopathology in relatives. When all significant univariate variables were examined in a single model, drug use disorders, regular smoking by mother, and regular smoking by a sibling remained significantly associated with smoking initiation. Results underscore the potential importance of assessing and treating psychiatric disorders in smoking prevention and cessation efforts.

Scal, P., Ireland, M., & Wagman, I. W. (2003). Smoking among American adolescents: A risk and protective factor analysis. *Journal of Community Health, 28*(2), 79-97.

Abstract: Cigarette smoking remains a substantial threat to the current and future health of America's youth. The purpose of this study was to identify the risk and protective factors for cigarette smoking among US adolescents. Data from the National Longitudinal Study of Adolescent Health was used, comparing the responses of all non-smokers at Time 1 for their ability to predict the likelihood of smoking at Time 2, one year later. Data was stratified into four gender by grade group cohorts. Cross-cutting risk factors for smoking among all four cohorts were: using alcohol, marijuana, and other illicit drugs; violence involvement; having had sex; having friends who smoke, and learning problems. Having a higher grade point average and family connectedness were protective across all cohorts. Other gender and grade group specific risk and protective factors were identified. The estimated probability of initiating smoking decreased by 19.2% to 54.1% both in situations of high and low risk as the number of protective factors present increased. Of the factors that predict or protect against smoking, some are influential across all gender and grade group cohorts studied, while others are specific to gender and developmental stage. Prevention efforts that target both the reduction of risk factors and enhancement of protective factors at the individual, family, peer group and community are likely to reduce the likelihood of smoking initiation.

Sher, K. J., & Gotham, H. J. (1999). Pathological alcohol involvement: A developmental disorder of young adulthood. *Dev Psychopathol, 11*(4), 933-956.

Abstract: In 1987, we began a longitudinal study of the offspring of alcoholic parents and have been following this group of young adults from their freshman year in college throughout their transition into later young adulthood. The goal of this review is to highlight some of the findings we consider most important and relevant to the development of pathological alcohol involvement in young adulthood. Courses of pathological alcohol involvement in young adulthood are outlined. Predictors of both the development and course of pathological alcohol use in young adulthood are also addressed, including family history of alcoholism, personality, alcohol use motivations, and role transitions. While certainly a problem in its own right, pathological alcohol involvement can also affect the attainment of important life tasks and success in various life roles. Consequently, we also examine the effects of pathological alcohol involvement on later role transitions and role attainment. Finally, prevention, policy, and treatment issues surrounding this stage of life are discussed.

Shope, J. T., Raghunathan, T. E., & Patil, S. M. (2003). Examining trajectories of adolescent risk factors as predictors of subsequent high-risk driving behavior. *Journal of Adolescent Health, 32*(3), 214-224.

Abstract: Examined the effects on early high-risk driving behavior of changes over time (trajectories) in adolescent alcohol use, friends' support for drinking susceptibility to peer pressure, and tolerance of deviance. Statewide driving data were obtained for 4,813 subjects who had completed at least 2 previous school-based questionnaires. The questionnaire data provided predictor measures from 5th-10th grades. Trajectory information on predictor measures was summarized using each measure's slope over time and level at the 10th grade data collection. Regression models used serious offenses, alcohol related offenses, serious crashes, and alcohol-related crashes as outcomes, trajectory measures as predictors, and produced parameter estimates adjusted for demographic measures. Probabilities of having a serious offense or serious crash for 5 sample trajectories on each measure were obtained from the estimated regression models. All 4 predictor measures were important particularly in predicting serious offenses, alcohol-related offenses, and alcohol-related crashes. The highest probabilities for young adult high-risk driving were found among those with consistently high or increasingly high trajectories of friends' support for drinking susceptibility to peer pressure, and tolerance of deviance.

Shrier, L. A., Harris, S. K., Kurland, M., & Knight, J. R. (2003). Substance use problems and associated psychiatric symptoms among adolescents in primary care. *Pediatrics*, *111*(6 Pt 1), e699-705.

Abstract: OBJECTIVE: Substance use disorders (SUDs) are associated with other mental disorders in adolescence, but it is unclear whether less severe substance use problems (SUPs) also increase risk. Because youths with SUPs are most likely to present first to their site of primary care, it is important to establish the presence and patterns of psychiatric comorbidity among adolescent primary care patients with subdiagnostic use of alcohol or other drugs. The objective of this study was to determine the association between level of substance use and psychiatric symptoms among adolescents in a primary care setting. METHODS: Patients who were aged 14 to 18 years and receiving routine care at a hospital-based adolescent clinic were eligible. Participants completed the Problem Oriented Screening Instrument for Teenagers Substance Use/Abuse scale, which is designed to detect social and legal problems associated with alcohol and other drugs, and the Adolescent Diagnostic Interview, which evaluates for Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition diagnoses of substance abuse/dependence and 8 types of psychiatric symptoms. We examined gender-specific associations of no/nonproblematic substance use (NSU), SUP, and SUD with psychiatric symptom presence (any symptoms within each type), score (symptom scores summed across all types), and number of types (number of different symptom types endorsed). RESULTS: Of 538 adolescents (68% female; mean +/- standard deviation age: 16.6 +/- 1.4 years), 66% were classified with NSU, 18% with SUP, and 16% with SUD, and 80% reported having at least 1 type of psychiatric symptom in the previous 12 months. Symptoms of anxiety were most common (60% of both boys and girls), followed by symptoms of depression among girls (51%) and symptoms of attention-deficit disorder (ADD) among boys (47%). Compared with those with NSU, youths with SUP and those with SUD were more likely to report symptom presence for several types of psychiatric symptoms. Girls with SUP or SUD had increased odds of reporting symptoms of mania, ADD, and conduct disorder; girls with SUD were at increased risk for symptoms of depression, eating disorders, and hallucinations or delusions. Boys with SUP had increased odds of ADD symptoms, whereas boys with SUD had increased odds of reporting hallucinations or delusions. Boys with SUP or SUD had increased odds of reporting symptoms of conduct disorder. Youths with SUP and SUD also had higher psychiatric symptom scores and reported a wider range of psychiatric symptom types (number of types) compared with youths with NSU. CONCLUSIONS: Like those with SUD, adolescents with subdiagnostic SUP were at increased risk for experiencing a greater number of psychiatric symptoms and a wider range of psychiatric symptom types than youths with NSU. Specifically, adolescents with SUP are at increased risk for symptoms of mood (girls) and disruptive behavior disorders (girls and boys). These findings suggest the clinical importance of SUP and support the concept of a continuum between subthreshold and diagnostic substance use among adolescents in primary care. Identification of youths with SUP may allow for intervention before either the substance use or any associated psychiatric problems progress to more severe levels.

Sieving, R. E., Maruyama, G., Williams, C. L., & Perry, C. L. (2000). Pathways to adolescent alcohol use: Potential mechanisms of parent influence. *Journal of Research on Adolescence*, *10*(4), 489-517.

Abstract: The purpose of this study was to clarify parents' role in the initiation of alcohol use of young adolescents. Subjects included 413 adolescent-parent dyads in which the youth had not begun drinking at the end of 6th grade. All dyads were participants in Project Northland (PN), an adolescent alcohol use prevention trial. A proposed etiologic model including parent norms related to underage drinking, household alcohol-related problems, family problems, and potential mediators of parent influence was tested using structural equation modeling techniques. To explore model differences between intervention conditions, separate models were estimated for intervention and reference samples. Among the parent constructs modeled, parent norms around underage drinking exhibited the strongest relationships with 7th- and 8th-grade alcohol use. Parent norms were directly related to adolescents' alcohol-related cognitions, and thereby had a significant indirect relationship with teenagers' alcohol use. No significant differences were found between intervention and reference groups in model-specified pathways to alcohol use.

Silberg, J., Rutter, M., D'Onofrio, B., & Eaves, L. (2003). Genetic and environmental risk factors in adolescent substance use. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 44(5), 664-676.

Abstract: The present study was undertaken with the goal of understanding the causes of association between substance use and both conduct disturbance (CD) and depression in adolescent boys and girls. Multivariate genetic structural equation models were fitted to multi-informant, multi-wave, longitudinal data collected in extensive home interviews with parents and children with respect to 307 MZ male, 392 MZ female, 185 DZ male, and 187 DZ female, same-sex twin pairs aged 12-17 years from the Virginia Twin Study of Adolescent Behavioral Development (VTSABD). Although conduct disturbance and depression were moderately associated with substance use, the pattern of genetic and environmental risk differed for males and females and across the two disorders. Genetic factors were predominant in girls' substance use whereas boys' use was mediated primarily by shared environmental factors reflecting family dysfunction and deviant peers. The patterns of correlations across the two waves of the study were consistent with conduct disturbance leading to substance use in both males and females, but depression leading to smoking, drug use and, to a lesser extent, alcohol use in girls.

Simantov, E., Schoen, C., & Klein, J. D. (2000). Health-compromising behaviors: Why do adolescents smoke or drink? Identifying underlying risk and protective factors. *Archives of Pediatrics & Adolescent Medicine*, 154(10), 1025-1033.

Abstract: OBJECTIVES: To better understand the motivation for adolescent smoking and drinking and to identify the underlying risk and protective factors associated with these behaviors among adolescents. DESIGN: Cross-sectional, school-based survey of students in grades 5 through 12. PARTICIPANTS: A nationally representative sample of 2,574 boys and 2,939 girls in grades 7 through 12 from 297 public, private, and parochial schools across the United States who participated in The Commonwealth Fund Survey of the Health of Adolescent Girls and Boys in 1997. MAIN OUTCOME MEASURES: Sex-specific adjusted relative risks (RRs) and 95% confidence intervals (CIs) comparing self-reported regular smokers and regular drinkers by risk and protective factors with adolescents reporting none of these behaviors. RESULTS: Adolescent boys and girls were equally likely to be regular smokers (11.2%). The prevalence rate of regular drinking was only slightly higher for boys (22.4%) than it was for girls (19.3%). The rates of both health-risk behaviors were significantly higher for those reporting risk factors, and the strengths of associations varied by sex. Sex differences also emerged in motivation for engaging in these behaviors. When we adjusted for demographic characteristics, exposure to childhood abuse (RR, 4.1; 95% CI, 2.4-7.0) and stressful life events (RR, 2.4; 95% CI, 1.1-5.4) were strongly associated with increased risk for boys' regular smoking. Similar associations were found for regular drinking. For girls, a history of abuse (RR, 1.8; 95% CI, 1.1-2.8), violence within the family (RR, 2.2; 95% CI, 1.6-3.2), depressive symptoms (RR, 1.6; 95% CI, 1.0-2.4), and stressful life events (RR, 3.1; 95% CI, 1.8-5.6) were significantly associated with increased risk for regular smoking. Similar associations were again found for regular drinking. Parental support was protective against both health-risk behaviors for both sexes. Participation in extracurricular activities was associated with lower risk for regular smoking for boys (RR, 0.4; 95% CI, 0.2-0.7) and for girls (RR, 0.3; 95% CI, 0.2-0.5); however, there was no significant association between drinking behavior and participation in activities. CONCLUSIONS: The increased risk for regular smoking and regular drinking among adolescents with a history of abuse, family violence, depressive symptoms, and stressful life events suggests that routine screening for abuse, violence, and other family experiences should be an essential component of adolescent health care visits. Effective prevention programs to reduce smoking and drinking among adolescents should recognize that health-risk behaviors may be associated with other negative life experiences and that the strength of these associations differs by sex.

Simons-Morton, B. G. (2002). Prospective analysis of peer and parent influences on smoking initiation among early adolescents. *Prev Sci*, 3(4), 275-283.

Abstract: The nature and relative importance of psychosocial influences on smoking initiation among early adolescents are topics of substantial research interest. Students (n = 1,081) from four middle schools were surveyed at the beginning and end of the sixth grade. Baseline predictors were regressed on smoking initiation at end of sixth grade. In bivariate, logistic regression analyses, association with problem behaving peers, perceived prevalence, and depression were positively associated and adjustment to school, perceived social competence, parent expectations, parental monitoring, and parental involvement were negatively associated with smoking initiation. In multivariate logistic regression analyses controlling for sex, race, and school, peer affiliation and perceived prevalence were positively associated, whereas social competence and parental monitoring were negatively associated with smoking initiation. A significant interaction between parental involvement and peer affiliation indicated that among teens with problem behaving friends, only those with parents who were relatively uninvolved were at increased risk for smoking initiation. This finding held for boys, girls, Whites, Blacks, and teens living in single parent families. These findings provide evidence that antecedent parenting behaviors may protect early adolescents against smoking even in the context of negative peer affiliation.

Spicer, P., Novins, D. K., Mitchell, C. M., & Beals, J. (2003). Aboriginal social organization, contemporary experience and American Indian adolescent alcohol use. *Quarterly Journal of Studies on Alcohol*, 64(4), 450-457.

Abstract: Objective: Anthropologists with an interest in American Indian alcohol use have long held that how native people drink has been conditioned by aspects of the social organization of their societies prior to the disruptive influences of European colonialism. Our goal in this article was to explicitly test the importance of these factors in four contemporary American Indian cultural groups. Method: Using data on adolescent alcohol use drawn from the first full wave of the longitudinal Voices of Indian Teens Project (N = 1,651, 51% female), we tested whether patterns of quantity-frequency of alcohol use and the negative consequences of alcohol use predicted by social organizational variables were found among contemporary adolescents and, subsequently, whether these differences persisted when other, more proximal, variables were included. Results: Cultural differences appeared to account for a small percentage of the variance in both quantity-frequency of alcohol use and negative consequences in the initial steps of our analyses, but the pattern in these data was not consistent with the predictions of existing theories regarding aboriginal social organization.

Stenbacka, M. (2003). Problematic alcohol and cannabis use in adolescence--risk of serious adult substance abuse? *Drug and Alcohol Review*, 22(3), 277-286.

Abstract: The aim of this longitudinal study was to investigate the problematic use of alcohol, cannabis or both in adolescence, identifying various risk factors for adult alcohol and drug abuse. The study included 7,577 18-year-old men conscripted in 1969-70. At enrolment, they completed two questionnaires about alcohol and drug use, social background, behavioural factors and health conditions. Data on adult alcohol and substance abuse were obtained from official registers up to 1996. A combination of problematic alcohol use and cannabis use in adolescence (>10 times) was associated more strongly with both adult alcohol abuse (RR = 6.56, 95% CI 4.24-9.83) and drug abuse (RR = 19.37, 95% CI 11.16-32.30) than adolescent use of cannabis or alcohol alone. When stratifying for different risk factors, the combination of both problematic alcohol use and cannabis use had higher relative risks of both outcomes than alcohol or cannabis use alone. In multivariate analyses, tobacco smoking was associated most strongly (RR = 2.26, 1.58-3.24) with adult alcohol abuse, and a combination of problematic alcohol use and cannabis use (<10 times) in adolescence was associated most strongly with adult drug abuse (RR = 5.60, 95% CI 2.92-10.75). Adolescent use of both cannabis and alcohol seems to be a more serious problem than adolescent use of either alcohol or cannabis alone with regard to escalation to adult alcohol and drug abuse. This is important knowledge for prevention of adult abuse. Special effort should be made to reach those who mix risky alcohol use and cannabis use in late adolescence.

Stewart, C., & Power, T. G. (2002). Identifying patterns of adolescent drinking: A tri-ethnic study. *Journal of Studies on Alcohol, 63*(2), 156-168.

Abstract: Sought to identify common patterns of adolescent drinking in a tri-ethnic sample (White, Black, and Mexican American) and to identify which patterns may be the most problematic in each ethnic group. 1,874 9th-12th grade students completed questionnaires on their drinking practices, self-esteem and involvement in antisocial behaviors. Cluster analyses identified 8 common adolescent drinking patterns: Light, Parent, Family Occasion, Date, Moderate-Friend, Party, Outdoor and Heavy Multiple-Context drinkers. Light, Parent and Family Occasion drinkers showed the highest levels of self-esteem and the lowest levels of drinking consequences, drinking reasons and antisocial behavior. Heavy Multiple-Context drinkers showed low self-esteem and high levels of antisocial behavior, drinking reasons and drinking consequences. Party and Date drinkers generally fell between these 2 groups on the drinking and adjustment variables, with the exception that Date drinkers were as likely to engage in antisocial behaviors as were drinkers in the Heavy Multiple-Context group. Among all of the drinking groups, Outdoor drinkers showed the highest levels of self-esteem, high levels of antisocial behavior and moderate levels of drinking reasons and consequences.

Stewart, S. H., & Kushner, M. G. (2003). Recent research on the comorbidity of alcoholism and pathological gambling. *Alcoholism: Clinical and Experimental Research, 27*(2), 285-291.

Abstract: This article summarizes a symposium held at the 2002 Annual Meeting of the Research Society on Alcoholism in San Francisco, CA, and was prepared on behalf of the symposium participants by the symposium co-organizers/co-chairs. Prior research with both clinical and nonclinical populations indicates a high comorbidity between alcohol-use disorders and pathological gambling. This symposium involved a set of papers in which exciting new research on this form of comorbidity was presented. The studies spanned populations of problem-gambling helpline callers, problem gamblers attempting to recover, and community-recruited gambler research volunteers. The studies used methodologies ranging from questionnaire and interview to laboratory-based paradigms (i.e., cognitive and alcohol challenge). Study designs ranged from cross-sectional to longitudinal and from correlation to experiment. The symposium highlighted novel approaches that researchers are using to enhance understanding of functional relations that may underlie this common comorbidity.

Sussman, S., Dent, C. W., & Leu, L. (2000). The one-year prospective prediction of substance abuse and dependence among high-risk adolescents. *Journal of Substance Abuse, 12*(4), 373-386.

Abstract: The present study examined 1-year prospective predictors of self-reported substance abuse and dependence among a sample of 702 youths at high risk for drug abuse from 21 southern California continuation high schools. Triadic influence theory was used as a theoretical guide. Predictors were selected as measures of triadic influence theory. Among 13 predictors, a drug use and intention index, and concern that one is or will become an addict or alcoholic, were consistently predictive of self-reported substance abuse or substance dependence 1 year later, controlling for baseline abuse or dependence status. In addition, baseline substance abuse, White ethnicity, and relatively poor prosocial coping predicted later substance dependence. Apparently, adolescents can predict their future use, and abuse or dependence status. Also, instruction in prosocial coping (e.g., seeking social support) may help inhibit the transition from substance abuse to substance dependence.

Sussman, S., McCuller, W. J., & Dent, C. W. (2003). The associations of social self-control, personality disorders, and demographics with drug use among high-risk youth. *Addictive Behaviors, 28*(6), 1159-1166.

Abstract: A 10-item self-report measure of social self-control was examined for its association with substance use, controlling for its associations with 12 personality disorder indices and 4 demographic variables among a sample of 1,050 high-risk youth. Social self-control was found to be associated with 30-day cigarette smoking, alcohol use, marijuana use, and hard drug use, controlling for these other variables. The most consistent concurrent predictors of substance use were male gender, antisocial personality disorder, and social self-control. These results highlight the importance of social self-control as a unique concurrent predictor of substance use and suggest that social self-control skill training is relevant in substance abuse prevention programming.

Tapert, S. F., McCarthy, D. M., Aarons, G. A., Schweinsburg, A. D., & Brown, S. A. (2003). Influence of language abilities and alcohol expectancies on the persistence of heavy drinking in youth. *Journal of Studies on Alcohol*, 64(3), 313-321.

Abstract: Examined a model in which language skills moderate the extent to which expectancies about the positive effects of alcohol (AI) predict the persistence of AI involvement in youth over an 8-yr period. 139 participants were substance use disordered adolescents recruited from inpatient AI and drug treatment centers. Participants (Pp) were administered neuropsychological tests, expectancy questionnaires and substance involvement interviews that spanned an 8-yr period from ages 16-24 on average. Substance involvement was assessed by self-report, collateral reports and urine toxicology screens. Using latent class growth analysis of AI use over 8 yrs, Pp were classified as abstainers, infrequent users, worse with time or frequent users. Language x Expectancy interactions were significant at all time points. This interaction significantly predicted 8-yr AI dependence symptoms over and above effects accounted for by covariates or main effects. For youths with above average language skills, positive AI expectancies predicted AI use frequency and dependence symptoms in the 8 yrs following treatment; expectancies were less related to outcomes for youths with poorer language scores. Results suggest that verbal skills may magnify the relationship between AI expectancies and drinking behavior.

Toumbourou, J. W., Williams, I. R., Snow, P. C., & White, V. M. (2003). Adolescent alcohol-use trajectories in the transition from high school. *Drug and Alcohol Review*, 22(2), 111-116.

Abstract: A cohort of 3,300 students from high schools across Victoria, Australia, were surveyed regarding their patterns of alcohol consumption from mid-1993 to 1995. The first wave of data was collected halfway through the students' final year of school (year 12). Students were then resurveyed 3 months following school completion and on two subsequent occasions, each separated by 6-month intervals. Analysis of the four waves of data indicated that five longitudinal patterns (trajectories) characterized temporal trends in male and female alcohol use through the transition from high school. Stable non-use trajectories were evident for 17% of males and 16% of females. Trajectories of less than weekly use characterized 45% of females and 46% of males, and showed little tendency to escalate toward harmful use. Among those using alcohol on a weekly or more frequent basis in high school, with few exceptions, use continued with at least the same frequency, but the quantity of alcohol consumed tended to escalate over time toward harmful levels. Overall, findings indicate that patterns of alcohol use tend to be stable over time, and more frequent alcohol use during the final year of high school tends to precede potentially harmful alcohol use following high school. Encouraging those high school students who consume alcohol once per week or more often to use alcohol on a less than weekly basis may be a valuable yet neglected harm minimization strategy.

Vakalahi, H. F. (2001). Adolescent substance use and family-based risk and protective factors: A literature review. *J Drug Educ*, 31(1), 29-46.

Abstract: Adolescent substance use has become a serious concern nationwide. Although there are many ways of viewing adolescent substance use, family influence has been established as one of the strongest sources of risk and protection. A review of the literature indicated relevant theories for understanding adolescent substance use and specific family-based variables influencing adolescent substance use. In general, there seems to be a relationship between adolescent substance use and family-based risk and protective factors. Relevant theories identified in the literature review include family systems theory, social cognitive theory, social control theory, and strain theory. Specific family-based risk and protective factors include family relationships such as with siblings and parents and family characteristics such as ethnicity and religious backgrounds. Future implications for research and prevention/intervention in relation to family-based risk and protective factors are discussed.

Vakalahi, H. F. (2002). Family-based predictors of adolescent substance use. *Journal of Child & Adolescent Substance Abuse, 11*(3), 1-15.

Abstract: This study examined family-based variables as predictors of adolescent substance use. Parental education level, ethnic background, religious affiliation, sibling substance use, family conflict, and family involvement were the specific family-based variables examined. 5,005 randomly sampled adolescents in the state of Utah participated in this study. Responses of 4,983 adolescents (51% males and 49% females, aged 12-17 yrs) were included in the data analysis. Overall, this study supported prior research, indicating certain family variables as predictors of adolescent substance use. Sibling marijuana use, family involvement, and religious affiliation were predictors of adolescent tobacco use. Family involvement, sibling tobacco use, and religious affiliation were predictors of adolescent alcohol use. Family involvement, sibling alcohol use, and religious affiliation were predictors of marijuana use. Future implications for research and practice in relation to family-based risk and protective factors are discussed.

White, V. M., Hopper, J. L., Wearing, A. J., & Hill, D. J. (2003). The role of genes in tobacco smoking during adolescence and young adulthood: A multivariate behaviour genetic investigation. *Addiction, 98*(8), 1087-1100.

Abstract: Examines genetic and environmental influences on variation in smoking involvement. 414 pairs of twins initially aged between 13 and 18 yrs were surveyed 3 times between 1988-96. Biometric modelling estimated the influence of genetic and environmental factors in determining variation in smoking at each wave, both before and after adjusting for perceived smoking behaviours of peers and parents. Twins answered a questionnaire on their own smoking status and reported on the use of tobacco by parents and friends as they perceived it, at each survey wave. At all 3 surveys, current smokers were more likely to have parents who smoked and to have smokers among their peers. Genes and environmental factors, both common and unique, contributed to variation in smoking behaviours. However, after controlling for the smoking behaviours of peers and parents, the role of genes in determining variation in smoking involvement was reduced by 100% at wave 1 and by 30% at wave 2. Friends' smoking reduced the magnitude of common environment variance by 11%, 30% and 40% at waves 1, 2 and 3, respectively. Parents' smoking explained part of the common environment. Genes might influence smoking involvement at wave 1 by influencing choice of peers.

Williams, R. J., McDermitt, D. R., Bertrand, L. D., & Davis, R. M. (2003). Parental awareness of adolescent substance use. *Addictive Behaviors, 28*(4), 803-809.

Abstract: Parental awareness of adolescent substance use was investigated in a high school sample of 985 adolescents and their parents. Only 39% of parents were aware their adolescent used tobacco, only 34% were aware of alcohol use, and only 11% were aware of illicit drug use. There were no variables that differentiated aware from unaware parents for all substances. Greater parental awareness of alcohol and tobacco use occurred with older adolescents. High adolescent ratings of family communication combined with low parental ratings of family communication were also associated with greater parental awareness of alcohol and tobacco use. Better school grades predicted greater awareness of alcohol and illicit drug use. Single parents and blended families were more aware of tobacco and illicit drug use.

Wu, L., Schlenger, W. E., & Galvin, D. M. (2003). The relationship between employment and substance use among students aged 12 to 17. *Journal of Adolescent Health, 32*(1), 5-15.

Abstract: Examined the association between employment status and substance use among students aged 12 to 17 yrs. Secondary analysis of data from the 1995 and 1996 National Household Surveys on Drug Abuse was conducted. The survey is a primary source of data on licit and illicit drug use among non-institutionalized Americans aged 12 yrs or older. About one in six adolescents reported both going to school and holding a job. Approximately one-fourth of students smoked cigarettes, and one-third consumed alcohol in the past year. An estimated 1.6% of students were current heavy cigarette smokers, and 2.6% were current heavy alcohol users. One-yr prevalence estimates of any illicit drug use and heavy illicit drug use were 16.7% and 1.8%, respectively. Among students employed full time, prevalence estimates increased to 9.7% for heavy cigarette smoking, 13.1% for heavy alcohol use, 38.1% for any illicit drug use, and 5.0% for heavy illicit drug use. Logistic regression analyses supported relatively high rates of cigarette use, alcohol use, illicit drug use, and heavy substance use among working students. Mental health problems, especially externalizing behavioral syndromes, were found to coexist with the use and heavy use of substances. The observed associations varied somewhat by gender.

Young, S. E., Corley, R. P., Stallings, M. C., Rhee, S. H., Crowley, T. J., & Hewitt, J. K. (2002). Substance use, abuse and dependence in adolescence: Prevalence, symptom profiles and correlates. *Drug & Alcohol Dependence, 68*(3), 309-322.

Abstract: We present data on the lifetime prevalence of substance use, abuse and dependence in adolescents obtained through structured psychiatric interviews and self-report questionnaires. Most notably, we evaluate symptom profiles based on DSM-IV abuse and dependence criteria for tobacco, alcohol and marijuana, including a gender comparison. Participants are 3,072 adolescents (12-18 years) drawn from three community-based family samples in Colorado. Age trends suggest that substance use is a developmental phenomenon, which increases almost linearly from early to late adolescence. Substance use disorders are less common than experimentation in adolescence, but approximately 1 in 4 adolescents in the oldest cohorts meets criteria for abuse for at least one substance, and 1 in 5 meets criteria for substance dependence. By age 18 nearly 1 in 3 adolescents report daily smoking and 8.6% meet criteria for tobacco dependence. Although alcohol is the most commonly abused substance (10%), a slightly larger proportion of adolescents meet criteria for dependence on marijuana (4.3%) than alcohol (3.5%). Gender differences in prevalence of use more often show greater use in males than females. Males more frequently meet criteria for dependence on alcohol and marijuana in late adolescence, while females are more often nicotine dependent. A comparison of abuse and dependence symptom profiles shows some interesting variability across substances, and suggests that manifestations of a subset of symptoms are gender specific.

Yu, J. (2003). The association between parental alcohol-related behaviors and children's drinking. *Drug & Alcohol Dependence, 69*(3), 253-262.

Abstract: Past literature has established an association between children's alcohol-related behaviors and parents' use of and attitudes toward alcohol. However, it is not clear the extent to which actual parental use and attitudes influence children's alcohol behaviors. The current study directly used parents' reports on alcohol use and attitudes toward alcohol and examined their impact on children's alcohol use. Based on a three-stage random sampling design, 642 dyads of parents and children (ages 15-18) were interviewed by telephone in New York State. Study variables include parental alcohol use, children's alcohol use, parental attitudes toward underage drinking and parent-child interaction. While parental use and attitudes do not seem to significantly affect children's alcohol use, the extent to which parents prohibit children from using alcohol at home tends to reduce children's alcohol involvement. In addition, the greater the amount of time spent with alcohol-using parents, the more likely the children are to use alcohol. Findings suggest that, while parents' alcohol use influences children's alcohol use through extensive interaction, parental control of underage alcohol use in the household appears to reduce children's involvement in underage alcohol use.

Zapert, K., Snow, D. L., & Tebes, J. K. (2002). Patterns of substance use in early through late adolescence. *Am J Community Psychol, 30*(6), 835-852.

Abstract: This study examined patterns of substance use throughout adolescence. A cluster analytic approach was used to identify subgroups of adolescents on the basis of their levels of substance use from early through late adolescence (Grades 6 through 11). Six distinct clusters of substance users emerged--2 groups representing relatively stable patterns of substance use from early through late adolescence (i.e., nonusers and alcohol experimenters), and 4 groups of users showing escalating patterns of substance use (i.e., low escalators, early starters, late starters, and high escalators). The study provides a comprehensive view of adolescent substance use by examining the progression of use from early to late adolescence, demonstrates the usefulness of studying patterns of use across multiple substances, and underscores the importance of building classification schemes based on repeated measurements of substance use to reflect changes over time. Implications of the findings for future research and for identifying high-risk subgroups of adolescents for purposes of intervention based on timing and pattern of escalation are discussed.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality*, 68(6), 999-1029.

Abstract: The first part of this article describes a study of the relationships between personality and risk-taking in six areas: smoking, drinking, drugs, sex, driving, and gambling. The participants, 260 college students, were given self-report measures of risky behaviors in each of the six areas and the Zuckerman-Kuhlman five-factor personality questionnaire. Generalized risk-taking (across all six areas) was related to scales for impulsive sensation seeking, aggression, and sociability, but not to scales for neuroticism or activity. Gender differences on risk-taking were mediated by differences on impulsive sensation seeking. The second part discusses biological traits associated with both risk-taking and personality, particularly sensation seeking, such as the D4 dopamine receptor gene, the enzyme monoamine oxidase, and augmenting or reducing of the cortical evoked potential. Comparative studies show relationships between biological markers shared with other species and correlated behaviors similar to sensation seeking in humans. A biosocial model of the traits underlying risk-taking is presented.

Zweig, J. M., Phillips, S. D., & Lindberg, L. D. (2002). Predicting adolescent profiles of risk: Looking beyond demographics. *Journal of Adolescent Health*, 31(4), 343-353.

Abstract: **PURPOSE:** To identify vulnerability and protective factors related to profiles of risk encapsulating the co-occurrence of health risk behaviors. **METHODS:** The current sample includes 12,578 high school students from the National Longitudinal Study of Adolescent Health, a nationally representative sample. Four profiles of risk behaviors (sexual activity, general alcohol use, binge-drinking, cigarette use, marijuana use, other illicit drug use, fighting, and suicide) were compared separately by gender for factors in four domains: psychosocial adjustment, daily activities, school, and family. Data were analyzed using ordinary least-squares regression with follow-up contrast statements and multinomial logit regression. **RESULTS:** Results indicate that profiles are related to factors in the psychosocial adjustment, school, and family domains. Students in the lowest risk profiles reported consistently higher levels of protective factors and lower levels of vulnerability factors than students in any other profiles. Likewise, students in the highest risk profiles reported consistently lower levels of protective factors and higher levels of vulnerability factors than those in any other profiles. Students in profiles of risk distinguished by higher levels of suicidal thoughts and behaviors reported similar levels of vulnerability and protection as the highest risk profiles. Students in profiles consisting of sexually active, substance-using teens reported higher levels of protective factors and lower levels of vulnerability factors than both the highest risk profiles and the profiles distinguished by suicidal thoughts and behaviors. **CONCLUSION:** Program staff and policymakers should recognize that different profiles of risk behaviors are related to varying levels of vulnerability and protective factors which have potential implications for preventive interventions.

5.3 Measurement

Aarons, G. A., Brown, S. A., Stice, E., & Coe, M. T. (2001). Psychometric evaluation of the marijuana and stimulant effect expectancy questionnaires for adolescents. *Addictive Behaviors, 26*(2), 219-236.

Abstract: Alcohol expectancies are important in the mediation and prediction of alcohol use. Expectancies for the effects of other drugs, although less well delineated, appear equally important. Therefore, development and validation of expectancy measures for drugs other than alcohol is necessary for evaluating the importance of these constructs. We examined the factor structure, reliability, and validity of the Marijuana Effect Expectancy Questionnaire (MEEQ) and the Stimulant Effect Expectancy Questionnaire (SEEQ) in clinical and community samples of adolescents as they moved into young adulthood (N=279). Confirmatory factor analyses (CFAs) supported the a priori factors, and we found good reliability for most individual scales. Temporal stability and convergent and discriminant validity of drug effect expectancies were supported in this sample of adolescents and young adults. Drug effect expectancies were associated with drug preference and drug use patterns over 2 years. Use of these measures may aid our understanding of the etiology and course of marijuana and stimulant involvement during adolescence and young adulthood.

Aertgeerts, B., Buntinx, F., Bande-Knops, J., Vandermeulen, C., Roelants, M., Ansoms, S., & Fevery, J. (2000). The value of CAGE, CUGE, and AUDIT in screening for alcohol abuse and dependence among college freshmen. *Alcoholism: Clinical and Experimental Research, 24*(1), 53-57.

Abstract: Background: This study attempted to (1) determine the prevalence of alcohol problems in college freshmen, (2) assess the performance of both the CAGE and the Alcohol Use Disorders Identification Test (AUDIT) questionnaires in this population, and (3) assess the possibility of improving the CAGE and/or AUDIT. Methods: A sample of 3,564 consecutive college freshmen, with a mean age of 18 years, at the Catholic University of Leuven, (Belgium) completed, during a cross-sectional study, a questionnaire assessing drinking behavior and identifying students at risk as defined by DSM-IV criteria. The questionnaire also included the CAGE questionnaire and the AUDIT. Calculations of sensitivity, specificity, negative predictive value, positive predictive value, likelihood ratios, and receiver operating characteristic curves for different scores of the CAGE and the AUDIT were performed, using DSM-IV criteria as the reference standard. Results: The area under the receiver operating characteristic curve of the CAGE and the AUDIT was 0.76 and 0.85, respectively. The cutoff score of 1 for the CAGE was associated with a sensitivity of 42%, a specificity of 87%, a positive predictive value of 36%, and a negative predictive value of 90%. A score of 6 or more for the AUDIT gave a sensitivity of 80%, a specificity of 78%, a positive predictive value of 37%, and a negative predictive value of 77%. These results were related with a prevalence of 14.1% of alcohol problems. Replacing one question of the CAGE by "often driving under the influence" resulted in the CUGE (acronym for "cut down, under influence, guilty feelings, and eye opener"), with an area under the curve of 0.96, a positive likelihood ratio of 8.7, and a negative likelihood ratio of 0.04. Conclusions: Prevalence of alcohol problems in college students is confirmed to be high. When screening for alcohol problems in a college freshmen population, one question seems extremely important. The newly constructed CUGE questionnaire may improve screening efforts in students, compared with existing questionnaires.

Ammerman, R. T., Lynch, K. G., Donovan, J. E., Martin, C. S., & Maisto, S. A. (2001). Constructive thinking in adolescents with substance use disorders. *Psychol Addict Behav, 15*(2), 89-96.

Abstract: This study examined the concurrent validity and clinical correlates of the Constructive Thinking Inventory (CTI), a measure of experiential coping, in 551 adolescents aged 14-18 years with and without Diagnostic and Statistical Manual of Mental Disorders (4th ed.; American Psychiatric Association, 1994) substance use disorders (SUDs). The CTI was correlated with depression, anxiety, and conduct problems. After controlling for demographics and comorbid lifetime psychiatric disorders, the CTI scales of Behavioral Coping and Categorical Thinking distinguished adolescents with and without SUDs. Implications of these findings for assessment and treatment are discussed.

Arnett, J. (1989). *Reckless Behavior Questionnaire (RBQ)*.

Abstract: The RBQ is a 10-item, self-report inventory intended to assess reckless behavior within the past year. A 5-point format yielding one overall score is used. Responses include never, once, 2-5 times, 6-10 times, and more than 10 times. Item content includes use of alcohol while driving, use of various illicit drugs, driving at excessive speed, sexual intercourse without contraception or with strangers, vandalism and shoplifting.
Cited at: <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Bastiaens, L., Francis, G., & Lewis, K. (2000). The RAFFT as a screening tool for adolescent substance use disorders. *American Journal on Addictions, 9*(1), 10-16.

Abstract: The objective of this study was to measure the sensitivity and specificity of the RAFFT, a screening instrument for problematic adolescent substance use. Two hundred and twenty-six adolescent patients, aged 13 to 18, who were referred to an emergency room or an ambulatory evaluation clinic were included. Patients answered the five questions of the RAFFT before a comprehensive psychiatric assessment was completed. Diagnoses were made according to DSM-IV. The best results were obtained with two positive answers on the RAFFT: a sensitivity of 89% and a specificity of 69% in the screening for substance abuse or dependence. The RAFFT performed well in this highly selected patient population.

Beck, K. H., Thombs, D. L., & Summons, T. G. (1993). The social context of drinking scales: Construct validation and relationship to indicators of abuse in an adolescent population. *Addictive Behaviors, 18*(2), 159-169.

Abstract: A series of items that measure the social context of alcohol consumption among adolescents was administered in a questionnaire survey to over 1,300 high school students. Emerging from a factor analysis were five factors which suggested that drinking occurs in the following social contexts: drinking for social facilitation where adults are not present, drinking at school or during school-related activities, drinking for stress control, drinking for conformity or to be part of a group, and drinking under parental supervision at home. Scales based on these factors appeared to be reliable, free from social desirability bias, and able to discriminate problem drinkers from nonproblem drinkers. The most important of these factor was drinking for social facilitation that is not restrained by the presence of adults. These findings reinforce the validity of examining the social context of drinking (which involves situational as well as motivational reasons for drinking) to uncover important etiological contributors of alcohol abuse in an adolescent population.

Benishek, L. A. (1989). *A summary of adolescent substance abuse assessment instruments*. East Lansing, MI, Michigan State University.

Blanken, A. J. (1993). Measuring use of alcohol and other drugs among adolescents. *Public Health Reports, 108*, 25-30.

Abstract: DESPITE REDUCTIONS in recent years, drug use is widely believed to be greater among youth in America than among youth in any other industrialized nation. An estimated 9.3 million American youth, 46 percent of those aged 12 to 17 living in the general population, have used alcohol; and 4.0 million, 20 percent of those in the same age group, have used an illegal drug other than alcohol.

Boekeloo, B. O., Schamus, L. A., Simmens, S. J., & Cheng, T. L. (1998). Ability to measure sensitive adolescent behaviors via telephone. *American Journal of Preventive Medicine, 14*(3), 209-216.

Abstract: Introduction: Difficulty in measuring sensitive behaviors in 12-15-year-old adolescents is a barrier to research. This study determined whether early adolescents reported substance use and sexual activity similarly in assisted paper-and-pencil versus touch-tone telephone responses. Methods: Adolescents 12-15 years old completed confidential, interviewer-assisted questionnaires first in a physician office by paper-and-pencil and then at home by touch-tone approximately 3 months later. Adolescents were from a high-risk urban area, 71% were minority, and all had parent consent to participate. Results: The follow-up participation rate was 94% (follow-up n = 207). Test-retest stability was generally poor for low-frequency behaviors such as injection drug use, anal intercourse, and sexual behaviors in 12-13-year-olds. Test-retest stability was fair to good for common substance use items. Test-retest stability was generally good among females and 14-15-year-old adolescents, and poor to fair among males and 12-13-year-olds, for common sexual experiences in the last 3 months. Test-retest stability was generally good to excellent for all lifetime sexual experiences except among 12-13-year-olds in which it was generally poor. Internal consistency of the self-esteem scale was high using both response technologies. Both response technologies reproduced correlations between substance use and lifetime sexual experience. Conclusion: A high participation rate and reliable data capture were achieved when assessing sensitive behaviors of 14-15-year-olds using touch-tone telephone response. Sexual behaviors were more reliably captured using a "lifetime" versus "last 3-month" reference period. Low prevalence contributed to poor reliability in 12-13-year-olds.

Brown, S. A., Myers, M. G., Lippke, L., Tapert, S. F., Stewart, D. G., & Vik, P. W. (1998). Psychometric evaluation of the customary drinking and drug use record (CDDR): A measure of adolescent alcohol and drug involvement. *Journal of Studies on Alcohol, 59*(4), 427-438.

Abstract: Objective: The present study was undertaken to assess the psychometric characteristics of the Customary Drinking and Drug Use Record (CDDR), an interviewer-administered questionnaire. The CDDR provides current (past 3 months) and lifetime measures of four alcohol-and other drug-related domains: level of involvement, withdrawal characteristics, psychological/behavioral dependence symptoms, and negative consequences. The present report describes the evaluation of the psychometric properties of the instrument with youth between the ages of 13 and 22 years who had markedly variable histories of involvement with alcohol and other psychoactive substances. Method: The sample assessed was composed of 166 adolescents recruited from two inpatient substance abuse treatment programs and 115 adolescents recruited from the community. Of the 281 subjects, 150 were male. Follow-up interviews with each adolescent and a resource person were conducted 6, 12, 24 and 48 months after the initial assessment. Results: Reliability of the CDDR was assessed by examination of internal consistency, test-retest reliability and inter-rater reliability. Convergent, discriminant and construct validity were evaluated for each of the CDDR domains, and gender and ethnic differences on substance involvement were examined. The CDDR was found to be internally consistent and reliable over time and across interviewers for each major domain assessed. The findings supported the validity of the four domains of alcohol and other drug involvement assessed on the CDDR. Conclusions: The present results demonstrated convergent validity of the CDDR, ability to differentiate abusing from nonabusing youth, and strong diagnostic specificity when compared to other standard instruments. The solid psychometric characteristics of the CDDR support its use for both research and clinical purposes.

Caetano, R. (1999). The identification of alcohol dependence criteria in the general population. *Addiction, 94*(2), 255-267.

Abstract: AIMS: To assess the criteria used to identify alcohol dependence in the general population. DESIGN AND SETTING: Two independent probability surveys of the US household population 18 years of age and older were analyzed: the 1994 National Telephone Survey (NTS-94), which interviewed 637 respondents, and the 1988 National Household Interview Survey (NHIS-88), which interviewed 43,809 respondents in their homes. PARTICIPANTS: The analyses of the NHIS-88 dataset focused on drinkers who consumed at least 12 drinks of alcohol in the 12 months prior to the survey interview (N = 22,102). The analyses of the NTS-94 dataset focused on drinkers who consumed at least one drink in the 12 months prior to the survey interview (N = 637). MEASUREMENTS: Criteria for DSM-IV alcohol dependence were operationalized using 15 items from a standardized questionnaire. FINDINGS: Analyses suggested that normal drinking behavior can be misidentified as dependence criteria. Results for men who drank up to two drinks per day suggest that if the dependence criteria were invalid, reductions in the prevalence of specific indicators of alcohol dependence would range from 0.3% to 5.2%. Correcting for the misidentification of alcohol dependence diagnosis would reduce the overall prevalence of alcohol dependence by 0.5%. Up to 7% of the men could have been diagnosed as alcohol-dependent and could have provided invalid reports. CONCLUSIONS: The identification of alcohol dependence in general population samples must include careful probing of the nature of drinking-related behavior reported by respondents. This will decrease misidentification of dependence criteria, increasing the validity of dependence diagnosis in survey research.

Campanelli, P. C., Dielman, T. E., & Shope, J. T. (1987). Validity of adolescents' self-reports of alcohol use and misuse using a bogus pipeline procedure. *Adolescence, 22*(85), 7-22.

Abstract: Past research, particularly in the area of adolescent smoking behavior, has suggested that more valid self-reports of socially undesirable behavior can be obtained when a bogus pipeline procedure is implemented. "Bogus pipeline" refers to a methodology in which subjects are informed that their self-reports can and will be objectively verified by the researcher through a procedure such as a biochemical test. In actuality, no verification takes place. Recent studies using this methodology have produced mixed results. In the current study, a bogus pipeline procedure designed to increase the validity of adolescents' self-reports of alcohol use and misuse was devised and evaluated as part of the pilot work for an alcohol misuse prevention study in southeastern Michigan schools. A total of 291 students in grades seven through nine were tested in the pilot study. Of these, 173 experienced the bogus pipeline approach in which saliva samples were collected, while 118 served as controls. The differences between the two conditions were examined with respect to nine variables concerning alcohol use and misuse. An overall frequency of use index and an overall misuse index were also examined. Two-way analyses of variance (treatment by grade level and treatment by gender) were conducted. The F values for a main effect of treatment ranged from .00 to 1.27 for the 11 variables. None of these was significant at the prespecified alpha level of .20. In addition, there was no interaction of the treatment procedure with either grade level or gender. In the context of a school-based study in which confidentiality was assured, adolescents' self-reports of alcohol use and misuse were not significantly affected by a bogus pipeline procedure.

Chung, T., Colby, S. M., Barnett, N. P., & Monti, P. M. (2002). Alcohol use disorders identification test: Factor structure in an adolescent emergency department sample. *Alcoholism: Clinical and Experimental Research*, 26(2), 223-231.

Abstract: Background: This study examined whether the factor structure of a modified version of the Alcohol Use Disorders Identification Test (AUDIT) represented the three intended conceptual domains of consumption, dependence symptoms, and alcohol-related consequences in an adolescent sample. Additionally, the utility of factor-specific cut scores in identifying patients with DSM-IV alcohol diagnoses was investigated. Methods: Adolescents treated for an injury in an emergency department and who reported alcohol use in the last year (n = 173; 57% male, 72% white) constituted the study sample. A modified version of the AUDIT and the alcohol section of the Diagnostic Interview Schedule for Children were administered. The AUDIT's factor structure was determined by confirmatory factor analysis and exploratory principal components analysis. Factor-specific cut scores that identified adolescents with a DSM-IV alcohol diagnosis were determined by using receiver operating characteristic analysis. Results: A two-factor model representing consumption and dependence/consequences provided the best fit to the data. A cut score of 3 on the consumption factor and a cut score of 1 on the dependence/consequences factor demonstrated optimal performance in identifying patients with alcohol diagnoses. The consumption factor had better overall performance compared with the dependence/consequences factor, and it had similar overall performance compared with the AUDIT total score. Conclusions: The AUDIT comprised two correlated factors: consumption and dependence/consequences. The better performance of the consumption factor in detecting adolescents with DSM-IV alcohol diagnoses suggests the utility of including consumption items in brief alcohol screens used with adolescents. Results also indicate the need to identify developmentally appropriate alcohol-related problems to enhance screening performance among adolescents.

Chung, T., Colby, S. M., Barnett, N. P., Rohsenow, D. J., Spirito, A., & Monti, P. M. (2000). Screening adolescents for problem drinking: Performance of brief screens against DSM-IV alcohol diagnoses. *Journal of Studies on Alcohol*, 61, 579-587.

Abstract: OBJECTIVE: The performance of three brief screens, the CAGE, TWEAK and Alcohol Use Disorders Identification Test (AUDIT), was evaluated against a DSM-IV diagnosis of alcohol abuse or dependence in an adolescent sample. METHOD: Adolescents (13-19 years old) who presented to an emergency department for treatment of an injury, and who tested negative for blood alcohol concentration at time of admission, were administered a structured diagnostic interview and modified versions of the CAGE, TWEAK and AUDIT. RESULTS: Of the 415 adolescents for whom complete data were available, 18% met criteria for a DSM-IV alcohol use disorder according to the Diagnostic Interview Schedule for Children (version 2.3). Teens who reported alcohol use in the last year (n = 261, 58% male, 71% white) were included in analyses that compared the performance of the three screening instruments. Receiver Operating Characteristic analysis indicated that the AUDIT demonstrated the best performance across the range of its cut-scores, with optimal performance at a cut-score of 4. The TWEAK performed optimally at a cut-score of 2 and the CAGE at a cut-score of 1. CONCLUSIONS: Routine alcohol screening among adolescents seen in a hospital setting is indicated. Two important directions for future research include the identification of adolescent-specific alcohol screening items, and the validation of an adolescent-specific definition of problem drinking that addresses limitations of DSM-IV alcohol diagnoses when applied to adolescents.

Chung, T., Colby, S. M., O'Leary, T. A., Barnett, N. P., & Monti, P. M. (2003). Screening for cannabis use disorders in an adolescent emergency department sample. *Drug & Alcohol Dependence*, 70(2), 177-186.

Abstract: This study examined the prevalence of DSM-IV cannabis and alcohol diagnoses in an adolescent emergency department (ED) sample, evaluated the performance (i.e. sensitivity and specificity) of DSM-IV cannabis symptoms and other screening items as indicators of cannabis diagnosis status, and examined parent-adolescent agreement on the presence of cannabis and alcohol diagnoses. Adolescents (ages 13-19; n = 442) admitted to an ED for a non-substance-related injury were administered the Diagnostic Interview Schedule for Children (DISC). Parents (n = 272) of adolescents younger than age 18 completed the DISC-parent version to report on their child's drug use. A minority met criteria for a current DSM-IV cannabis or alcohol diagnosis: 7.9% for both alcohol and cannabis, 7.5% for cannabis-only, and 9.0% for alcohol-only. Frequency of cannabis use had the best overall performance in discriminating those with and without a cannabis diagnosis compared with items on perceived risk of cannabis use, peer cannabis use, and alcohol and cigarette use. Parent reports generally underestimated the adolescent's substance use. Questions on level of substance use generally provide an efficient method of screening adolescents for substance-related problems in an ED setting.

Chung, T., & Martin, C. S. (2002). Concurrent and discriminant validity of DSM-IV symptoms of impaired control over alcohol consumption in adolescents. *Alcoholism: Clinical and Experimental Research*, 26(4), 485-492.

Abstract: BACKGROUND: Little research has examined impaired control over alcohol consumption in adolescents. This study examined the concurrent and discriminant validity of two DSM-IV dependence criteria that reflect impaired control over drinking: "using more or longer than intended" (Larger/Longer) and "persistent desire or unsuccessful efforts to quit or cut down" (Quit/Cut Down). METHODS: Adolescent drinkers, ages 13-19 (N = 173), were recruited from addictions treatment (76%) and community sources (24%). A modified SCID that included assessment of alcohol craving and questionnaires measuring dependence severity, attempts to limit drinking, and impulsivity were administered. RESULTS: Larger/Longer had higher prevalence and an earlier onset than Quit/Cut Down, suggesting that the symptoms respectively represent milder and more severe manifestations of impaired control over drinking. Both symptoms were associated with drinking frequency, dependence severity, episodes of passing out, and an independent measure of unsuccessful attempts to limit drinking. Alcohol craving was associated with both Larger/Longer and Quit/Cut Down. Impulsivity was correlated with Larger/Longer but not Quit/Cut Down. CONCLUSIONS: Larger/Longer and Quit/Cut Down demonstrated adequate concurrent validity. The two symptoms were distinguished by severity and differential relations with impulsivity, suggesting that Larger/Longer and Quit/Cut Down reflect different types of impaired control over alcohol consumption. Results suggest the need for improved description and scaling of the impaired control construct in adolescents.

Clark, D. B., Bukstein, O., & Cornelius, J. (2002). Alcohol use disorders in adolescents: Epidemiology, diagnosis, psychosocial interventions, and pharmacological treatment. *Paediatric Drugs*, 4(8), 493-502.

Abstract: Alcohol (ethanol) abuse and dependence are the most common substance use disorders among adolescents. Binge drinking occurs in up to one-third of adolescents, and alcohol use disorders occur in about 6% of this age group. Adolescents with alcohol use disorders also typically have problems with other substances and comorbid mental disorders. Validated measures are available for the clinical detection and diagnosis of adolescent alcohol use disorders and related problems. Psychosocial interventions promoting abstinence are the most common treatments for alcohol use disorders, with empirical support particularly strong for family-based approaches. Pharmacological interventions may diminish the effects of alcohol withdrawal, prevent a return to alcohol consumption, or treat comorbid mental disorders. In this population, pharmacological interventions require further investigation and, where indicated, are generally considered to be supplementary to psychosocial approaches.

Cohen, L. M., Myers, M. G., & Kelly, J. F. (2002). Assessment of nicotine dependence among substance abusing adolescent smokers: A comparison of the DSM-IV criteria and the Modified Fagerstrom Tolerance Questionnaire. *Journal of Psychopathology and Behavioral Assessment*, 24(4), 225-233.

Abstract: Nicotine dependence has been found to be a significant factor in adolescent smoking persistence. However, measures of this construct are primarily adult-derived, limiting their utility as bases for characterizing nicotine dependence and formulating youth intervention strategies. This issue is of particular importance among substance abusing youth who have substantially higher rates of cigarette smoking than do adolescents in the general population. The objectives of this preliminary study were to examine the construct validity of the DSM-IV nicotine dependence criteria and the modified Fagerstrom Tolerance Questionnaire (mFTQ) and to compare the DSM-IV diagnostic criteria for nicotine dependence with the mFTQ in a sample of 67 adolescent smokers in treatment for substance abuse. Results revealed that more participants were classified as nicotine dependent using DSM-IV criteria than by mFTQ scores. Little evidence was found for construct validity of these measures and convergence between the two measures was low. Findings also suggested that the present measures do not capture optimally broad dimensions of adolescent nicotine dependence.

Colby, S. M., Tiffany, S. T., Shiffman, S., & Niaura, R. S. (2000). Measuring nicotine dependence among youth: A review of available approaches and instruments. *Drug Alcohol Depend*, 59(Suppl. 1), S23-39.

Abstract: This paper reviews issues and concepts related to the measurement of nicotine dependence among youth. The primary objectives of this review are to: (1) review the measures of nicotine dependence currently being used; and (2) delineate a future research agenda in an attempt to advance the quality of measurement and instrumentation for this important research endeavor. Existing measures of nicotine dependence, including formal diagnostic interviews, related withdrawal assessments, brief self-report measures, and single-item indicators, are described. While formal diagnostic systems have been considered the 'gold standard' for evaluating dependence clinically, their specific limitations related to use for research purposes are outlined. Each broad class of measure is evaluated in terms of its rationale for use, strengths and limitations, and the extent to which it has successfully been applied to adolescent populations. A research agenda follows in the second section of the paper. In this section, the need for identification and inclusion of a standard set of optimal dependence measures, for enhancement of current measures, and for the onset of a new and comprehensive measures development program is outlined.

Cottler, L. B. (1993). Comparing DSM-III-R and ICD-10 substance use disorders. *Addiction*, 88(5), 689-696.

Abstract: At the present, the DSM-III-R is nearing the final stages of metamorphosis to DSM-IV. A series of field trials has been completed which has focused the attention on coverage of the different systems, the impact of social and legal problems on crossing the diagnostic threshold, the importance of subtyping by tolerance and withdrawal, the exclusionary diagnosis of abuse, the duration criterion, and other nosological comparisons. The focus of this Data Note is the comparison of rates between DSM-III, III-R, and both the old and new ICD-10 diagnostic systems, using data from the DSM-IV Substance Use Disorders Field Trials. Especially noteworthy is the inclusion of African Americans, females, and a population with a range of diagnoses and use patterns. Comparisons of DSM-III, III-R and ICD-10 substance use diagnoses among alcohol, nicotine, cannabis, and cocaine substance users indicate considerable agreement for dependence but less similarities between systems for abuse and harmful use. These findings suggest that the dependence criteria may be more stable than those chosen to represent abuse and harmful use. More work needs to be done to evaluate the differences and similarities of the diagnostic systems.

Davidson, R. (1987). Assessment of the alcohol dependence syndrome: A review of self-report screening questionnaires. *British Journal of Clinical Psychology*, 26, 243-255.

Abstract: The development of the alcohol dependence syndrome and its inclusion in the International Classification of Diseases in January 1979 led to a demand for brief, easy-to-administer screening questionnaires explicitly based on the syndrome. The present review considers some of the conceptual, methodological and psychometric problems faced by the authors of such questionnaires. The five major self-report scales which have been published since 1979 are critically appraised and the usefulness of each scale for different populations and contexts is noted.

De Micheli, D., & Formigoni, L. O. S. (2002). Psychometric properties of the Brazilian version of the Drug Use Screening Inventory. *Alcoholism: Clinical & Experimental Research*, 26(10), 1523-1528.

Abstract: Adolescent involvement with alcohol and drugs is rising in Brazil, and there is an increasing need for psychometrically sound assessment tools to detect early drug involvement. The psychometric properties of the Brazilian version of the Drug Use Screening Inventory (DUSI) were examined in a sample (aged 12-19 yrs) composed of 71 non-drug-dependent adolescents and 142 adolescents who met DSM-III-R criteria for drug dependence. With a cutoff score of 13% or lower for the absolute density index of the substance use area, DUSI correctly classified 80% of the drug-dependent adolescents and 90% of the non-drug-dependent adolescents, thus correctly classifying 83.6% of the sample. Factor analysis applied to each of the 10 DUSI areas indicated their uni-dimensionality, with substantial percentages of variance on the first factor. The Brazilian version of DUSI presented strong internal consistency reliability for the whole sample (drug-dependents and non-drug-dependent adolescents) with an average across all 10 scales for Cronbach's alpha reliability coefficient of 0.96 and for the split-half reliability coefficient of 0.88. These results suggest that the Brazilian version of DUSI preserves its original psychometric properties and is a sensitive and useful screening instrument for drug use.

Deas, D., Roberts, J. S., Randall, C. L., & Anton, R. F. (2002). Confirmatory analysis of the Adolescent Obsessive Compulsive Drinking Scale (A-OCDS): A measure of 'craving' and problem drinking in adolescents/young adults. *Journal of the National Medical Association, 94*(10), 879-887.

Abstract: The A-OCDS was modeled after the Obsessive Compulsive Drinking Scale (OCDS) to establish an instrument appropriate for use in adolescent/young adult populations. Initial exploratory analysis of the A-OCDS revealed 2 factors, namely "irresistibility" and "interference," which were specific and sensitive to identifying problematic drinking. The study objective was to administer the A-OCDS to obtain data for confirmatory analyses regarding the dimensionality of the scale, its reliability, and its sensitivity and specificity in identifying problem drinkers. The A-OCDS was administered to 380 Ss aged 17-20 yrs. The confirmatory factor analysis supported the 2 previously identified factors. Using logistic regression to predict drinking classifications, the predictive value of the subscale scores for predicting problem drinking was statistically significant. It is concluded that the A-OCDS was confirmed as a scale for identifying certain dimensions of "craving" and problematic drinking in adolescents/young adults. This scale may be useful as a screening tool, as well as monitoring change over time.

Dent, C. W., Sussman, S. Y., & Stacy, A. W. (1997). The impact of a written parental consent policy on estimates from a school-based drug use survey. *Eval Rev, 21*(6), 698-712.

Abstract: The authors examine differences between mean, variance, and correlation parameter estimates derived from a full school-based sample and subsamples restricted by the provision of parental consent. A total of 1,607 students at 21 continuation high schools and 1,192 students at 3 traditional high schools completed a survey containing variables related to sociodemographics, drug use, mental health, and violence. The employment of a researcher-initiated home-telephone-call procedure substantially increased the parental response rate over a student-/school-assisted consent method. The subsamples restricted by the written consent criterion showed some small biases in estimates of sociodemographic variables but little or no biases on measures related to mental health, drug use, or violence measures. The augmentation of the written consent samples with verbally consented students reduced observed biases.

Dias, P. J. (2002). Adolescent substance abuse – Assessment in the office. *Pediatric Clinics of North America, 49*(2), 269-300.

Abstract: This article discusses in depth the screening of an adolescent for substance abuse and evaluation of the adolescent identified with substance abuse that includes negotiating a confidentiality policy with the parents. A bio-psychosocial-spiritual developmental approach that briefly outlines clinical clues and laboratory assessment is described. Reviews of individual, family, and environmental risk factors with legal issues in assessment are considered. Easy-to-remember mnemonics and screening tools are presented to assist the busy pediatrician in the comprehensive office assessment of the adolescent using or suspected of using/abusing substances.

Farrell, A. D., Kung, E. M., White, K. S., & Valois, R. F. (2000). The structure of self-reported aggression, drug use, and delinquent behaviors during early adolescence. *Journal of Clinical Child Psychology, 29*(2), 282-292.

Abstract: Examined the structure of self-report scales designed to assess the frequency of adolescent problem behaviors. Urban (n = 988) and rural (n = 1,895) middle school students completed the Problem Behavior Frequency Scale (Farrell, Danish, & Howard, 1992a) and measures of other relevant constructs. Confirmatory factor analyses supported a model that included specific factors related to aggression, drug use, and delinquent behaviors, and a higher order problem behavior factor. Findings did not support a distinction between physical and nonphysical aggression. Results were generally consistent across settings (i.e., urban vs. rural) and gender. Other relevant constructs, including peer pressure for drug use and attitudes favoring aggression, had both specific associations with relevant first-order factors and more general associations with the second-order factor. These findings support the construction of separate scales assessing specific domains of problem behaviors in studies of adolescents' problem behaviors.

Farrow, J. A., Smith, W. R., & Hurst, M. D. (1993). *Adolescent drug and alcohol assessment instruments in current use: A critical comparison*. Seattle, WA: Department of Pediatrics, University of Washington.

Feingold, A., & Rounsaville, B. (1995). Construct validity of the dependence syndrome as measured by DSM-IV for different psychoactive substances. *Addiction, 90*(12), 1661-1669.

Abstract: The Diagnosis of Drug Dependence in the Official Psychiatric Nomenclatures (DSM-III-R, DSM-IV, and ICD 10) are based on the Drug Dependence Syndrome construct. Although the validity and utility of the dependence syndrome has been widely documented for alcohol, the generalizability of the dependence syndrome to other psychoactive substances is still not clear. Thus, this article examines the construct validity of the drug dependence syndrome, as measured by diagnostic criteria for DSM-IV, using both internal consistency analyses and confirmatory factor analyses. Data were obtained from non-mutually exclusive groups of abusers for five drugs (alcohol, cocaine, marijuana, opioids, sedatives, stimulants) drawn from a pool of 521 subjects obtained from drug treatment, general psychiatric and community samples. As predicted by the theory, drug dependence items were found to be unidimensional and factorially distinct from measures of the consequences of substance abuse (e.g. legal problems) for all drug groups. Moreover, the drug dependence items yielded internally consistent scales that produced a distribution of scores reflecting a continuum from low to high severity of abuse for all drugs.

Fowler, F., & Stringfellow, V. (2001). Learning from experience: Estimating teen use of alcohol, cigarettes, and marijuana from three survey protocols. *Journal of Drug Issues, 31*(3), 643-664.

Abstract: Estimates of teen substance use from 3 federally funded surveys were examined. Results from the NHSDA, a household survey, and the MTF and YRBS, both school-based surveys, were compared by gender and ethnic group. Trends in reported use from 1993-1997 were also analyzed. Many discrepancies exist among the results from the 3 surveys and are likely due to several factors, including different sample sizes and frames, policies regarding sample substitution, question wording, and data collection protocols. Discussion of these factors underscores the need for more research dedicated to methodology. Routinely investing a portion of survey budgets in studies of the methods that are used and how they affect comparability with other surveys would build a knowledge base that would make comparisons of results easier and would inform design decisions to increase comparability across surveys.

Fromme, K., & D'Amico, E. J. (2000). Measuring adolescent alcohol outcome expectancies. *Psychology of Addictive Behaviors, 14*(2), 206-212.

Abstract: The psychometric properties and construct validity of the Comprehensive Effects of Alcohol (CEOA) questionnaire were compared with those of the Alcohol Expectancy Questionnaire--Adolescent version (AEQ-A) in relation to adolescent alcohol consumption. Both measures of adolescent alcohol expectancies were found to be internally reliable and temporally stable. Alcohol use was significantly associated with subjective evaluations for Cognitive and Behavioral Impairment and Self-Perception on the CEOA and with expected effects for Cognitive and Motor Impairment and Changes in Social Behavior on the AEQ-A. Compared with the AEQ-A, the CEOA explained more variance in quantity (28%) and a similar variance in frequency (15%) for adolescent alcohol use (AEQ-A QUANTITY = 20%, FREQUENCY = 15%). Whereas the general content and psychometric properties of the 2 measures are markedly similar, the Likert response format, shorter length, and assessment of both expected effects and subjective evaluations with the CEOA may offer measurement advantages over the AEQ-A.

Harrell, A., & Wirtz, P. (1989). Screening for adolescent problems drinking: Validation of a multidimensional instrument for case identification. *Psychological Assessment, 1*, 61-63.

Abstract: This research tested the thesis that adolescent problem drinking may be manifest in any of four independent domains (measured by the 24-item screening instrument, the Adolescent Drinking Inventory: Drinking and You): drinking-related loss of control, social indicators, psychological indicators, and physical indicators. Clinical assessments of 264 adolescents referred for screening revealed that more than half of the variation in clinical assessment of problem drinking severity was captured by these four domains and that two of the four domains (loss of control and psychological indicators) made an independent contribution to clinical assessment.

Harrison, L. (2001). Understanding the differences in youth drug prevalence rates produced by the MTF, NHSDA, and YRBS studies. *Journal of Drug Issues, 31*(3), 665-694.

Abstract: This paper explores potential reasons for the differences in drug use prevalence rates among youth generated by three nationally representative surveys: The National Household Survey on Drug Abuse (NHSDA), the Monitoring the Future (MTF) survey, and the Youth Risk Behavioral Survey (YRBS). The MTF and YRBS are the most similar of the surveys, being conducted among students in a classroom using self-administered questionnaires. The NHSDA is conducted in the respondent's household, but it has always used self-administered procedures for the drug questions. Nevertheless, the NHSDA generally reports the lowest drug prevalence rates for youth among the three surveys. There are a number of methodological differences across the surveys that cumulatively, probably account for the differences in estimates. Some of the differences appear to be due to telescoping, in that when a calendar was introduced to anchor past 30 day and 12 month time periods in the NHSDA, prevalence rates for illicit drugs were reduced. However, there is substantial similarity in the trends over time among the three surveys, especially for cigarettes, alcohol and cocaine. Many of the estimates generated by the three surveys have overlapping confidence intervals, which suggests the estimates are not statistically significantly different from one another.

Hasin, D. S., Schuckit, M. A., Martin, C. S., Grant, B. F., Bucholz, K. K., & Helzer, J. E. (2003). The validity of DSM-IV alcohol dependence: What do we know and what do we need to know? *Alcoholism-Clinical and Experimental Research, 27*(2), 244-252.

Abstract: This article presents the proceedings of a symposium at the 2002 RSA Meeting in San Francisco, California. Deborah S. Hasin organized the symposium and co-chaired it with Marc Schuckit. The purpose of the symposium was to provide an overview of what is known about the validity of DSM-IV and ICD-10 alcohol dependence and abuse, with a focus on work done since 1994. Presentations included: (1) Validity of DSM-III-R alcohol dependence in adolescents, by Christopher S. Martin; (2) Reliability and validity of DSM and ICD formulations of alcohol use disorders: findings from epidemiology, by Bridget F. Grant; (3) Validity and reliability of the alcohol-dependence phenotype in the context of genetic studies, by Kathleen K. Bucholz; and (4) DSM-IV and beyond: uniting the clinical utility of categories with the precision of dimensions, by John E. Helzer. The findings supported the validity of DSM-IV alcohol dependence across numerous study designs and samples, suggested some value in a dimensional dependence measure, and raised questions about the validity of the diagnosis of alcohol abuse as currently defined. Marc Schuckit, as discussant for the symposium, placed the issues in perspective for the upcoming DSM-V.

Henly, G. A., & Winters, K. C. (1988). Development of problem severity scales for the assessment of adolescent alcohol and drug abuse. *The International Journal of the Addictions, 23*, 65-85.

Abstract: Developed a standardized assessment battery to provide a multidimensional description of problems associated with alcohol and drug use by adolescents to assist in the identification, referral, and treatment of adolescent alcohol and drug abuse. A preliminary version of the questionnaire was administered to 398 12-18 yr olds receiving chemical dependency treatment. The scales developed from the responses (problem use syndrome, effects of use, social benefits use, social recreation use, personal consequences, and loss of control) were examined using 248 treatment cases. Responses from an additional 563 Ss indicated a moderate relationship between problem severity scales and response bias measures (e.g., social desirability) and Diagnostic and Statistical Manual of Mental Disorders (DSM-III) substance use disorder diagnoses.

Henly, G. A., & Winters, K. C. (1989). Development of psychosocial scales for the assessment of adolescent alcohol and drug involvement. *The International Journal of the Addictions, 24*, 973-1001.

Describes the development of the Personal Experience Scales, a self-report inventory developed to assess psychosocial factors that may (1) predispose or perpetuate adolescent chemical involvement, (2) complicate chemical abuse treatment, or (3) require treatment in their own right. Scale construction procedures, scale characteristics, and evidence of scale validity are reported, based on data from 458 adolescent chemical treatment program clients (aged 12-20 yrs).

Jessor, R., & Jessor, S. (1977). *Multiple Problem Behavior Index (MPBI)*.

Abstract: The MPBI assesses four different areas of adolescent problem behavior: problem drinking, delinquent-type behavior; marijuana involvement; and sexual intercourse experience.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Kaminer, Y., Bukstein, O., & Tarter, R. (1991). The Teen-Addiction Severity Index: Rationale and reliability. *The International Journal of Addictions, 26*(2), 219-226.

Abstract: There is an urgent need for a reliable method of evaluating the severity of adolescent chemical abuse and problems related to chemical abuse. The lack of an appropriate rating scale to fill this objective hampers the design and the assessment of objective treatment outcome and follow-up of adolescent chemical abusers. The Teen-Addiction Severity Index (T-ASI) is a structured interview which was developed to assess the seven following domains: chemical use, school status, employment-support status, family relationships, peer-social relationships, legal status, and psychiatric status. This paper discusses the rationale for the design of the T-ASI and presents a preliminary study indicating satisfactory inter-rater reliability of the rating scale.

Kelly, T. M., & Donovan, J. E. (2001). Confirmatory factor analyses of the Alcohol Use Disorders Identification Test (AUDIT) among adolescents treated in emergency departments. *Journal of Studies on Alcohol, 62*(6), 838-842.

Abstract: Objective: The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item instrument designed by the World Health Organization to assess problematic drinking. The objective of this study was to conduct confirmatory factor analysis of the AUDIT in a sample of adolescents and young adults who were treated in emergency departments. Method: Adolescents and young adults (N = 103, 55 males), ranging in age from 12 to 20.9 years (mean [SD] age = 17.5 [2.1]), completed the AUDIT. Confirmatory factor analyses were conducted using LISREL 8.20 software to test the one-factor, two-factor and three-factor solutions for the AUDIT reported in the literature. Results: Goodness-of-fit indices indicated that a correlated two-factor solution, consisting of a consumption factor and an alcohol-related-problems factor, provides the best fit to the data. The three-factor solution fits the data equally well, but Factor 2 (dependency) and Factor 3 (problems) correlate 1.00. The one-factor solution did not provide a good fit to the data. Conclusions: Our findings support those of others who have reported that the AUDIT assesses a consumption factor and an alcohol-related problems factor among primary care patients at risk for problematic drinking behavior.

Kelly, T. M., Donovan, J. E., Kinnane, J. M., & Taylor, D. M. C. D. (2002). A comparison of alcohol screening instruments among under-aged drinkers treated in emergency departments. *Alcohol & Alcoholism, 37*(5), 444-450.

Abstract: Few studies have examined the adequacy of adult-validated alcohol screening measures when used with adolescents and young adults. A total of 103 subjects (55 males and 48 females, aged 12.2-20.9 yrs) participated in a study of alcohol use among under-aged drinkers conducted in two emergency departments. Participants completed three brief screening instruments for problematic alcohol use: the Alcohol Use Disorders Identification Test (AUDIT); a modified version of the TWEAK; and the CAGE. Missing data on the TWEAK, lower internal consistency for the TWEAK and CAGE, and the better ability of the AUDIT to differentiate problem drinkers from non-problem drinkers, suggest that the AUDIT performs best in screening for problematic alcohol use among under-aged drinkers treated in emergency departments.

Kline, R. B. (1996). Eight-month predictive validity and covariance structure of the Alcohol Expectancy Questionnaire for Adolescents (AEQ-A) for junior high school students. *Journal of Studies on Alcohol, 57*(4), 396-405.

Abstract: OBJECTIVE: Research about the role of alcohol-related expectancies in the drinking behavior of young people has two crucial limitations: a paucity of longitudinal studies and questions about the construct validities of extant expectancy questionnaires. This study concerned the Alcohol Expectancy Questionnaire for Adolescents (AEQ-A) and its relation to drinking among grades 6, 7 and 8 students. Objectives were (1) the evaluation of the concurrent and predictive validities of scales of the AEQ-A; and (2) study of the joint covariance structure of the AEQ-A with measures of alcohol use. METHOD: The AEQ-A and measures of drinking and related problems were administered twice within an 8-month period to 408 grades 6, 7, and 8 public school students (mean age = 12.1 years; 50% boys; 98% white). All measures were administered in the schools as part of health classes. RESULTS: In regression analyses, only one AEQ-A scale-expectation of social enhancement- had clear concurrent and predictive validity. Structural equation modeling analyses indicated that the entire AEQ-A seems to measure relatively distinct belief areas, but, again, only the social enhancement domain was related to drinking quantity-frequency. CONCLUSIONS: Expectations of social benefit may be a risk factor for higher levels of drinking among junior high school students, but the relative importance of this belief over other possible factors remains to be studied.

Knight, J. R., Sherritt, L., Harris, S. K., Gates, E. C., & Chang, G. (2003). Validity of brief alcohol screening tests among adolescents: A comparison of the AUDIT, POSIT, CAGE, and CRAFFT. *Alcoholism: Clinical and Experimental Research*, 27(1), 67-73.

Abstract: Background: Adolescents should be screened for alcohol misuse as part of routine care. The objective of this study was to compare the criterion validity of the Alcohol Use Disorders Identification Test (AUDIT), the Problem Oriented Screening Instrument for Teenagers substance use/abuse scale (POSIT), and the CAGE and CRAFFT questions among adolescents. Methods: Fourteen- to 18-year-old patients arriving for routine healthcare at a large, hospital-based adolescent clinic completed the four screens and the criterion standard Adolescent Diagnostic Interview, which yields DSM-IV diagnoses of alcohol abuse and dependence. Receiver operating characteristic (ROC) curves were plotted to determine optimal cut-points. Areas under the ROC curves of the four screens were compared, and sensitivities and specificities were calculated. Results: Participants' past 12-month alcohol diagnostic classifications were as follows: no use (58.6%), nonproblem use (13.0%), problem use (20.8%), abuse (5.4%), and dependence (2.2%). Optimal cut-points associated with problem use or higher were 2 for AUDIT, 1 for POSIT, 1 for CAGE, and 1 for CRAFFT. ROC curve area of the CAGE was significantly lower compared with areas of all other screens. Sensitivities (95% confidence intervals) were AUDIT 0.88 (0.83-0.93), POSIT 0.84 (0.79-0.90), CAGE 0.37 (0.29-0.44), and CRAFFT 0.92 (0.88-0.96); specificities were AUDIT 0.81 (0.77-0.85), POSIT 0.89 (0.86-0.92), CAGE 0.96 (0.94-0.98), and CRAFFT 0.64 (0.59-0.69). Conclusions: The AUDIT, POSIT, and CRAFFT have acceptable sensitivity for identifying alcohol problems or disorders in this age group. The CAGE is not recommended for use among adolescents.

Knight, J. R., Sherritt, L., Shrier, L. A., Harris, S. K., & Chang, G. (2002). Validity of the CRAFFT substance abuse screening test among adolescent clinic patients. *Archives of Pediatrics & Adolescent Medicine*, 156(6), 607-614.

Abstract: Objective: To determine the accuracy of the CRAFFT substance abuse screening test. Design: Criterion standard validation study comparing the score on the 6-item CRAFFT test with screening categories determined by a concurrently administered substance-use problem scale and a structured psychiatric diagnostic interview. Screening categories were "any problem" (i.e., problem use, abuse, or dependence), "any disorder" (i.e., abuse or dependence), and "dependence." Setting: A large, hospital-based adolescent clinic. Participants: Patients aged 14 to 18 years arriving for routine health care. Main Outcome Measures: The CRAFFT receiver operating characteristic curve, sensitivity, specificity, positive predictive value, and negative predictive value. Results: Of the 538 participants, 68.4% were female, and 75.8% were from racial and ethnic minority groups. Diagnostic classifications for substance use during the past 12 months were no use (49.6%), occasional use (23.6%), problem use (10.6%), abuse (9.5%), and dependence (6.7%). Classifications were strongly correlated with the CRAFFT score (Spearman rho, 0.72; $P < .001$). A CRAFFT score of 2 or higher was optimal for identifying any problem (sensitivity, 0.76; specificity, 0.94; positive predictive value, 0.83; and negative predictive value, 0.91), any disorder (sensitivity, 0.80; specificity, 0.86; positive predictive value, 0.53; and negative predictive value, 0.96), and dependence (sensitivity, 0.92; specificity, 0.80; positive predictive value, 0.25; and negative predictive value 0.99). Approximately one fourth of participants had a CRAFFT score of 2 or higher. Validity was not significantly affected by age, sex, or race. Conclusion: The CRAFFT test is a valid means of screening adolescents for substance-related problems and disorders, which may be common in some general clinic populations.

- Knight, J. R., Shrier, L. A., Bravender, T. D., Farrell, M., Vander Bilt, J., & Shaffer, H. J. (1999). A new brief screen for adolescent substance abuse. *Archives of Pediatrics & Adolescent Medicine*, 153(6), 591-596.
- Abstract:** Objective: To develop a brief alcohol and other drug (AOD) screening test for adolescents. Methods: A 9-item test was constructed by combining and modifying items from several AOD assessments, and administered concurrently with the Personal Involvement With Chemicals Scale (PICS), the criterion standard. Setting: A hospital-based adolescent clinic. Subjects: Fourteen- to 18-year-old patients consecutively arriving for routine medical care who were known to have used AOD. Measures: Internal consistency of the 9 items was calculated using the Cronbach alpha. The relationship between the brief screen and PICS raw score was determined by stepwise linear regression analysis. The PICS T score has been shown to correctly classify substance abuse treatment need as no treatment ($T < 35$), brief office intervention ($T = 35-40$), outpatient or short-term treatment ($T = 49-54$), and inpatient or long-term treatment (T greater than or equal to 55). Sensitivity and specificity rates for predicting a PICS T score of 55 or higher were calculated from 2 x 2 tables. Results: Ninety-nine adolescents were tested (70.7% female, 36.4% black, 32.3% white, 19.2% Hispanic, mean age, 16.3 years). The 9 items had good internal consistency (Cronbach alpha = .79). Stepwise linear regression analysis identified 6 items whose total combined score was highly correlated with PICS (Pearson $r = 0.84$, $P < .01$). This model correctly classified 86% of subjects according to the PICS criteria. Two or more yes answers had a sensitivity of 92.3% and specificity of 82.1% for intensive AOD treatment need. The 6 items were arranged into a mnemonic (CRAFFT). Conclusions: Further research must confirm the test's psychometric properties in a general clinic population. However, CRAFFT seems promising as a brief AOD screening test.
- Leccese, M., & Waldron, H. B. (1994). Assessing adolescent substance use: A critique of current measurement instruments. *Journal of Substance Abuse Treatment*, 1, 553-563.
- Abstract:** A variety of instruments are currently available to screen for and assess adolescent substance abuse and aid in planning appropriate interventions. Assessment practices in treatment facilities for adolescents have tended to rely on the use of unstandardized, local measures or on measures developed for adults with unknown reliability and validity for adolescents. This review is designed to serve as a resource for health professionals regarding the issues involved in assessing adolescent substance involvement and the types of instruments that are available for use. Conceptual issues relevant to the evaluation of adolescent substance use are discussed. Then, standardized, adolescent-specific assessment tools are briefly summarized, including screening questionnaires, comprehensive instruments, and several other substance-related instruments.
- Martin, C. S., Kaczynski, N. A., Maisto, S. A., Bukstein, O. M., & Moss, H. B. (1995). Patterns of DSM-IV alcohol abuse and dependence symptoms in adolescent drinkers. *Journal of Studies on Alcohol*, 56(6), 672-680.
- Abstract:** OBJECTIVE: Diagnostic criteria for alcohol use disorders have largely been developed from research and clinical experience with adults. This research was designed to describe patterns of DSM-IV alcohol use disorder symptoms, and other problem domains, in adolescents with alcohol problems. METHOD: A modified version of the Structured Clinical Interview for the DSM (SCID) was used to assess DSM-IV alcohol abuse and alcohol dependence symptoms in 91 male and 90 female adolescent drinkers with various levels of alcohol consumption and alcohol-related problems. The SCID was expanded to assess other alcohol problem domains thought to be relevant for adolescents. RESULTS: DSM-IV dependence symptoms showed moderate to high covariation, supporting the utility of the alcohol dependence construct in adolescence. Compared to previous reports from adult samples, some symptoms were relatively infrequent (e.g., withdrawal, medical problems). Tolerance had low specificity for the diagnosis of alcohol dependence. There was significant heterogeneity in the symptomatology of subjects with DSM-IV alcohol abuse. Although they are not in the DSM-IV criteria, alcohol-related blackouts, craving and risky sexual behavior were common in adolescents with DSM-IV alcohol dependence and abuse diagnoses. CONCLUSIONS: The data generally support the utility of DSM-IV criteria for alcohol dependence among adolescents. However, tolerance, withdrawal and medical problems appear to present differently in adolescents than has been reported in adults. Those with DSM-IV alcohol abuse diagnoses had very heterogeneous patterns of symptomatology, suggesting limitations of the criteria for DSM-IV alcohol abuse in adolescence. Alcohol-related blackouts, craving and risky sexual behavior are common among adolescents with alcohol use disorders and are an important focus for assessment and treatment efforts.

Martin, C. S., Langenbucher, J. W., Kaczynski, N. A., & Chung, T. (1996). Staging in the onset of DSM-IV alcohol symptoms in adolescents: Survival/hazard analyses. *Journal of Studies on Alcohol*, 57(5), 549-558.

Abstract: OBJECTIVE: This research examined staging in the time to onset of DSM-IV alcohol symptoms in adolescents. Consistent staging in the onset of symptoms provides important tests of the construct validity of diagnostic systems, and aids the development of early case identification strategies. METHOD: The Structured Clinical Interview for the DSM (SCID), adapted to assess DSM-IV alcohol abuse and dependence symptoms, was used to determine time to symptom onset in 102 male and 97 female adolescent drinkers with and without alcohol use disorders. The sample provided a broad range of drinking practices and alcohol-related problems. Symptom onset patterns were examined using survival-hazard analyses. RESULTS: Survival and hazard data suggested three stages of alcohol problems distinguished by time to onset: heavy and heedless drinking with associated social and role obligation problems, psychological dependence, and withdrawal. This three-stage model fit both the male and female data, and described staging patterns in 70% of the subjects. CONCLUSIONS: The symptom onset model suggested a first stage of adolescent alcohol symptoms characterized by heavy and heedless drinking with associated interpersonal and role obligation problems. The data did not support the construct validity of DSM-IV alcohol abuse when applied to adolescents, and suggested staging among DSM-IV alcohol dependence symptoms. Implications for the diagnosis and early identification of adolescent alcohol problems are discussed.

Martin, C. S., & Winters, K. C. (1998). Diagnosis and assessment of alcohol use disorders among adolescents. *Alcohol Health and Research World*, 22(2), 95-105.

Abstract: The diagnostic criteria for alcohol use disorders (AUDs) (i.e., alcohol abuse and alcohol dependence) as defined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) were developed largely from research and clinical experience with adults. Little is known about the validity of these criteria when applied to adolescents. Recent epidemiological and clinical studies of AUDs and their symptoms among adolescents have indicated that the DSM-IV criteria have significant limitations when applied to this age group. Diagnostic interviews and screening tools for adolescent AUDs are discussed. Numerous instruments are available that have shown moderate-to-high reliability and validity in assessing AUDs among adolescents.

Martin, C. S., & Winters, K. C. (1998). Screening instruments for adolescent alcohol use disorders. *Alcohol Health and Research World*, 22(2), 102-103. [Note: This article appears within Martin, C. S., & Winters, K. C. (1998), Diagnosis and assessment of alcohol use disorders among adolescents. *Alcohol Health and Research World*, 22(2), 95-105.]

Abstract: In contrast to diagnostic interviews, which serve to establish a diagnosis of an alcohol use disorder (AUD), the aim of screening tools is to identify the possible presence of an alcohol problem or AUD. Thus, screening tools are used to determine whether a more complete assessment of a person's condition and treatment needs is appropriate. Screening tools are typically self-report questionnaires that employ scoring cutoffs. The use of screening tools requires caution. A score above the cutoff point does not necessarily indicate the presence of an AUD but merely suggests that a more detailed assessment should be performed. Similarly, a score below the cutoff point does not necessarily indicate the absence of an AUD, but merely suggests that this is likely. The following sections summarize some of the available screening tools that have been used widely with adolescents. Some of these instruments assess both alcohol and other drug use and problems, whereas others are specific to alcohol.

Martino, S., Grilo, C. M., & Fehon, D. C. (2000). Development of the drug abuse screening test for adolescents (DAST-A). *Addict Behav*, 25(1), 57-70.

Abstract: The development and initial validation of the Drug Abuse Screening Test for Adolescents (DAST-A) is summarized. The DAST-A, derived from a modification of the original adult version called the Drug Abuse Screening Test (DAST: Skinner, 1982), was psychometrically tested in a study group of adolescent inpatients. The DAST-A demonstrated good internal consistency, high test-retest reliability, unidimensional factor structure, and good concurrent validity. Using the classification system of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association 1994), DAST-A scores of greater than 6 yielded sensitivity, specificity, and positive predictive powers of 78.6%, 84.5%, and 82.3%, respectively, in differentiating adolescent psychiatric inpatients with and without drug-related disorders. These findings suggest that the DAST-A holds promise as a drug abuse screening measure in psychiatrically impaired adolescent populations.

Mayer, J., & Filstead, W. (1979). The Adolescent Alcohol Involvement Scale: An instrument for measuring adolescents' use and misuse of alcohol. *Journal of Studies on Alcohol* 40(3), 291-300.

Abstract: The reliability of the scale was measured by the test-retest scores of adolescent alcoholics and adolescents who drink infrequently; its validity was assessed by psychiatrists' and others' ratings of the items, the scores of adolescents reporting alcohol misuse, and the factor-analyzed scores of a large population of high-school students.

Meyers, K., Hagan, T. A., Zanis, D., Webb, A., Frantz, J., Ring-Kurtz, S., et al. (1999). Critical issues in adolescent substance use assessment. *Drug Alcohol Depend*, 55(3), 235-246.

Abstract: Despite advances in methodology and instrumentation, the assessment of adolescent drug and alcohol involvement remains a complex clinical and practical process. It requires the careful and skillful implementation of procedures across a wide range of service systems and providers. While the literature identifies and provides information on singular aspects of the assessment of adolescents, few sources furnish an integrated overview of the key issues necessary for appropriate and accountable assessment. Consequently, this paper synthesizes theoretical, research, and clinical issues into a practical framework that can be used by clinical and research staff making assessment decisions. Issues discussed have been informed by the literature and by our collective experience during the 8-year development and testing of the Comprehensive Adolescent Severity Inventory (CASI).

Meyers, K., Webb, A., Frantz, J., & Randall, M. (2003). What does it take to retain substance-abusing adolescents in research protocols? Delineation of effort required, strategies undertaken, costs incurred, and 6-month post-treatment differences by retention difficulty. *Drug & Alcohol Dependence*, 69(1), 73-85.

Abstract: This article describes: (1) the range of effort required and type of follow-up strategies used to complete face-to-face follow-up interviews with substance-abusing adolescent research participants; (2) common locations of follow-up interviews; and (3) characteristics of difficult- versus easy-to-retain adolescent participants. Diverse contact strategies and numerous contact attempts were needed to obtain a 94% 1-month and 92% 6-month retention rate among substance-abusing adolescent research participants. About half of the youth did not respond to basic telephone tracking and required enhanced tracking efforts. Approximately 40% of the youth required 6 or more contacts prior to interview completion. The majority of follow-up interviews were conducted in community settings such as fast food restaurants. Those youth proving difficult-to-retain were significantly more likely to report serious problem behavior and poorer outcomes 6-months post-treatment within the alcohol/drug, juvenile justice, family, and educational domains. Assessing the cost/benefit of different methods used in preventing attrition, identifying the minimum standards that avoid response bias and examining the impact of interviewer/participant alliances on data reliability/validity is discussed.

Miles, H., Winstock, A., & Strang, J. (2001). Identifying young people who drink too much: The clinical utility of the five-item Alcohol Use Disorders Identification Test (AUDIT). *Drug and Alcohol Review*, 20(1), 9-18.

Abstract: The current study investigated the patterns and consequences of alcohol use among young people and their perceptions of associate health risk, and explored the clinical utility of the five-item version of the Alcohol Use Disorders Identification Test (AUDIT) in screening young people for hazardous drinking. A cross-sectional sample of 393 young people aged 16-19 years was accessed through two tertiary colleges in South London and self-completed an anonymous, confidential questionnaire recording the five-item AUDIT, patterns of alcohol consumption, hazardous consequences and perception of associate health risk. Over 90% of the sample reported drinking alcohol regularly, commonly excessive weekend use, and related physical, psychological and social consequences. A significant minority (20.4% of males, 18.0% of females) reported consumption of alcohol in excess of UK recommended limits, while almost a third (34.2% of males, 30.2% of females) reported scores in the 'hazardous' range of the five-item AUDIT. However, the majority had little perception of associate health risk, perceiving their use to be 'light' and unproblematic. Only one in 10 of those drinking at 'hazardous' levels recognized their alcohol use as problematic, most believing the hazardous consequences of this use were acceptable. Self-reported patterns of alcohol consumption (except age first used) and total number of psychological and social hazardous consequences were found to significantly predict AUDIT scores using linear regression analysis. Therefore the five-item AUDIT appears to have predictive validity, reflecting self-reported alcohol consumption, perception of associate health risk, and hazardous consequences among young people. It is concluded that it may consequently have clinical utility as a simple screening tool (suitable for use by a variety of professionals in contact with young people) for the identification of hazardous alcohol consumption among this population.

Moberg, D. P. (1983). Identifying adolescents with alcohol problems: A field test of the adolescent alcohol involvement scale. *Journal of Studies on Alcohol*, 44(4), 701-721.

Abstract: A modified version of the Adolescent Alcohol Involvement Scale (AAIS) was administered in a telephone survey and in a longitudinal study. Results indicated acceptable reliability and validity in the AAIS but scores may be unstable in the long run because of the transient nature of alcohol misuse among many adolescents.

Murray, D. M., & Perry, C. L. (1987). The measurement of substance use among adolescents: When is the 'bogus pipeline' method needed? *Addictive Behaviors*, 12(3), 225-233.

Abstract: The use of objective measures to assess cigarette smoking among adolescents has become commonplace in research studies in recent years. This trend is based on evidence that this so called pipeline methodology can increase the disclosure of socially proscribed behaviors in a setting where adolescents might otherwise feel pressure to deny that they smoke. This paper examines the effects of the pipeline methodology alone and in combination with procedures designed to ensure anonymity on the disclosure of tobacco, alcohol, and marijuana use by young adolescents. The data indicate that the pipeline procedures significantly increase disclosure of tobacco and marijuana use when students are promised confidentiality but not anonymity. However, when anonymity was assured, disclosure of cigarette use was just as high without the pipeline; for marijuana use, disclosure was higher without the pipeline. No effects were observed for alcohol disclosure. These data are interpreted for their implications for prospective and cross sectional studies.

Nichter, M., Nichter, M., Thompson, P. J., Shiffman, S., & Moscicki, A. B. (2002). Using qualitative research to inform survey development on nicotine dependence among adolescents. *Drug & Alcohol Dependence*, 68 (Suppl 1), S41-56.

Abstract: Researchers interested in measuring tobacco use and dependence among youth face several formidable challenges. These challenges include: most existing measures have been developed for adult samples and may not be suitable for adolescent respondents; surveys must be relevant to different youth subcultures and to both genders; questions must be developmentally appropriate and not perceived as judgmental or condescending; and the multidimensional nature of nicotine dependence in youth must be recognized and measured. This paper demonstrates how researchers can address these challenges by using qualitative techniques to obtain information on youth tobacco consumption, and then using this information to inform the development of quantitative instruments. A case study is presented where a measure of tobacco dependence originally developed for adults is adapted for use with adolescents. A seven-step formative research process is outlined, consisting of gathering information in open-ended interviews, conducting follow-up research, modification of questionnaire items and addition of new items based on the information gathered, constructing a reliable instrument that is readable and acceptable to youth, reducing the length of this instrument without significantly hurting reliability and validity, conducting additional follow-up research involving case studies, and examining cultural differences. Following a formative research process like this one will help tobacco researchers gain a better understanding of how nicotine dependence develops.

Norton, E. C., Lindrooth, R. C., & Ennett, S. T. (2003). How measures of perception from survey data lead to inconsistent regression results: Evidence from adolescent and peer substance use. *Health Economics*, 12(1), 139-148.

Abstract: In studies of peer group behavior, the direct measure of peer group behavior is often not available, and so is replaced by perceptions from survey respondents. This study shows that regression estimators are inconsistent when the correctly measured independent variable of group behavior is replaced with perceived measures from survey respondents. The inconsistency is due to three sources: projection of own behavior onto the group, rescaling the marginal effect of the group, and simple random measurement error. We discuss why each effect may cause inconsistency, derive formulas for the probability limit to quantify their effects, and illustrate with three examples of adolescent smoking and drinking.

O'Loughlin, J., Tarasuk, J., Difranza, J., & Paradis, G. (2002). Reliability of selected measures of nicotine dependence among adolescents. *Annals of Epidemiology*, *12*(5), 353-362.

Abstract: PURPOSE: To examine the test retest reliability, internal consistency, and convergent construct validity of selected measures of nicotine dependence (ND) among adolescents. METHODS: Self-reports of sociodemographic characteristics and smoking behavior were collected in a convenience sample of 238 high school students aged 13 to 19 years. ND was measured in the Hooked on Nicotine Checklist (HONC), the Stanford Dependence Index (SDI) and in 45 new items identified in consultation with experts and focus group interviews with adolescent smokers. RESULTS: Test retest reliability among past 3-month smokers indicated good to excellent reliability coefficients for HONC items (κ 0.61 to 0.93), except one item that tapped feelings of depression on withdrawal (κ = 0.34). Intraclass correlation coefficients for SDI items ranged from 0.71 to 0.77. Test retest reliability coefficients for the 45 new items ranged from 0.20 to 0.90. The HONC and SDI demonstrated good internal consistency (Cronbach's α = 0.90 and 0.78, respectively). Convergent construct validity against cigarette exposure was demonstrated for the HONC, SDI, and most of the 45 new items. CONCLUSIONS: The HONC and SDI demonstrated excellent and good psychometric properties, respectively. Most of the 45 new items hold promise as indicators of ND in youth, and should be further investigated.

Page, R. M., Hammermeister, J., & Roland, M. (2002). Are high school students accurate or clueless in estimating substance use among peers? *Adolescence*, *37*(147), 567-573.

Abstract: The purpose of this study was to assess adolescents' estimations of the prevalence of alcohol and other drug use and to examine the consistency between these estimations and reported use. A survey was administered to 223 students in three northwestern U.S. high schools. Results showed that students in each of the three high schools grossly overestimated the prevalence of substance use when compared to self-reports of use. Still, students were not entirely clueless about the relative normativeness of substance use when comparing estimates and rates of use among the three schools. The school with the highest estimated prevalence of a particular substance use behavior generally also had the highest self-reported use of that same substance. These findings imply the need for high school personnel to provide students with accurate information about the actual prevalence of substance use within each school.

Petchers, M., & Singer, M. (1990). Clinical applicability of a substance abuse screening instrument. *Journal of Adolescent Chemical Dependency*, *1*(2), 47-56.

Abstract: Evaluated the clinical applicability of the Perceived-Benefit-of-Drinking and Drug Use Scales (PDDUSs) to screen for adolescent substance abuse (SA) among 260 adolescents receiving inpatient treatment for psychiatric disorders. Convergent validity was established by examining the relationships between the scale scores and the following indicators of substance use: self-reported times high on drugs and/or drunk over the past 2 mo, perceived problems due to drinking or drug taking, trouble in school or with police/courts, and clinical classification of use/abuse level. Findings provide evidence supporting the usefulness of the 2 PDDUSs as assessment tools for detecting adolescent SA.

Pollock, N., Martin, C., & Langenbucher, J. (2000). Diagnostic concordance of DSM-III, DSM-III-R, DSM-IV and ICD-10 alcohol diagnoses in adolescents. *Journal of Studies on Alcohol*, *61*(3), 439-446.

Abstract: OBJECTIVE: Little is known about the validity of diagnostic criteria for alcohol use disorders (AUDs) when applied to adolescents. This study examined the diagnostic concordance of DSM-III, DSM-III-R, DSM-IV and ICD-10 AUDs in a sample of adolescents with a broad range of alcohol problem severity. METHOD: Participants were 413 adolescents (250 male), ages 13 to 19, drawn from clinical and community sources. AUDs were assessed using the Structured Clinical Interview for the DSM (SCID), modified to make diagnoses in the four nosological systems. Diagnostic agreement for lifetime diagnoses was quantified with the kappa statistic. RESULTS: Agreement was fair to high across the three categories of alcohol dependence, alcohol abuse and no alcohol diagnosis (κ = 0.51 to 0.76); for alcohol dependence (κ = 0.51 to 0.83); and for the categories of any AUD versus no AUD (κ = 0.55 to 0.96). Concordance was very low for alcohol abuse diagnoses (κ = 0.10 to 0.23), with the exception of DSM-III-R and DSM-IV (κ = 0.62). Dependence was superior to abuse in the degree of temporal overlap in diagnostic agreements. CONCLUSIONS: Similar to findings with adults, diagnostic concordance among adolescents tended to be fair to high for alcohol dependence and very low for alcohol abuse. The data highlight the inconsistency across nosological systems in the conceptual framework and definition of the alcohol abuse category.

Richter, L., & Johnson, P. (2001). Current methods of assessing substance use: A review of strengths, problems, and developments. *Journal of Drug Issues, 31*(4), 809-832.

Abstract: Discusses various means of assessing and measuring substance use behaviors and describes the relative advantages and disadvantages of each of the measurement tools. Self-report instruments are the most convenient and widely used forms of substance use assessment. Self-report measures can be obtained through various modes of administration, including self-administration via paper-and-pencil questionnaires, computer assisted self-interviews or interactive voice recording, and through personal (interviewer-administered) interviews. The advantages and disadvantages of each of these modes of administration are discussed. Alternative assessment techniques, such as biological measurements, are also frequently used to measure substance use or to validate self-report measures of substance use. This article reviews the various available methods for validating self-report measures, highlighting self-report and biological testing techniques currently in use. It concludes by suggesting future avenues of research for improving upon current substance use measurement techniques.

Siegel, A. W., Cousins, J. H., Rubovits, D., Parsons, J. T., Lavery, B., & Crowley, C. (1994). *Risk Involvement and Perception Scale (RIPS)*.

Abstract: The RIPS is a self-report questionnaire addressing 19 risk taking behaviors in six topic areas (factors): alcohol, illegal drugs, sex, stereotypic male behaviors, socially acceptable behaviors, and imprudent behaviors.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Siegel, A. W., Cousins, J. H., Rubovits, D., Parsons, J. T., Lavery, B., & Crowley, C. (1994). Adolescents perceptions of the benefits and risks of their own risk-taking. *Journal of Emotional and Behavioral Disorders, 2*, 89-98.

Abstract: Assessed 126 adolescents' (aged 18-21 yrs) perceptions of and involvement in the benefits and risks of risk taking behaviors. Ss completed the Risk Involvement and Perception Scale (RIPS) by J. T. Parsons et al (in press). The RIPS was found to be highly reliable and internally consistent. Ss reported a wide range of involvement across the behaviors. In general, Ss' perceived benefits were strongly and positively related to their reported involvements; their perceived risks were negatively and less strongly related. A factor analysis of Ss' involvement yielded 6 independent clusters of risk taking behaviors: alcohol use, illegal drug use, sexual activity, stereotypical male behaviors, imprudent behaviors, and socially acceptable behaviors. Perceived benefits accounted for most of the variance in Ss' involvement in these clusters of behaviors.

Simkin, D. R. (2002). Adolescent substance use disorders and comorbidity. *Pediatr Clin North Am*, 49(2), 463-477.

Abstract: It is imperative to know what risk factors are more likely to appear during specific developmental stages so that identification and interventions can be used to decrease the risk for future SUD. Continued surveying of risk factors that can occur at any stage in childhood are important to ensure that other risk factors are anticipated and intervened upon as well. Multiple risk factors increase the magnitude of the risk for SUD, and therefore all risk factors should be detected to convert these to protective factors. Screening instruments that can assess risk factors found to increase the risk for substance abuse can be found in examples, such as the Drug Usage Screening Instrument and the Problem-Oriented Screening Instrument for Teenagers. The detection of risk factors by primary care providers is becoming increasingly important. However, other professionals are beginning to recognize that early recognition and treatment can enable a youth to go on to a productive life in other arenas as well. Drug courts and diversion programs are beginning to treat first-time offenders and their families rather than taking the punitive approach. These have proven to be very successful. Primary care physicians also should become familiar with motivational enhancement therapy when confronting a youth with a suspected substance abuse problem. This method has proven to be more effective in getting youth into treatment than the direct, confrontational style, which often puts the youth in a defensive mode. Motivational enhancement therapy includes interventions that are delivered in a neutral and empathetic way. The six components of motivational enhancement therapy (also called FRAMES) include: Feedback on personal impairment, Emphasis on personal responsibility, Clear advice to change, Menu of alternative options, Empathy as a counseling style, and Self-efficacy. In this way, a clinician can elicit pros and cons, give advice, provide choices, practice empathy, clarify goals, and remove barriers. This technique allows youth to be less defensive and more proactive. Monti et al. have demonstrated that this technique has been useful in getting youth into treatment. Primary care physicians can use instruments that will assess the possibility of both externalizing (e.g., ADHD) and internalizing (e.g., depression and anxiety) disorders. Examples of this type of instrument are the Achenbach child behavior checklist, teacher report form, and youth self-report form, which survey symptoms for these disorders. Social anxiety disorder can be detected by asking whether the pre-latency child went into new situations willingly and tended to hang back or whether the child had difficulty separating from his or her parents. Other questions to ask are whether the child tended to isolate or was fearful of speaking in front of the class. Of course, any bruising or behavior that suggests exposure to adult-related sexual acts may cause concern for physical or sexual abuse and possible PTSD. However, interest in sex earlier than expected for the age of the child may also indicate the possibility of bipolar disorder. These children have many symptoms of ADHD with a high degree of irritability and may seem boastful or grandiose. They may be "daredevils" with no fear of dangerous consequences. Referral to a specialist is necessary to evaluate these children further. Because substance use at age 14 or 15 years can be predicted by academic and social behavior at ages 7 to 9 years, early detection of poor social skills and learning difficulties is essential. Learning disorders can be uncovered by asking the school to do an evaluation. However, schools having economic problems may not be able to accommodate all requests. A parent may have to pay a private provider to complete this workup because insurance companies seldom pay for educational testing. Learning disorders may go undetected because many school systems opt to use a higher deviation from the full-scale IQ to detect learning problems. For instance, if a student has an IQ of 115, the standard nationally recommended deviation from this IQ to detect a learning disorder is 15. Therefore, any child who scores 100 or less on an achievement test should be considered to have a learning disorder. Some schools prefer to use a deviation of up to 23 so that learning disorders are not detected. Few schools screen for processing problems, including auditory and visual motor processing problems, processing speed, comprehension, and short-term and long-term memory problems. This is extremely important because ADHD can be confused with an auditory processing problem. Stimulants may help this condition, but accommodations must be made to ensure continued success. Early-intervention programs, such as Drug Abuse Resistance Education (DARE), proved to be ineffective because the programs did not target components that have been shown to predict future drug use. One program that has targeted these components, normative beliefs, lifestyle-behavior incongruence, and commitment is the All Stars program [39,40]. A strong initial dosage with booster interventions for at least 2 years is also important. Before a child is diagnosed with oppositional defiant disorder or conduct disorder, every effort should be made to detect any underlying psychiatric disorder that has not been treated and therefore may look like a conduct disorder (e.g., bipolar disorder). Proper psychopharmacologic interventions should be made for psychiatric disorders. If one drug has been ineffective, another untreated psychiatric disorder may be present, and it is always important to tease out what remaining symptoms are present after a therapeutic trial has been tried. It is important to form a team approach so that all risk factors can be approached. Members of the team often include a primary care physician, a child psychologist, the parents, the patient, a teacher, a school counselor, a child psychiatrist, and

sometimes a pediatric neurologist. No one member of the treatment team can provide all of the necessary services to prevent the future risk for substance abuse.

Steinhausen, H., & Metzke, C. W. (2003). The validity of adolescent types of alcohol use. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, 44(5), 677-686.

Abstract: Alcohol is the most frequently used substance among adolescents with different patterns of consumption. Various types of adolescent alcohol use have been proposed, but only a few studies have looked for external validation of these types. Data from 794 adolescents participating in the Zurich Adolescent Psychology and Psychopathology Study (ZAPPS) were used to evaluate the discriminant validity of the classification of four types of adolescent drinkers: abstainers, social drinkers, heavy drinkers, and problem drinkers. Data were based on questionnaires dealing with substance abuse, emotional and behavioral problems, life events, coping capacity, self-related cognitions, perceived parental behavior, perceived school environment, and the social network. There was a clear differentiation of the problem drinkers' group on almost all dimensions of the emotional and behavioral problems questionnaires, with the heavy drinkers' profile situated in between on some dimensions, and the abstainers and social drinkers almost ideally meeting the expectation of a mean normal population profile.

Stinchfield, R. (1997). Reliability of adolescent self-reported pretreatment alcohol and other drug use. *Subst Use Misuse*, 32(4), 425-434.

Abstract: This study is a preliminary examination of the reliability of adolescent self-reported pretreatment alcohol and other drug (AOD) use frequency. Assessments of self-reported pretreatment AOD use were conducted at admission and discharge (approximately a 1-month time period) at an adolescent drug misuser treatment program. The sample consisted of 197 male and female adolescents. There were statistically significant increases between admission and discharge assessments of pretreatment AOD use frequency. The greatest discrepancy was found for alcohol use, in which three-fourths (76%) of the sample reported a higher level of pretreatment alcohol use frequency at discharge assessment as compared to their admission assessment. Over one-third (35%) of the sample was found to have a significantly higher level of pretreatment alcohol use frequency at discharge assessment. The cause of this response discrepancy is unknown, but if it represents underreporting at admission, it may cause diagnostic and referral errors, as well as attenuate effect sizes in treatment outcome studies.

Sweet, R. I., & Saules, K. K. (2003). Validity of the Substance Abuse Subtle Screening Inventory-Adolescent Version (SASSI-A). *Journal of Substance Abuse Treatment*, 24(4), 331-340.

Abstract: The construct and convergent validity of the Substance Abuse Subtle Screening Instrument-Adolescent (SASSI-A) were examined in a population of suburban youth offenders. The analysis was conducted on archived data of 490 adolescent offenders from a suburban Circuit Court-Juvenile Division. Exploratory factor analysis results best supported a 5-factor solution that accounted for a modest 32.5% of the total variance. This 5-factor solution had a poor goodness of fit with the purported factor structure upon which the formal SASSI-A scoring is based. The relationship between the SASSI-A and variables with known relationships to adolescent substance abuse (i.e., lack of religious involvement, single parent household, learning disability, early onset of use, conduct problems) was examined. Results revealed moderately strong relationships between the SASSI-A and these variables, indicating reasonable convergent validity. It is concluded that the SASSI-A face valid scales have moderate utility for identifying substance dependence within this sample, while the subtle scales do not.

Tarter, R. E., Laird, S. B., Bukstein, O. G., & Kaminer, Y. (1992). Validation of the adolescent drug use screening inventory: Preliminary findings. *Psychology of Addictive Behaviors, 6*(4), 233-236.

Abstract: This study documents the validity of the substance use and psychiatric disorder scales of the newly developed drug use screening inventory (DUSI). Twenty-five adolescents were administered the DUSI. The results were correlated with the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) and DSM-III-R substance abuse symptoms. Significant positive correlations were observed between number of symptoms on the DSM-III-R checklist and severity scores on the Substance use, health status, psychiatric disorder, social skills, family system, school, work, and peer relations scales of the DUSI. Number of psychiatric symptoms reported on the K-SADS correlated with severity scores on the substance use, behavior problems, health status, and psychiatric disorder scales of the DUSI. The results also indicated that drug use, more than psychiatric disorder, was related to psychosocial disturbances in this sample of adolescents.

Windle, M. (1996). An alcohol involvement typology for adolescents: Convergent validity and longitudinal stability. *Journal of Studies on Alcohol, 57*(6), 627-637.

Abstract: Objective: This study used data from over 1,000 adolescents to evaluate the convergent validity and longitudinal stability of a five-group drinker typology (abstainers, light, moderate, heavy and problem drinkers). Drinker types were compared on a range of variables from the domains of childhood behavior problems, drinking motives, early substance use onset, family and peer relations. Method: Prospective, longitudinal survey data were collected from 10th and 11th graders and from their primary caregivers (principally mothers) to evaluate hypotheses about correlates of adolescent substance use. Results: General support was indicated for the distinctiveness of the adolescent drinker types. Moderate drinkers differed systematically from light drinkers and abstainers on several variables (e.g., disinhibitory behavior while drinking, percentage of friends who drink); heavy drinkers differed from moderate drinkers (e.g., percentage of friends who use drugs, illicit drug use); and problem drinkers differed from heavy drinkers (e.g., childhood behavior problems, coping motives for drinking, percentage of friends who use drugs, disinhibitory behavior while drinking). Over 50% of problem drinkers and 62% of abstainers remained similarly categorized across a 1-year interval. Conclusions: The heterogeneity of alcohol-related behaviors among adolescents may be usefully represented via a drinker status typology that incorporates data on alcohol consumption, heavy-drinking episodes, and adverse consequences. Different correlates for the drinker types highlight the need for a more distinctive approach to the prevention and treatment of adolescent drinking behaviors.

Winters, K. C. (1990). The need for improved assessment of adolescent substance involvement. *Journal of Drug Issues, 20*(3), 487-502.

Raises the awareness about the need for improved adolescent assessment practices. The inadequacies of existing practices are described, and current strains and burdens that yield additional challenges to adolescent chemical dependency assessors are discussed. Efforts by assessment developers to remedy the problem are surveyed.

Winters, K. C. (1992). Developing of an adolescent alcohol and other drug abuse screening scale: Personal experience screening questionnaire. *Addictive Behaviors, 17*, 479-490.

Abstract: The development of a new adolescent alcohol and other drug abuse screening scale is summarized. The Personal Experience Screening Questionnaire (PESQ) is intended to meet the need for a quick, psychometrically adequate adolescent screening tool to measure the need for a comprehensive assessment. The development of the questionnaire's problem severity scale and evidence related to its reliability (internal consistency) and validity are described.

Winters, K. C., Anderson, N., Bengston, P., Stinchfield, R. D., & Latimer, W. W. (2000). Development of a parent questionnaire for use in assessing adolescent drug abuse. *Journal of Psychoactive Drugs*, 32(1), 3-13.

Abstract: The development and initial psychometric properties of a new parent questionnaire for assessing adolescent drug abuse are described. The Personal Experience Inventory-Parent Version (PEI-PV) is intended to provide a standardized parent report as a companion measure to the adolescent self-report instrument, the Personal Experience Inventory. The PEI-PV addresses problems associated with the child's drug abuse and psychosocial factors and parenting practices that may underlie their drug involvement. Reliability and validity data are reported for two groups of mothers, 205 of whom had a child referred for an evaluation for drug treatment and 185 from a community sample. The structure and scope of the PEI-PV was supported by scale intercorrelation data; most scales had a proportion of unique, reliable variance greater than 20%. Estimates of the scale's internal consistency were found to be comparable to those of established parent questionnaires, and the observed differences between the clinic-referred and community samples were consistent with expectations. Significant convergence of mothers' reports to those of their child was obtained for nearly three-quarters of the PEI-PV scales, including moderate agreement between mother and child on the drug involvement severity scales. However, mothers tended to underreport their child's level of drug involvement and resulting problems compared to the child's self-report. The study results suggest that the PQ is associated with favorable evidence that the scales measure what they are intended to measure.

Winters, K. C., Latimer, W. W., & Stinchfield, R. (2002). Clinical issues in the assessment of adolescent alcohol and other drug use. *Behaviour Research & Therapy*, 40(12), 1443-1456.

Abstract: Clinicians working with adolescents are routinely faced with the issue that alcohol and other drug (AOD) involvement may be part of the clinical picture either as a primary problem or a contributing factor to other problems or disorders. Fortunately, assessment research in this area has produced several behaviorally oriented and psychometrically sound tools from which to choose for problem identification, referral and treatment of youth suspected of AOD abuse. The aim of this paper is to provide an overview of several issues related to the clinical utility of such assessment tools.

Winters, K. C., Stinchfield, R. D., Henly, G. A., & Schwartz, R. H. (1990). Validity of adolescent self-report of alcohol and other drug involvement. *Int J Addict*, 25(11A), 1379-1395.

Abstract: Validity of adolescent self-report of alcohol and drug use and consequential effects and problems is examined. Validity is discussed in terms of its importance in research and clinical work. Also, results from a recent study are presented that focus on self-report temporal stability and response bias tendencies as evidence of validity of self-report. Study results indicate that the great majority of drug clinic and school teenagers gave temporally consistent reports of substance involvement and that only a small proportion of drug clinic and school subjects presented extreme response bias tendencies.

6.0 Risk-Taking

6.1 Conceptualization

Arnett, J. (1992). Reckless behavior in adolescence: A developmental perspective. *Developmental Review, 12*, 339-373.

Abstract: The author presents a multidimensional, developmental theory of adolescent reckless behavior which focuses on the influence factors of sensation seeking and adolescent egocentrism. Socialization influences including peer influence also are discussed. Several types of reckless behavior, as well as their decline, are discussed in light of this theory. In addition, the model discussed in this article is compared to Jessor and Jessor's Problem Behavior Theory.

Arnett, J. (1992). Socialization and adolescent reckless behavior: A reply to Jessor. *Developmental Review, 12*(4), 391-409.

Abstract: Replies to the critique of R. Jessor (see record 1993-13124-001) of J. Arnett's (see record 1993-13089-001) developmental theory of adolescent reckless behavior and elaborates on that earlier article. The emphasis is on the socialization environment and how it acts to restrict or allow adolescent reckless behavior. Socialization is conceived here as having multiple dimensions: not just parents and peers but also school, community, the legal system, the media, and the cultural belief system. A comparison of the developmental basis of these theories is made. A research agenda is also included.

Bell, N. J., & Bell, R. W. (1993). *Adolescent risk taking*. Newbury Park, CA: Sage Publications.

Abstract: This book is a compilation by many scholars in the field of adolescent risk taking. Several sociological and psychological perspectives concerning adolescent risk taking are presented toward an understanding of how adolescents make choices which are considered risky or dangerous. Applying risk taking perspective to the study of adolescent problem behavior is suggested. Programmatic and policy issues also are discussed.

Beyth-Marom, R., Austin, L., Fischhoff, B., Palmgren, C., & Jacobs-Quadrel, M. (1993). Perceived consequences of risky behaviors: Adults and adolescents. *Developmental Psychology, 29*(3), 549-563.

Abstract: Adult and adolescent Ss were asked to list possible consequences of either accepting or declining opportunities to engage in various potentially risky behaviors (e.g., drinking and driving, skipping school to go to a mall). Response patterns were quite similar for these adults and adolescents, indicating shared beliefs about the possibilities. Although taking and avoiding a risk are logically complementary actions, they did not prove to be psychologically complementary. Other comparisons showed systematic differences in the consequences produced for 1-time and regular (or repeated) versions of the same behaviors, as well as open-ended and closed-ended response modes. These results are discussed in terms of their methodological implications for studying risk perceptions, their practical implications for influencing adolescents' risk behaviors, and their theoretical implications for understanding intellectual development.

Beyth-Marom, R., & Fischhoff, B. (1997). Adolescents' decisions about risks: A cognitive perspective. In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 110-135). New York, NY: Cambridge University Press.

Abstract: (From the chapter) looks at adolescents' risk behaviors from a cognitive perspective / attempts to account for behaviors that are the result of deliberate choices among alternative courses of action / one focus of this account is how seemingly unthinking behavior can be interpreted in cognitive terms / a 2nd focus is how a detailed analysis of decisions is needed to reveal the structure of tasks facing individuals and the opportunities they have to make successful choices / examines [the ability to make choices about health, family, career, peers, and school.

Burt, M. R. (2002). Reasons to invest in adolescents. *Journal of Adolescent Health, 31*(Suppl. 6), 136-152.

Abstract: PURPOSE: To discuss the frequent failure of the United States (and other countries) to make the types of investment in youth that would increase the future prospects of youth from high-risk backgrounds. I argue that these investments are worth making, and describe the types of research and knowledge dissemination that will be necessary to promote such investments. APPROACH: I begin with a framework for thinking about and working with adolescents. I review theories of youth development, the developmental tasks of adolescence, risk and resilience, and the strong tendency of current approaches to address single problems and symptoms rather than underlying conditions. A conceptual framework is presented that combines known elements of risk and protective factors, such as antecedents, system markers of current or potential difficulties, risk behaviors, and outcomes. I briefly review what we know about youth risk behavior and outcomes in various domains, including combined prevalence and patterning. I then examine what we know about the payoffs that we can expect from investing in activities that promote adolescent health. I end with a set of recommendations for researchers and practitioners, and discuss the information that they need to put these recommendations into practice.

Fischhoff, B. (1992). Risk taking: A developmental perspective. In J. F. Yates (Ed.), *Risk-Taking behavior*. Oxford, England: John Wiley & Sons.

Abstract: In this chapter the author discusses the complex interaction between risk taking and adolescent development. Cognitive, affective and social development are considered and examined regarding their influence on the risk taker. A decision making perspective is discussed whereby risk taking is viewed as a deliberate choice.

Fischhoff, B., Nightingale, E. O., & Iannotta, J. G. (Eds.). (2001). *Adolescent risk and vulnerability: Concepts and measurement*. Washington: National Academy Press.

Abstract: In Table of Contents: 1. Introduction: Adolescent risk and vulnerability: Approaches to setting priorities to reduce their burden -- 2. Perceptions of risk and vulnerability -- 3. Vulnerability, risk, and protection -- 4. Modeling the payoffs of interventions to reduce adolescent vulnerability -- 5. Adolescent vulnerability: Measurement and priority setting.

Furby, L., & Beyth-Marom, R. (1992). Risk raking in adolescence: A decision-making perspective. *Developmental Review, 12*(1), 1-44.

Abstract: Uses a decision-making (DM) perspective to review literature on risk taking in adolescence. The advantages of such an approach are demonstrated, and the DM approach is applied to common characterizations of adolescents' risky behaviors. The implications of this perspective for education are discussed, along with the need for a development theory of DM. Studies related to adolescent risk taking show whether and how each study addresses issues defined by a DM perspective. Alternative views of risk taking are also examined. The possible validity of the claim that adolescents are undue risk takers is discussed.

Kuther, T. L. (2000). Moral reasoning, perceived competence, and adolescent engagement in risky activity. *Journal of Adolescence, 23*(5), 599-604.

Abstract: Relations among moral reasoning, domain specific perceived competencies, and self-reported engagement in risky activity (substance use and antisocial behavior) were examined with 110 10th-12th grade students. An exploratory model demonstrated that perceived behavioral competence mediated the relation of moral reasoning and engagement in risky behavior such that preconventional moral reasoning predicted perceptions of low behavioral competence, which was associated with engagement in risky activity. The results support contentions of moral theorists that a comprehensive theory of moral development must include self-regulatory mechanisms such as perceptions of competence in order to predict moral conduct.

Lavery, B., Siegel, A. W., Cousins, J. H., & Rubovits, D. S. (1993). Adolescent risk-taking: An analysis of problem behaviors in problem children. *Journal of Experimental Child Psychology. Special Issue: Social Context and Socialization*, 55(2), 277-294.

Abstract: Adolescent risk-taking was explored from several theoretical positions: Jessor's (R. Jessor and S. L. Jessor, 1975) problem-behavior perspective, risk-taking as normal and adaptive, adolescent egocentrism, and a decision-making perspective. 80 adolescents (aged 11-17 yrs) referred to mental health clinics completed a risk involvement and perception questionnaire, the Jesness Inventory, and a measure of adolescent egocentrism. Both Benefit and Risk Perception were significantly correlated with Involvement (in opposite directions), supportive of a decision-making perspective. A configuration of social maladjustment personality correlates in conjunction with a diagnosis of Conduct Disorder showed a strong, positive correlation with Involvement, supporting a problem-behavior perspective. Adolescent risk-taking appears to be a multidimensional phenomenon involving personality correlates and cognitive aspects of decision making.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127(2), 267-286.

Abstract: Virtually all current theories of choice under risk or uncertainty are cognitive and consequentialist. They assume that people assess the desirability and likelihood of possible outcomes of choice alternatives and integrate this information through some type of expectation-based calculus to arrive at a decision. The authors propose an alternative theoretical perspective, the risk-as-feelings hypothesis, that highlights the role of affect experienced at the moment of decision making. Drawing on research from clinical, physiological, and other subfields of psychology, they show that emotional reactions to risky situations often diverge from cognitive assessments of those risks. When such divergence occurs, emotional reactions often drive behavior. The risk-as-feelings hypothesis is shown to explain a wide range of phenomena that have resisted interpretation in cognitive-consequentialist terms.

Moore, S., & Gullone, E. (1996). Predicting adolescent risk behavior using a personalized cost-benefit analysis. *Journal of Youth & Adolescence*, 25(3), 343-359.

Abstract: Examined adolescents' perceptions of what constitutes risk behavior (RB), their judgments about the consequences of RB, differences between gender and age groups in risk judgments, and the relationships between RBs and risk judgments. 291 male and 279 female adolescents (aged 12-17 yrs) named RBs perceived as common to similarly aged peers, then rated level of engagement in these RBs. Most frequently nominated RBs were smoking, drinking alcohol, dangerous driving, taking drugs, criminal behavior, sporting risks, antisocial behavior, minor rebellion, school-related risks, and sexual activity. Negative outcomes of RB were categorized as death, disablement, punishment, and social consequences. Payoffs included pleasure, material gain, and avoidance of negative outcomes. Perceived pleasantness, likelihood of positive outcomes, and unpleasantness of negative outcomes were found to be strongly associated with RB.

Moore, S. D., & Parsons, F. J. (2000). A research agenda for adolescent risk-taking: Where do we go from here? *Journal of Adolescence*, 23(4), 371-376.

Abstract: First Paragraph: It is timely that this special issue comes quite soon after the publication of an important book edited by Richard Jessor (1998), *New Perspectives on Adolescent Risk Behavior*, which sets a research agenda for the study of adolescent risk-taking. In a concluding chapter, research priorities in the area are summed up by Silbereisen. He argues we should: (1) study adolescents as whole persons, emphasizing complexes of risk-related behaviours rather than concentrating on single risks; (2) isolate the different developmental pathways, and their risk-related characteristics, which are linked with long-term as opposed to short-term risk taking; (3) study the biological underpinnings of risk behaviour and their interactions with other biopsychosocial processes; and (4) pay more attention to context, in particular, move beyond the study of adolescent risk in developed western nations to look at commonalities and differences in other cultures.

Resnick, M. D. (2000). Protective factors, resiliency and healthy youth development. *Adolescent Medicine*, 11(1), 157-165.

Abstract: The last decade has been characterized by an increasing focus on the question: "What works to promote and protect the health and well-being of adolescents?" This question is raised in multiple arenas, from pregnancy prevention to substance use and violence prevention, as well as for broad populations of young people. An accumulating body of evidence underscores the effectiveness of a dual strategy of enhancing protective factors and promoting healthy youth development while seeking to reduce risk factors in the lives of youth. Building upon research frameworks of the 1970s and 1980s that emphasized the concepts of resiliency, risk, vulnerability, and protective factors, this research provides insights into best practices when the weight of evidence is sufficiently developed, as well as ideas about "best bets" when strategies show particular promise. Critical to the ongoing advancement of adolescent health is a powerful, evidence-based response to the argument that "nothing can be done" for high-risk youth. This perspective must be superseded by practitioners, researchers, and advocates who demonstrate, at multiple points of intervention, that the dual approach of risk reduction and enhancement of protective factors constitutes an effective strategy for adolescent health promotion.

Romer, D. (2003). *Reducing adolescent risk: Toward an integrated approach*. Thousand Oaks: Sage Publications.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality*, 68(6), 999-1029.

Abstract: The first part of this article describes a study of the relationships between personality and risk-taking in six areas: smoking, drinking, drugs, sex, driving, and gambling. The participants, 260 college students, were given self-report measures of risky behaviors in each of the six areas and the Zuckerman-Kuhlman five-factor personality questionnaire. Generalized risk-taking (across all six areas) was related to scales for impulsive sensation seeking, aggression, and sociability, but not to scales for neuroticism or activity. Gender differences on risk-taking were mediated by differences on impulsive sensation seeking. The second part discusses biological traits associated with both risk-taking and personality, particularly sensation seeking, such as the D4 dopamine receptor gene, the enzyme monoamine oxidase, and augmenting or reducing of the cortical evoked potential. Comparative studies show relationships between biological markers shared with other species and correlated behaviors similar to sensation seeking in humans. A biosocial model of the traits underlying risk-taking is presented.

6.2 Correlates

Anteghini, M., Fonseca, H., Ireland, M., & Blum, R. W. (2001). Health risk behaviors and associated risk and protective factors among Brazilian adolescents in Santos, Brazil. *Journal of Adolescent Health, 28*, 295-302.

Abstract: OBJECTIVE: To describe the prevalence of health risk behaviors and identify risk and protective factors that are associated with several health risk behaviors (cigarette smoking, drug use, onset of sexual intercourse before age 15, pregnancy, gun-carrying, suicidal ideation, and suicide attempts) among adolescents in Brazil, as well as to explore gender differences. METHODS: We estimated prevalence rates, evaluated bivariate associations, and explored multivariate analyses using logistic regression on data from a 1997 survey of adolescent health among 2,059 eighth- and 10th-grade students in Santos, Brazil. RESULTS: Youth in Santos, Brazil report high rates of gun-carrying, suicidal thoughts and attempts, sexual intercourse, and pregnancy. Factors associated with diminished involvement for nearly all health risk behaviors, for both boys and girls, included having good family relationships, and feeling liked by friends and teachers. Factors associated with increases in nearly all health risk behaviors were: gun-carrying and gun availability in the home, drug use, and sexual abuse. CONCLUSIONS: Factors that are associated with a wide range of health risk behaviors among adolescents in Brazil appear to parallel those found in industrialized countries: access to guns, substance use, and sexual abuse. Likewise, connectedness to family, school, and peers is consistently the protective factor associated with diminished risky behaviors.

Arnett, J. J. (1996). Sensation seeking, aggressiveness, and adolescent reckless behavior. *Personality and Individual Differences, 20*(6), 693-702.

Abstract: Sensation seeking and aggressiveness were hypothesized to contribute to the developmental basis of reckless behavior in adolescence. This hypothesis was investigated in two studies, one on high school students and the other on college students. Sensation seeking was found to be related to every type of reckless behavior, including five types of automobile driving, sex without contraception, sex with someone known only casually, number of sexual partners, alcohol and drug use, vandalism, and theft. Aggressiveness was related to several of the driving variables, as well as to vandalism and theft. For every type of reckless behavior, frequencies of reckless behavior were as high or higher for the college students than for the high school students. Findings are discussed in relation to socialization in the culture of the American middle-class.

Arnett, J. J. (2002). Developmental sources of crash risk in young drivers. *Injury prevention: Journal of the International Society for Child and Adolescent Injury Prevention* (Suppl. 2), ii17-21; discussion ii21-3.

Abstract: OBJECTIVE: To outline various sources of crash risk among young drivers that are developmental (age based) factors. METHODS AND RESULTS: First, a distinction is made between adolescence (ages 10-18) and emerging adulthood (ages 18-25) in order to shed light on the reasons for especially high crash rates among 16-17 year old drivers relative to 18-25 year olds. Then various developmental sources of risk in adolescence are described, including the power of friends, the optimistic bias, and adolescent emotionality. The reasons for especially high crash rates among young males are discussed, with an emphasis on how American ideas about manhood promote driving risks. Finally, a cross national comparison between adolescents in the United States and Denmark shows how developmental risks interact with driving policies. CONCLUSIONS: The high crash rates of adolescents relative to emerging adults and of emerging adults relative to older drivers can be explained in part by developmental factors.

Ary, D. V., Duncan, T. E., Biglan, A., Metzler, C. W., Noell, J. W., & Smolkowski, K. (1999). Development of adolescent problem behavior. *Journal of Abnormal Child Psychology*, 27(2), 141-150.

Abstract: The developmental model of adolescent antisocial behavior advanced by Patterson and colleagues (e.g., Patterson, Reid, & Dishion, 1992) appears to generalize the development of a diverse set of problem behaviors. Structural equation modeling methods were applied to 18-month longitudinal data from 523 adolescents. The problem behavior construct included substance use, antisocial behavior, academic failure, and risky sexual behavior. Families with high levels of conflict were less likely to have high levels of parent-child involvement. Such family conditions resulted in less adequate parental monitoring of adolescent behavior, making associations with deviant peers more likely. Poor parental monitoring and associations with deviant peers were strong predictors of engagement in problem behavior. These constructs accounted for 46% of the variance in problem behavior. Although association with deviant peers was the most proximal social influence on problem behavior, parental monitoring and family factors (conflict and involvement) were key parenting practices that influenced this developmental process.

Ary, D. V., Duncan, T. E., Duncan, S. C., & Hops, H. (1999). Adolescent problem behavior: The influence of parents and peers. *Behaviour Research and Therapy*, 37(3), 217-230.

Abstract: This paper presents evidence that the Patterson et al. (1992) model of development of antisocial behavior in children generalizes to the development of a wide array of problem behaviors during later adolescence and that youth antisocial behavior, high-risk sexual behavior, academic failure and substance use form a single problem behavior construct. Structural equation modeling methods were applied to 24-month longitudinal data from 204 adolescents and parents. The model fit the data well, accounting for 52% of the variance in adolescent problem behavior. Specifically, families experiencing high levels of conflict were more likely to have low levels of parent-child involvement. These family conditions were related to poor parental monitoring and association with deviant peers one year later. Poor parental monitoring and associations with deviant peers were strong proximal predictors of engagement in an array of problem behaviors at two-year follow-up.

Atav, S., & Spencer, G. A. (2002). Health risk behaviors among adolescents attending rural, suburban, and urban schools: a comparative study. *Family & Community Health*, 25(2), 53-64.

Abstract: This study describes differences in health risk behaviors among 2,017 adolescents attending rural, suburban, and urban school districts in upstate New York. Differences in risk behaviors regarding use of tobacco, alcohol, and illegal substances; sexual activity; and carrying weapons were analyzed. A consistent pattern emerged from the analysis of the data, with rural students at most risk. The findings reinforce the need to focus on the relationship between residence and health risk behaviors, so that intervention programs specific to the needs of rural, suburban, and urban adolescents can be developed.

Bachanas, P. J., Morris, M. K., Lewis-Gess, J. K., Sarett-Cuasay, E. J., Flores, A. L., Sirl, K. S., et al. (2002). Psychological adjustment, substance use, HIV knowledge, and risky sexual behavior in at-risk minority females: Developmental differences during adolescence. *Journal of Pediatric Psychology, 27*(4), 373-384.

Abstract: OBJECTIVE: To assess developmental differences in the psychological functioning, substance use, coping style, social support, HIV knowledge, and risky sexual behavior of at-risk, minority adolescent girls; to assess developmental differences in psychosocial correlates of risky sexual behavior in older and younger adolescents. METHOD: Participants included 164 minority teens, ages 12-19, who were receiving medical care in an adolescent primary care clinic. Teens completed measures of psychological adjustment, substance use, coping style, social support, religious involvement, and HIV knowledge and attitudes. In addition, they answered questions regarding their sexual history, family situation, school status, and psychiatric and legal history. RESULTS: Younger teens (ages 12-15) reported more symptoms of depression and earlier sexual debuts than older teens (ages 16-19). However, older teens reported significantly more substance use and were more likely to have been pregnant and to have contracted a sexually transmitted disease (STD) than younger teens. Older teens also reported more religious involvement and using more adaptive coping strategies than younger teens. Developmental differences in the correlates of risky behaviors were also found between younger and older teens. Specifically, conduct problems and substance use were significantly associated with risky sexual behavior for younger teens, but not for older teens. Similarly, younger teens whose peers were engaging in risky behaviors reported engaging in more risky sexual behaviors; however, these same relations were not found for older teens. CONCLUSIONS: Young minority adolescents exhibiting conduct problems and using substances seem to be at highest risk for contracting HIV and STDs as a result of risky sexual behavior. Prevention interventions should target teens in high-risk environments during late elementary school or early middle school to encourage teens to delay intercourse, practice safer sex, and avoid drug and alcohol use. An interdisciplinary model of care in primary care settings is clearly indicated to provide these services to at-risk youths.

Beal, A. C., Ausiello, J., & Perrin, J. M. (2001). Social influences on health-risk behaviors among minority middle school students. *J Adolesc Health, 28*(6), 474-480.

Abstract: PURPOSE: To determine whether parent social influences are associated with health-risk behaviors more than peer social influences among young minority adolescents. METHODS: We conducted a cross-sectional survey of seventh-grade students in a public urban magnet middle school using a survey instrument adapted from the Centers for Disease Control and Prevention Youth Risk Behavior Survey. The sample consisted of all seventh-grade students in the school, and the survey was part of a needs assessment for a school-based health education program. We measured four health-risk behaviors--use of (a) tobacco, (b) alcohol, (c) onset of sexual activity, and (d) marijuana use--and five social influences: (a) parent disapproval of health-risk behaviors, (b) parent modeling of health-risk behaviors, (c) parent monitoring of health-risks, (d) peer disapproval of health risks, and (e) peer modeling of health-risk behaviors. The analyses included measures of the prevalence of health-risk behaviors, bivariate analyses to evaluate relationships between health-risk behaviors and social influences, and regressions analyses to determine the independent associations of the social influences with the four health-risk behaviors. RESULTS: Twenty percent of respondents reported using tobacco, over 50% used alcohol in the past year, 13.3% were sexually active, and 12% reported marijuana use. Parent influences were associated with differences in alcohol use, whereas peer influences were associated with differences in all measured health-risk behaviors: tobacco and alcohol use, sexual activity, and marijuana use. Regression analyses demonstrated that peer social influences were the only measures independently associated with abstinence from tobacco ($p < .05$), alcohol ($p < .01$), sexual activity ($p < .05$), and marijuana use ($p < .05$). In all analyses, peers emerged as the most consistent social influence on health-risk behavior. CONCLUSION: This study suggests peers and peer group behavior may be better predictors of adolescent health-risk behaviors than parental social influences among young adolescents.

Benthin, A., Slovic, P., & Severson, H. (1993). A psychometric study of adolescent risk perception. *Journal of Adolescence*, 16(2), 153-168.

Abstract: 41 high-school students evaluated each of 30 activities (e.g., drinking, drug use, sex) on each of 14 characteristics of perceived risk and perceived benefit. They also indicated whether they themselves engaged in the activities. Adolescents who participated in an activity perceived the risks to be smaller, better known, and more controllable than did non-participants. Participants also perceived greater benefits relative to risks, greater peer pressure to engage in the activity, and a higher rate of participation by others.

Bergman, M. M., & Scott, J. (2001). Young adolescents' wellbeing and health-risk behaviours: Gender and socio-economic differences. *Journal of Adolescence*, 24(2), 183-197.

Abstract: In this paper we use the 1994-1997 Youth Surveys of the British Household Panel Study to examine the wellbeing of young adolescents. We conceptualize wellbeing as a multi-dimensional construct and we develop and test models of gender and age differences. Using confirmatory factor analysis, we find clear gender differences in self-esteem, self-efficacy, unhappiness and worries. We confirm that wellbeing and some health-risk behaviours (fighting and smoking) are linked. We test models that examine how family structure, father's occupation, tenure, and household income affect adolescent wellbeing. While socio-economic factors affect health-risk behaviours and also adolescents' reported worries, they have little impact on other aspects of youth wellbeing. The implications of these findings are discussed.

Blum, R. W., Beuhring, T., Shew, M. L., Bearinger, L. H., Sieving, R. E., & Resnick, M. D. (2000). The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. *American Journal of Public Health*, 90(12), 1879-1884.

Abstract: OBJECTIVES: The study examined the unique and combined contributions of race/ethnicity, income, and family structure to adolescent cigarette smoking, alcohol use, involvement with violence, suicidal thoughts or attempts, and sexual intercourse. METHODS: Analyses were based on the National Longitudinal Study of Adolescent Health. A nationally representative sample of 7th to 12th graders participated in in-home interviews, as did a resident parent for 85.6% of the adolescent subjects. The final sample included 10,803 White, Black, and Hispanic 7th to 12th graders. RESULTS: White adolescents were more likely to smoke cigarettes, drink alcohol, and attempt suicide in the younger years than were Black and Hispanic youths. Black youths were more likely to have had sexual intercourse; both Black and Hispanic youths were more likely than White teens to engage in violence. Controlling for gender, race/ethnicity, income, and family structure together explained no more than 10% of the variance in each of the 5 risk behaviors among younger adolescents and no more than 7% among older youths. CONCLUSIONS: Findings suggest that when taken together, race/ethnicity, income, and family structure provide only limited understanding of adolescent risk behaviors.

Brener, N. D., & Collins, J. L. (1998). Co-occurrence of health-risk behaviors among adolescents in the United States. *Journal of Adolescent Health*, 22(3), 209-213.

Abstract: Purpose: Although it is common for adolescents to experiment with several health-risk behaviors before reaching adulthood, little is known about the co-occurrence of these behaviors. The purposes of this study were to determine the co-occurrence of specific health-risk behaviors among a nationally representative sample of adolescents, and to examine whether the distribution of multiple risk behaviors varies by age, sex, and school enrollment status. Methods: This study analyzed survey data from a United States national probability sample (n = 10,645) of youth aged 12-21 years. Survey items measuring current seat belt use, weapon carrying, tobacco, alcohol, and other drug use, and sexual behavior were included in the analysis. Results: The majority of adolescents aged 12-17 years did not engage in multiple health-risk behaviors. However, the prevalence of multiple risk behaviors increased dramatically with age. While only 1 in 12 adolescents aged 12-13 years engaged in two or more of these behaviors, one-third of those aged 14-17 years and half of the college-aged youth (18-21 years) did so. Male respondents and out-of-school youth aged 14-17 years were more likely to engage in multiple health-risk behaviors than were other respondents. Conclusions: These results suggest that the likelihood that adolescents engage in multiple health-risk behaviors is related to age and that many adolescents engage in these behaviors serially rather than at the same time.

Brooks, T. L., Harris, S. K., Thrall, J. S., & Woods, E. R. (2002). Association of adolescent risk behaviors with mental health symptoms in high school students. *Journal of Adolescent Health, 31*(3), 240-246.

Abstract: PURPOSE: To examine the hypothesis that self-reported symptoms of depression and stress may be associated with other risk behaviors. METHODS: A secondary data analysis of the 1992 Massachusetts Adolescent Health Survey involving a representative sample of 2,224 ninth and twelfth grade students was performed. The dichotomous dependent variable was positive if the adolescent reported feeling depressed or stressed for 10 or more days in the past month. Potential independent variables examined were age, gender, race/ethnicity, and 14 risk or protective behaviors: each scored on a seven point scale representing increasing frequency of a behavior in the past month. A four-level sexual risk variable was constructed as well. Associations were assessed using Chi-square, phi/contingency coefficients, and logistic regression analyses to predict the odds of reporting depression/stress... CONCLUSIONS: Female gender had greater than threefold increased odds of reporting depression/stress. Other associations, with some gender differences, include older age, physical fights, non-use of birth control, lack of a healthy diet, and use of tobacco.

Centers for Disease Control and Prevention (CDC). (1990). *Youth Risk Behavior Surveillance System (YRBSS) Questionnaire*.

Abstract: The YRBSS Questionnaire is used for the National and State Youth Risk Behavior Surveys. The focus of the YRBSS is to determine incidence and prevalence of specific behaviors in six areas that contribute to leading causes of morbidity and mortality in adolescents and adults. These six areas are: unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and STD; dietary behaviors that result in disease; and physical inactivity. It is a self-report questionnaire containing 75 multiple choice questions.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Cook, P. A., & Bellis, M. A. (2001). Knowing the risk: Relationships between risk behaviour and health knowledge. *Public Health, 115*(1), 54-61.

Abstract: Communicating risk is a key public health strategy. The implicit assumptions are that the public interprets risk information in a logical fashion and adopts behavioural changes to reduce risk. We assessed risk behaviour, and knowledge and perception of voluntary and involuntary risks using an anonymous questionnaire completed by 472 students. Risk-taking behaviour was measured as the number of different risk behaviours undertaken in the previous 12 months. Knowledge and perception were measured by the extent to which subjects agreed with statements of risk-related information. These varied in complexity from simple statements linking a behaviour with a health risk to numerical statements describing the strength of such relationships. Risk-taking behaviour was highest amongst younger people, males, people whose parents were in non-manual occupations, and people who believed in God (risk-taking behaviour was not related to voting preference or birth order). Overall, knowledge was not significantly related to risk-taking behaviour. However, risk-taking was positively related to more accurate responses to numerical risk questions and risk-takers were also more likely to perceive both voluntary and involuntary risks as less risky. At least in this cohort, more information about risk is not related to lower risk behaviour. In fact, those individuals with a better understanding of the precise risk associated with certain behaviours were more likely to be higher risk-takers while those who consistently over-estimated risks were low risk-takers. Overall, knowledge and perception of risk explained relatively little of the variance in behaviour. Although these findings need further examination within the general population, public health measures should not assume that information campaigns will necessarily lead to a reduction in risk behaviour.

Dembo, R., Wothke, W., Seeberger, W., Shemwell, M., Pacheco, K., Rollie, M., et al. (2000). Testing a model of the influence of family problem factors on high-risk youths' troubled behavior: A three-wave longitudinal study. *Journal of Psychoactive Drugs, 32*(1), 55-65.

Abstract: Using data collected in a study of arrested youths processed at a juvenile assessment center who entered a home-based family intervention project, the authors test a three-stage longitudinal model. The model reflects a developmental damage view of the relationships of the youths' family problems (including their physical abuse and sexual victimization experiences) to their drug use and delinquent behavior over time. The hypothesized model is supported by the data. Research, theoretical, and policy implications of the results are drawn.

DiClemente, R. J., Wingood, G. M., Crosby, R., Sionean, C., Cobb, B. K., Harrington, K., et al. (2001). Parental monitoring: Association with adolescents' risk behaviors. *Pediatrics*, *107*(6), 1363-1368.

Abstract: CONTEXT: Contemporary threats to adolescents' health are primarily the consequence of risk behaviors and their related adverse outcomes. Identifying factors associated with adolescents' risk behaviors is critical for developing effective prevention strategies. A number of risk factors have been identified, including familial environment; however, few studies have examined the impact of parental monitoring. OBJECTIVE: To examine the influence of less perceived parental monitoring on a spectrum of adolescent health-compromising behaviors and outcomes. Design: Survey. SETTING: A family medicine clinic. Participants: To assess eligibility, recruiters screened a sample of 1,130 teens residing in low-income neighborhoods. Adolescents were eligible if they were black females, between the ages of 14 and 18 years, sexually active in the previous 6 months, and provided written informed consent. Most teens (n = 609) were eligible, with 522 (85.7%) agreeing to participate. MAIN OUTCOME MEASURES: Variables in 6 domains were assessed, including: sexually transmitted diseases, sexual behaviors, marijuana use, alcohol use, antisocial behavior, and violence. RESULTS: In logistic regression analyses, controlling for observed covariates, adolescents perceiving less parental monitoring were more likely to test positive for a sexually transmitted disease (odds ratio [OR]: 1.7), report not using a condom at last sexual intercourse (OR: 1.7), have multiple sexual partners in the past 6 months (OR: 2.0), have risky sex partners (OR: 1.5), have a new sex partner in the past 30 days (OR: 3.0), and not use any contraception during the last sexual intercourse episode (OR: 1.9). Furthermore, adolescents perceiving less parental monitoring were more likely to have a history of marijuana use and use marijuana more often in the past 30 days (OR: 2.3 and OR: 2.5, respectively); a history of alcohol use and greater alcohol consumption in the past 30 days (OR: 1.4 and OR: 1.9, respectively); have a history of arrest (OR: 2.1); and there was a trend toward having engaged in fights in the past 6 months (OR: 1.4). CONCLUSIONS: The findings demonstrate a consistent pattern of health risk behaviors and adverse biological outcomes associated with less perceived parental monitoring. Additional research needs to focus on developing theoretical models that help explain the influence of familial environment on adolescent health and develop and evaluate interventions to promote the health of adolescents.

Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2000). Risk and protective factors influencing adolescent problem behavior: A multivariate latent growth curve analysis. *Annals of Behavioral Medicine*, *22*(2), 103-109.

Abstract: This study examined the dynamic relations between adolescent problem behaviors (alcohol, marijuana, deviance, academic failure) over time and predictors of these behaviors. Data from the National Youth Survey (1) included 1,044 adolescents (53.5% male; mean age at year 1 = 13.20). Dependent measures were adolescent alcohol use, marijuana use, deviance, and academic failure, assessed annually over 4 years. Independent measures included age, gender, marital status, income, family time, family support, time with friends, friend deviance, knowledge of friends, activities, and neighborhood problems. An associative latent growth modeling (LGM) analysis showed significant increases and relations between the four behaviors in both initial status and development. Second-order multivariate LGM analyses indicated that the four behaviors could be modeled by a higher-order problem behavior construct. Significant effects on the common problem behavior intercept or slope included time with friends, deviant friends, age, marital status, family time, and support. Additional effects were found to be specific to the initial status and slopes of individual problem behaviors. Overall, results indicate the importance of assessing the relations between adolescent problem behaviors as they change over time and identifying the risk and protective factors that have both common and individual influences on these behaviors.

DuRant, R. H., Smith, J. A., Kreiter, S. R., & Krowchuk, D. P. (1999). The relationship between early age of onset of initial substance use and engaging in multiple health risk behaviors among young adolescents. *Archives of Pediatric Adolescent Medicine*, 153(3), 286-291.

Abstract: BACKGROUND: Previous research based on problem-behavior theory has found that early age of onset of substance use is associated with engaging in multiple health risk behaviors among high school students. It is unknown whether these relationships begin during early adolescence. OBJECTIVE: To examine the relationships between early age of onset of cigarette, alcohol, marijuana, and cocaine use and engaging in multiple risk behaviors among middle school students. METHODS: A modified version of the Centers for Disease Control and Prevention Youth Risk Behavior Survey was administered to 2,227 sixth through eighth grade students attending 53 randomly selected middle schools in North Carolina. A Health Risk Behavior Scale was constructed from 16 behaviors, including indicators of violence and weapon carrying; current substance use; nonuse of helmets when biking, in-line skating or skateboarding; not wearing a seat belt; riding with a driver who had been drinking; and suicide plans. Among this sample of middle school students, the scale had a mean (SD) of 4.1 (2.7) (range=0-15), and had a high internal reliability coefficient ($\alpha=0.74$). The independent variables included first time use of cigarettes, alcohol, marijuana, and cocaine at age 11 years or earlier; actual age of onset of each substance; race and ethnicity; family composition; sex; school grade; academic ranking; and older age for school grade. These data were analyzed with analysis of variance, Spearman r, and multiple linear regression. RESULTS: All the independent variables were found to be associated ($P<0.05$) with the Health Risk Behavior Scale during the bivariate analyses. When each of these significant variables were entered into a multiple regression model, having smoked at age 11 years or younger accounted for 21.9% of the variation in the Health Risk Behavior Scale. Male sex, early marijuana or cocaine use, older age, lower academic rank, white race, and living in a 1-parent family explained an additional 19.1% of variation in the model (adjusted $R^2=0.41$, $P<0.001$). When the actual ages of onset of the use of substances were analyzed, in order of magnitude: age of onset of smoking; male sex; age of onset of alcohol and marijuana use; age; lower academic ranking; age of onset of cocaine use; white race; and lower academic rating accounted for 52.8% ($P<0.001$) of the variation in the Health Risk Behavior Scale. CONCLUSION: Even when considering sociodemographic factors, early age of onset of cigarette use was the strongest correlate of the number of health risk behaviors in which these young adolescents had engaged. Early onset of use of other substances was also associated with a clustering of health risk behaviors among this sample of middle school students. The findings suggest that screening for early experimentation with tobacco and other substance use will help identify young adolescents at increased risk for engaging in multiple health risk behaviors.

Fischhoff, B., Nightingale, E. O., & Iannotta, J. G. (Eds.). (2001). *Adolescent risk and vulnerability: Concepts and measurement*. Washington: National Academy Press.

Abstract: In Table of Contents: 1. Introduction: Adolescent risk and vulnerability: Approaches to setting priorities to reduce their burden; 2. Perceptions of risk and vulnerability; 3. Vulnerability, risk, and protection; 4. Modeling the payoffs of interventions to reduce adolescent vulnerability; 5. Adolescent vulnerability: Measurement and priority setting

Flisher, A. J., Kramer, R. A., Hoven, C. W., King, R. A., Bird, H. R., Davies, M., et al. (2000). Risk behavior in a community sample of children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(7), 881-887.

Abstract: OBJECTIVES: First, to investigate whether there is covariation between risk behaviors, including suicidality, in a community probability sample of children and adolescents; and second, to investigate whether risk behavior is associated with selected potential correlates. METHOD: A sample of 9- to 17-year-old youths ($N = 1,285$) and their caretakers were interviewed in the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study. The risk behaviors were marijuana smoking, alcohol use, intercourse, fighting, cigarette smoking, and suicidal ideation/attempts. Relationships between the risk behaviors were described using odds ratios. Linear regression analyses of an index of risk behavior on the selected potential correlates of risk behavior were conducted. RESULTS: There were significant relationships between all pairs of risk behaviors. The score on the index of risk behavior was associated with stressors, lack of resources, family psychiatric disorder, psychopathology, and functional impairment. CONCLUSIONS: Clinicians should be alerted to the possibility of risk behaviors, especially in children and adolescents engaging in other risk behaviors and those with inadequate resources, stressors, functional impairment, or psychopathology.

Gerrard, M., Gibbons, F. X., Benthin, A. C., & Hessling, R. M. (2003). A longitudinal study of the reciprocal nature of risk behaviors and cognitions in adolescents: What you do shapes what you think and vice versa. In P. Salovey & A. J. Rothman (Eds.), *Social psychology of health. Key readings in social psychology* (pp. 21-46). New York, NY, US: Psychology Press.

Abstract: (From the chapter) Adolescents' reckless driving, drinking, and smoking, along with their cognitions about these behaviors, were assessed in a 3-year longitudinal design. Consistent with most models of health behavior, the results indicated that health cognitions predict risk behavior. In addition, the current data demonstrate that increases in risk behavior are accompanied by increases in perceptions of vulnerability and prevalence and by decreases in the influence of concerns about health and safety. Furthermore, the changes in prevalence estimates and concern about health and safety predicted subsequent risk behavior. These results demonstrate reciprocity between risk behaviors and related cognitions and suggest that adolescents are aware of the risks associated with their behavior but modify their thinking about these risks in ways that facilitate continued participation in the behaviors.

Goldberg, J. H., Halpern-Felsher, B. L., & Millstein, S. G. (2002). Beyond invulnerability: The importance of benefits in adolescents' decision to drink alcohol. *Health Psychology, 21*(5), 477-484.

Abstract: Some investigators propose that adolescents engage in risky behaviors mainly because they perceive themselves to be invulnerable to risk. However, studies have typically not included perceived benefits. In the current study, 5th, 7th, and 9th graders were surveyed about their perceptions of and experience with alcohol and tobacco. Results indicated that perceptions of the benefits were significantly related to drinking and smoking 6 months later, over and above perceptions of the risks, age of the respondent, and experience level. Further, the importance of benefits was replicated across 3 separate analyses. Experience with alcohol alone, especially positive experience, was also related to perception and behavior. These findings are discussed in terms of how to improve messages and influence adolescents' decisions regarding risk-taking behaviors.

Greene, K., Krcmar, M., Walters, L. H., Rubin, D. L., Hale, J., & Hale, L. (2000). Targeting adolescent risk-taking behaviors: the contributions of egocentrism and sensation-seeking. *Journal of Adolescence, 23*(4), 439-461.

Abstract: Tremendous resources are spent each year developing programs and messages targeting adolescent risk behavior. Adolescents are often reasonably well educated about methods for health promotion such as preventing HIV infection, yet they fail to act accordingly. One widely used individual difference variable, sensation-seeking, has been incorporated in health message design to some extent, but it fails to take development into account. Research on adolescent egocentrism suggests adolescents experience personal fable which can lead to an exaggerated sense of invulnerability. The present study sampled adolescents and college students to examine relative contributions of egocentrism and sensation-seeking to risk-taking behavior. Results indicate a latent factor labeled risk-seeking (primarily indicated by disinhibition and risk-taking personality, and to a lesser degree by invulnerability, experience-seeking, boredom susceptibility, and thrill and adventure-seeking) indeed predicted a latent factor labeled delinquent behavior (primarily indicated by alcohol consumption and delinquency, and to a lesser degree by drug use, drinking and driving, and risky driving). Other results indicate consistently high personal fable combined with high sensation-seeking explained most risk-taking behavior. Implications and directions for future research are discussed.

Griffin, K. W., Botvin, G. J., Scheier, L. M., Doyle, M. M., & Williams, C. (2003). Common predictors of cigarette smoking, alcohol use, aggression, and delinquency among inner-city minority youth. *Addictive Behaviors, 28*(6), 1141-1148.

Abstract: The present study examined the prevalence rates and common predictors of substance use, aggression, and delinquency among inner-city minority youth entering middle school. A survey was administered to sixth grade students (N= 5,442) from 42 New York City schools. Aggressive behaviors were reported most frequently, followed by delinquent behaviors, alcohol use, and cigarette smoking. Across all behavioral outcomes, social and environmental influences explained the largest proportion of variance, followed by individual characteristics and skills, bonding to conventional institutions, and demographic variables. For the majority of predictor variables, there was substantial overlap in patterns of prediction across outcomes. These findings indicate that several factors that correspond to the predominant psychosocial theories of adolescent development explain variation across different problem behavior outcomes among inner-city minority youth.

Grunbaum, J. A., Kann, L., Kinchen, S. A., Williams, B., Ross, J. G., Lowry, R., et al. (2002). Youth Risk Behavior Surveillance--United States, 2001. *Morbidity & Mortality Weekly Report. Surveillance Summaries*, 51(4), 1-62.

Abstract: PROBLEM/CONDITION: Priority health-risk behaviors, which contribute to the leading causes of mortality and morbidity among youth and adults, often are established during youth, extend into adulthood, are interrelated, and are preventable. REPORTING PERIOD COVERED: This report covers data during February-December 2001. DESCRIPTION OF SYSTEM: The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults; these behaviors contribute to unintentional injuries and violence; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs), including human immunodeficiency virus (HIV) infection; unhealthy dietary behaviors; and physical inactivity. The YRBSS includes a national school-based survey conducted by CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies. This report summarizes results from the national survey, 34 state surveys, and 18 local surveys conducted among students in grades 9-12 during February-December 2001. RESULTS: In the United States, approximately three fourths of all deaths among persons aged 10-24 years result from only four causes: motor-vehicle crashes, other unintentional injuries, homicide, and suicide. Results from the 2001 national Youth Risk Behavior Survey demonstrated that numerous high school students engage in behaviors that increase their likelihood of death from these four causes: 14.1% had rarely or never worn a seat belt during the 30 days preceding the survey; 30.7% had ridden with a driver who had been drinking alcohol; 17.4% had carried a weapon during the 30 days preceding the survey; 47.1% had drunk alcohol during the 30 days preceding the survey; 23.9% had used marijuana during the 30 days preceding the survey; and 8.8% had attempted suicide during the 12 months preceding the survey. Substantial morbidity and social problems among young persons also result from unintended pregnancies and STDs, including HIV infection. In 2001, 45.6% of high school students had ever had sexual intercourse; 42.1% of sexually active students had not used a condom at last sexual intercourse; and 2.3% had ever injected an illegal drug. Two thirds of all deaths among persons aged > or = 25 years result from only two causes: cardiovascular disease and cancer. The majority of risk behaviors associated with these two causes of death are initiated during adolescence. In 2001, 28.5% of high school students had smoked cigarettes during the 30 days preceding the survey; 78.6% had not eaten > or = 5 servings per day of fruits and vegetables during the 7 days preceding the survey; 10.5% were overweight; and 67.8% did not attend physical education class daily. PUBLIC HEALTH ACTIONS: Health and education officials at national, state, and local levels are using these YRBSS data to analyze and improve policies and programs to reduce priority health-risk behaviors among youth. The YRBSS data also are being used to measure progress toward achieving 16 national health objectives for 2010 and 3 of the 10 leading health indicators.

Gullone, E., & Moore, S. (2000). Adolescent risk-taking and the five-factor model of personality. *Journal of Adolescence*, 23(4), 393-407.

Abstract: The aim of this study was to investigate the links between adolescent risk-taking and personality in a comprehensive manner, as opposed to focusing on any one particular risk or personality factor as has occurred in much previous research. We conceptualized risk-taking broadly through use of the Adolescent Risk Questionnaire (ARQ) which yields information relating to risk judgements and behaviours in four areas (i.e. thrill-seeking risk behaviours, reckless risks, rebellious risks and antisocial risks). Personality was conceptualized using the Five-factor Model of personality, a comprehensive trait model of personality. The ARQ and the NEO Five-factor Inventory were administered to 459 school-based adolescents aged 11 to 18 years. Consistent with past research, younger adolescents and girls generally reported engaging in risk behaviours less frequently than older adolescents and boys. Also, younger adolescents and girls generally rated the ARQ behaviours as more risky than their older male counterparts. This was in line with the significant negative correlations found between risk judgements and risk behaviours of all types. Also consistent with past research, few age differences were found for the personality traits. Sex differences were evident, with female adolescents scoring higher on neuroticism, agreeableness and conscientiousness than male adolescents. Together, risk judgements, personality factors, age and sex were found to be significant predictors of risk behaviours; however, the personality factor of significance was found to differ depending upon the risk type. This was also true for age and sex which differed in importance depending upon the risk type. Overall, these factors were most successful in predicting rebellious risk-taking and least successful in predicting thrill-seeking.

Johnson, R. J., McCaul, K. D., & Klein, W. M. (2002). Risk involvement and risk perception among adolescents and young adults. *Journal of Behavioral Medicine, 25*(1), 67-82.

Abstract: Adolescents as a group know about the connections between many risky behaviors and negative outcomes. However, it is unclear whether adolescents who engage in risky behavior differ in risk perceptions from those who do not. We proposed that risk differences between risk-involved and risk-uninvolved adolescents depend on how risk questions are framed. High school and college students estimated their risk of smoking and unprotected sex by replying to four different questions. The results revealed that, for both high school and college students, smokers saw their outcome risk (risk of negative outcomes) as higher than that of nonsmokers. A similar finding was obtained for sexual behavior, though only for high school students. No significant differences between risk groups were obtained when risk was measured by asking about behavior risk (general riskiness of the behavior). Overall, the data suggest that adolescents engaged in risky behavior do not have a complete appreciation of their exposure to harm. Programs intended to prevent or reduce risky behavior need to take a multifaceted approach to persuasion about risk.

Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Grunbaum, J. A., et al. (2000). Youth Risk Behavior Surveillance--United States, 1999. State and local YRBSS Coordinators. *J Sch Health, 70*(7), 271-285.

Abstract: Priority health-risk behaviors, which contribute to the leading causes of mortality and morbidity among youth and adults, often are established during youth, extend into adulthood, are interrelated, and are preventable. The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults--behaviors that contribute to unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs) (including human immunodeficiency virus [HIV] infection); unhealthy dietary behaviors; and physical inactivity. The YRBSS includes a national school-based survey conducted by CDC as well as state, territorial, and local school-based surveys conducted by education and health agencies. This report summarizes results from the national survey, 33 state surveys, and 16 local surveys conducted among high school students during February through May 1999. In the United States, approximately three fourths of all deaths among persons aged 10-24 years result from only four causes: motor-vehicle crashes, other unintentional injuries, homicide, and suicide. Results from the 1999 national Youth Risk Behavior Survey demonstrate that numerous high school students engage in behaviors that increase their likelihood of death from these four causes--16.4% had rarely or never worn a seat belt; during the 30 days preceding the survey, 33.1% had ridden with a driver who had been drinking alcohol; 17.3% had carried a weapon during the 30 days preceding the survey; 50.0% had drunk alcohol during the 30 days preceding the survey; 26.7% had used marijuana during the 30 days preceding the survey; and 7.8% had attempted suicide during the 12 months preceding the survey. Substantial morbidity and social problems among young persons also result from unintended pregnancies and STDs, including HIV infection. In 1999, nationwide, 49.9% of high school students had ever had sexual intercourse; 42.0% of sexually active students had not used a condom at last sexual intercourse; and 1.8% had ever injected an illegal drug. Two thirds of all deaths among persons aged > or = 25 years result from only two causes--cardiovascular disease and cancer. The majority of risk behaviors associated with these two causes of death are initiated during adolescence. In 1999, 34.8% of high school students had smoked cigarettes during the 30 days preceding the survey; 76.1% had not eaten > or = 5 servings/day of fruits and vegetables during the 7 days preceding the survey; 16.0% were at risk for becoming overweight; and 70.9% did not attend physical education class daily. These YRBSS data are already being used by health and education officials at national, state, and local levels to analyze and improve policies and programs to reduce priority health-risk behaviors among youth. The YRBSS data also are being used to measure progress toward achieving 16 national health objectives for 2010 and 3 of the 10 leading health indicators.

- Kulbok, P. A., & Cox, C. L. (2002). Dimensions of adolescent health behavior. *J Adolesc Health, 31*(5), 394-400.
Abstract: PURPOSE: To determine dimensions of healthy and unhealthy behaviors of young people aged 12 to 21 years to better inform measures of adolescent health behavior and assist in targeting appropriate strategies to promote health. METHODS: The study sample (N = 8,730), derived from a U.S. national probability sample; 52.3% were female, 67% white, 15% African-American, 18% Hispanic, 22.2% aged 12-13 years, 38.4% aged 14-17 years, and 39.4% aged 18-21 years. Principal components analysis was done to examine the covariance structure of 42 healthy and unhealthy behaviors selected from the behavioral questions of the Youth Risk Behavior Survey (YRBS). RESULTS: A four-factor oblique rotation, comprised of 18 variables with factor loadings of .50 or greater, resulted in interpretable and meaningful health behavior factors. Sexual activity, substance use (e.g., alcohol, marijuana, and other drugs), smoking, and exercise factors accounted for 74% of the variance in the composite of healthy and unhealthy behaviors. These four factors were subsequently reproduced on random samples as well as on samples defined by age (12-13 years [excluding sexual activity variables], 14-17 years, 18-21 years), gender, and race (white, African-American, Hispanic). CONCLUSIONS: These results provide new information about the consistent structure of sexual activities and exercise behaviors across subgroups defined by age, gender, and racial/ethnic origins, and about differences in clusters of substance use behaviors across ethnic groups. Further study of diverse population-based samples and multiple health-promoting and health-negating behaviors should profile developmental variations and health protective factors in adolescents.
- Lindberg, L. D., Boggess, S., Porter, L., & Williams, S. (2000). *Teen risk-taking: A statistical portrait*. Washington, DC: Urban Institute.
Abstract: The most serious threats to the health and safety of adolescents and young adults are preventable. They result from such risk-taking behaviors as fighting, substance abuse, suicide, and sexual activity rather than from illnesses. These behaviors have harmful, even deadly, consequences. Changes in teen participation in specific risk behaviors have been well documented. What is less well known, and of growing concern, is how overall teen risk-taking has changed. In addition, information is lacking about the nuances in the behavior of adolescents who engage in more than one of these risks at a time. Teens who participate in multiple risks increase the chance of damaging their health. This booklet provides a statistical portrait of teen participation in 10 of the most prevalent risk behaviors. It focuses on the overall participation in each behavior and in multiple risk-taking. The booklet presents the overall incidence and patterns of teen involvement in the following risk behaviors: regular alcohol use, regular binge drinking, regular tobacco use, marijuana use, other illegal drug use, fighting, weapon carrying, suicidal thoughts, suicide attempts, and risky sexual activity.
- Maggs, J. L., Frome, P. M., Eccles, J. S., & Barber, B. L. (1997). Psychosocial resources, adolescent risk behaviour and young adult adjustment: Is risk taking more dangerous for some than others? *Journal of Adolescence, 20*(1), 103-119.
Abstract: Examined whether social and personal resources predicted adjustment both as a main effect and in interaction with risk behavior among 693 12th graders (mean age 17.79 yrs). Ss completed the self-report measures, representing 5 domains, in Grade 12 and 2 yrs later. Results showed that personal and social resources predicted success in occupational, relational and health domains. High school risk behaviors predicted decreased success in relational domains, and alcohol use predicted higher educational attainment, independent of the relations with psychosocial resources. Interactions of resources with risk behaviors predicting adjustment were inconsistent, but resources predicted decreased risk behaviors in young adulthood among adolescent risk-takers. The discussion focused on the value of, and challenges to, research on consequences of adolescent risk taking.
- Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth & Adolescence, 31*(4), 267-277.
Abstract: This longitudinal project examined peer influence across five risk behaviors: cigarette smoking, alcohol consumption, marijuana use, tobacco chewing, and sexual debut. A total of 1,969 adolescents aged 12-18 years completed two waves of data collection. Each respondent matched behavior data for at least one friend. Results found that a random same sex peer predicts a teen's risk behavior initiation; there is influence only to initiate cigarette and marijuana use; and that there is influence to initiate and stop alcohol and chewing tobacco use. This finding suggests that friends may protect adolescents from risk activities. The study has implications for understanding how peer influence, expressed as social norms, may be used in public health campaigns that target teen behavior.

Moore, S., & Eleonora, G. (1996). Predicting adolescent risk behavior using a personalized cost-benefit analysis. *Journal of Youth & Adolescence*, 25(3), 343-359.

Abstract: Examined adolescents' perceptions of what constitutes risk behavior (RB), their judgments about the consequences of RB, differences between gender and age groups in risk judgments, and the relationships between RBs and risk judgments. 291 male and 279 female adolescents (aged 12-17 yrs) named RBs perceived as common to similarly aged peers, then rated level of engagement in these RBs. Most frequently nominated RBs were smoking, drinking alcohol, dangerous driving, taking drugs, criminal behavior, sporting risks, antisocial behavior, minor rebellion, school-related risks, and sexual activity. Negative outcomes of RB were categorized as death, disablement, punishment, and social consequences. Payoffs included pleasure, material gain, and avoidance of negative outcomes. Perceived pleasantness, likelihood of positive outcomes, and unpleasantness of negative outcomes were found to be strongly associated with RB.

Najaka, S. S., Gottfredson, D. C., & Wilson, D. B. (2001). A meta-analytic inquiry into the relationship between selected risk factors and problem behavior. *Prevention Science*, 2(4), 257-271.

Abstract: Identifying the predictors of problem behavior is essential both for understanding the causes of such behavior and for preventing it. Although a great deal of research has sought to identify the factors predictive of problem behavior, much of the research to date has been correlational and tells us little about causality. This study attempts to improve on the correlational research by applying meta-analytic techniques to existing experimental and quasi-experimental studies of school-based prevention. The following 3 risk factors were examined: academic performance, bonding to school, and social competency skills. The most convincing evidence of a relationship between risk and problem behavior was found for bonding to school. Positive changes in attachment and commitment to school resulting from the preventive interventions were consistently accompanied by positive changes in problem behavior. Preventive interventions that produced improvements in academic performance produced moderate improvements in problem behavior. With regard to social competence, the association depended in large part on the type of measure used to assess social competency skills. Changes in self-report measures of social competency were unrelated to changes in problem behavior, whereas a strong positive correlation was observed between changes in ratings and observations of social competency by others and improvements in problem behavior.

Neumark-Sztainer, D., M., French, S. A., & Resnick, M. D. (1997). Psychosocial correlates of health compromising behaviors among adolescents. *Health Educ Res*, 12(1), 37-52.

Abstract: The objective of the present study was to examine psychosocial correlates of diverse health-compromising behaviors among adolescents of different ages. The study population included 123,132 adolescents in sixth, ninth and 12th grades. Psychosocial correlates of substance abuse, delinquency, suicide risk, sexual activity and unhealthy weight loss behaviors were examined. Risk-taking disposition was significantly associated with nearly every behavior across age and gender groups. Other consistent correlates included sexual abuse and family connectedness. Correlates of health-compromising behaviors tended to be consistent across age groups. However, stronger associations were noted between sexual abuse and substance use for younger adolescents, and risk-taking disposition and school achievement were stronger correlates for older youth. The results suggest the presence of both common and unique etiological factors for different health-compromising behaviors among youth. The results emphasize the importance of focusing on positive 'risk-taking' experiences for youth in prevention programs; being sensitive to possible sexual abuse experiences among both female and male adolescents in health-care consultations; integrating strategies for improved family connectedness into health promotion efforts; and making school relevant for all adolescents.

Parsons, J. T., Siegel, A. W., & Cousins, J. H. (1997). Late adolescent risk-taking: Effects of perceived benefits and perceived risks on behavioral intentions and behavioral change. *Journal of Adolescence*, 20, 381-392.

Abstract: In this study perceived risks, perceived benefits, intended risk taking and actual risk taking were assessed with 187 late adolescent college students. It was found that although both perceived risks and benefits influenced behavioral intentions, perceived benefits were a better predictor of actual involvement in risk taking behavior. The implications of these findings to interventions with risk taking adolescents are discussed.

Patterson, G. R., Dishion, T. J., & Yoerger, K. (2000). Adolescent growth in new forms of problem behavior: Macro- and micro-peer dynamics. *Prevention Science, 1*(1), 3-13.

Abstract: Longitudinal data from an at-risk sample were used to analyze individual linear trend scores for each of three new forms of problem behavior that emerges during the interval from age 10 through 18 years. Growth in substance use, health-risking sexual behavior and police arrests defined a latent construct for growth in adolescent problem behavior. A structural equation model (SEM) showed a significant path from early involvement with deviant peers to a latent construct for growth in new forms of antisocial behavior. A second SEM showed that the contribution of early involvement to later growth was mediated by a latent construct for deviancy training assessed at age 14 years. The relative rates of reinforcement for deviancy, amount of time spent with deviant peers, and deviancy level of the peer network defined a deviancy training construct that accounted for 53% of the variance in later growth in new forms.

Prinstein, M. J., Boergers, J., & Spirito, A. (2001). Adolescents' and their friends' health-risk behavior: Factors that alter or add to peer influence. *J Pediatr Psychol, 26*(5), 287-298.

Abstract: **OBJECTIVE:** To examine models of risk for adolescent health-risk behavior, including family dysfunction, social acceptance, and depression as factors that may compound or mitigate the associations between adolescents' and peers' risk behavior. **METHODS:** Participants were 527 adolescents in grades 9-12. Adolescents reported on their substance use (cigarette and marijuana use, heavy episodic drinking), violent behavior (weapon carrying, physical fighting), suicidality (suicidal ideation and attempts), and the health-risk behavior of their friends. **RESULTS:** Adolescents' substance use, violence, and suicidal behavior were related to their friends' substance use, deviance, and suicidal behaviors, respectively. Friends' prosocial behavior was negatively associated with adolescent violence and substance use. Family dysfunction, social acceptance, and depression altered the magnitude of association between peers' and adolescents' risk behavior. In cumulative risk factor models, rates of adolescent health-risk behavior increased twofold with each added risk factor. **CONCLUSIONS:** Results supported both additive and multiplicative models of risk. Implications for intervention and primary prevention are discussed.

Resnick, M. D. (2000). Protective factors, resiliency and healthy youth development. *Adolescent Medicine, 11*(1), 157-165.

Abstract: The last decade has been characterized by an increasing focus on the question: "What works to promote and protect the health and well-being of adolescents?" This question is raised in multiple arenas, from pregnancy prevention to substance use and violence prevention, as well as for broad populations of young people. An accumulating body of evidence underscores the effectiveness of a dual strategy of enhancing protective factors and promoting healthy youth development while seeking to reduce risk factors in the lives of youth. Building upon research frameworks of the 1970s and 1980s that emphasized the concepts of resiliency, risk, vulnerability, and protective factors, this research provides insights into best practices when the weight of evidence is sufficiently developed, as well as ideas about "best bets" when strategies show particular promise. Critical to the ongoing advancement of adolescent health is a powerful, evidence-based response to the argument that "nothing can be done" for high-risk youth. This perspective must be superseded by practitioners, researchers, and advocates who demonstrate, at multiple points of intervention, that the dual approach of risk reduction and enhancement of protective factors constitutes an effective strategy for adolescent health promotion.

Rolison, M. R., & Scherman, A. (2002). Factors influencing adolescents' decisions to engage in risk-taking behavior. *Adolescence, 37*(147), 585-596.

Abstract: Few studies have assessed adolescent risk-taking from a decision-making perspective while also looking at sensation-seeking and locus of control. In this study, 171 older adolescents completed a risk-taking inventory to measure risk involvement. Sensation-seeking and locus of control, as well as perceived benefits and costs, were assessed to determine their effects on risk-taking. Results showed that perceived risks affected risk-taking more significantly than did perceived benefits. Higher sensation-seeking tendencies were affiliated with more risk-taking. Locus of control was not related to risk-taking.

Romer, D. (2003). *Reducing Adolescent Risk: Toward an integrated approach*. Thousand Oaks: Sage Publications.

Shope, J. T., Raghunathan, T. E., & Patil, S. M. (2003). Examining trajectories of adolescent risk factors as predictors of subsequent high-risk driving behavior. *Journal of Adolescent Health, 32*(3), 214-224.

Abstract: Examined the effects on early high-risk driving behavior of changes over time (trajectories) in adolescent alcohol use, friends' support for drinking susceptibility to peer pressure, and tolerance of deviance. Statewide driving data were obtained for 4,813 subjects who had completed at least 2 previous school-based questionnaires. The questionnaire data provided predictor measures from 5th-10th grades. Trajectory information on predictor measures was summarized using each measure's slope over time and level at the 10th grade data collection. Regression models used serious offenses, alcohol related offenses, serious crashes, and alcohol-related crashes as outcomes, trajectory measures as predictors, and produced parameter estimates adjusted for demographic measures. Probabilities of having a serious offense or serious crash for 5 sample trajectories on each measure were obtained from the estimated regression models. All 4 predictor measures were important particularly in predicting serious offenses, alcohol-related offenses, and alcohol-related crashes. The highest probabilities for young adult high-risk driving were found among those with consistently high or increasingly high trajectories of friends' support for drinking, susceptibility to peer pressure, and tolerance of deviance.

Yates, J. F. (Ed.). (1992). *Risk-Taking Behavior*. Wiley Series in Human Performance and Cognition. Oxford, England: John Wiley & Sons.

Abstract: (From the cover) Risk is pervasive and seemingly inescapable in contemporary life. Moreover, the positive and negative consequences of people's actions in the presence of risk are often dramatic. That is why risk taking has been studied by so many different scholars within so many different fields, from business and engineering to health care and developmental education. "Risk-Taking Behavior" is an examination of the psychological foundations and ramifications of this activity. A major feature of the book is its comprehensive coverage of ideas from multiple perspectives--within psychology itself as well as in areas like economics, medicine, and decision analysis--and its integration of them. The book offers detailed insights into fundamental risk concepts; discoveries about risk taking in group settings; models and evidence about practices that affect individuals' susceptibility to health threats; recommendations on how personnel training as well as product, architectural, and organizational design can encourage appropriate risk taking; and future research on this most compelling topic. This well-referenced book should prove a valuable resource for a broad audience of readers, such as research psychologists, decision scientists, risk managers, health professionals, staff supervisors, and policy makers.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: Common biosocial factors. *Journal of Personality, 68*(6), 999-1029.

Abstract: The first part of this article describes a study of the relationships between personality and risk-taking in six areas: smoking, drinking, drugs, sex, driving, and gambling. The participants, 260 college students, were given self-report measures of risky behaviors in each of the six areas and the Zuckerman-Kuhlman five-factor personality questionnaire. Generalized risk-taking (across all six areas) was related to scales for impulsive sensation seeking, aggression, and sociability, but not to scales for neuroticism or activity. Gender differences on risk-taking were mediated by differences on impulsive sensation seeking. The second part discusses biological traits associated with both risk-taking and personality, particularly sensation seeking, such as the D4 dopamine receptor gene, the enzyme monoamine oxidase, and augmenting or reducing of the cortical evoked potential. Comparative studies show relationships between biological markers shared with other species and correlated behaviors similar to sensation seeking in humans. A biosocial model of the traits underlying risk-taking is presented.

Zweig, J. M., Phillips, S. D., & Lindberg, L. D. (2002). Predicting adolescent profiles of risk: Looking beyond demographics. *Journal of Adolescent Health, 31*(4), 343-353.

Abstract: PURPOSE: To identify vulnerability and protective factors related to profiles of risk encapsulating the co-occurrence of health risk behaviors. METHODS: The current sample includes 12,578 high school students from the National Longitudinal Study of Adolescent Health, a nationally representative sample. Four profiles of risk behaviors (sexual activity, general alcohol use, binge-drinking, cigarette use, marijuana use, other illicit drug use, fighting, and suicide) were compared separately by gender for factors in four domains: psychosocial adjustment, daily activities, school, and family. Data were analyzed using ordinary least-squares regression with follow-up contrast statements and multinomial logit regression. RESULTS: Results indicate that profiles are related to factors in the psychosocial adjustment, school, and family domains. Students in the lowest risk profiles reported consistently higher levels of protective factors and lower levels of vulnerability factors than students in any other profiles. Likewise, students in the highest risk profiles reported consistently lower levels of protective factors and higher levels of vulnerability factors than those in any other profiles. Students in profiles of risk distinguished by higher levels of suicidal thoughts and behaviors reported similar levels of vulnerability and protection as the highest risk profiles. Students in profiles consisting of sexually active, substance-using teens reported higher levels of protective factors and lower levels of vulnerability factors than both the highest risk profiles and the profiles distinguished by suicidal thoughts and behaviors. CONCLUSION: Program staff and policymakers should recognize that different profiles of risk behaviors are related to varying levels of vulnerability and protective factors which have potential implications for preventive interventions.

6.3 Measurement

Alexander, C. S., Kim, Y. J., Ensminger, M., Johnson, K. E., Smith, B. J., & Dolan, L. J. (1990). *Adolescent Risk Taking Scale (ARTS)*.

Abstract: The ARTS is a 6-item, 3-level ordinal response questionnaire. It assesses risk taking in adolescence, both deviant and thrill-seeking behaviors in six topic areas: raced; dare; broke rule; steal; sneaked out; and dangerous driver.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Alexander, C. S., Kim, Y. J., Ensminger, M., Johnson, K. E., Smith, B. J., & Dolan, L. J. (1990). A measure of risk taking in young adolescents: Reliability and validity assessments. *Journal of Youth and Adolescence*, 19, 559-569.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Arnett, J. (1989). *Reckless Behavior Questionnaire (RBQ)*.

Abstract: The RBQ is a 10-item, self-report inventory intended to assess reckless behavior within the past year. A 5-point format yielding one overall score is used. Responses include never, once, 2-5 times, 6-10 times, and more than 10 times. Item content includes use of alcohol while driving, use of various illicit drugs, driving at excessive speed, sexual intercourse without contraception or with strangers, vandalism and shoplifting.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Arthur, M. W., Hawkins, J. D., Pollard, J. A., Catalano, R. F., & Baglioni, A. J. Jr. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors. The Communities That Care Youth Survey. *Eval Rev*, 26(6), 575-601.

Abstract: Risk and protective factors predictive of adolescent problem behaviors such as substance abuse and delinquency are promising targets for preventive intervention. Community planners should assess and target risk and protective factors when designing prevention programs. This study describes the development, reliability, and validity of a self-report survey instrument for adolescents aged 11 to 18 that measures an array of risk and protective factors across multiple ecological domains as well as adolescent problem behaviors. The instrument can be used to assess the epidemiology of risk and protection in youth populations and to prioritize specific risk and protective factors in specific populations as targets for preventive intervention.

Benthin, A., Slovic, P., & Severson, H. (1993). A psychometric study of adolescent risk perception. *Journal of Adolescence*, 16(2), 153-168.

Abstract: 41 high-school students evaluated each of 30 activities (e.g., drinking, drug use, sex) on each of 14 characteristics of perceived risk and perceived benefit. They also indicated whether they themselves engaged in the activities. Adolescents who participated in an activity perceived the risks to be smaller, better known, and more controllable than did non-participants. Participants also perceived greater benefits relative to risks, greater peer pressure to engage in the activity, and a higher rate of participation by others.

Beyth-Marom, R., Austin, L., Fischhoff, B., Palmgren, C., & Jacobs-Quadrel, M. (1993). Perceived consequences of risky behaviors: Adults and adolescents. *Developmental Psychology*, 29(3), 549-563.

Abstract: Adult and adolescent Ss were asked to list possible consequences of either accepting or declining opportunities to engage in various potentially risky behaviors (e.g., drinking and driving, skipping school to go to a mall). Response patterns were quite similar for these adults and adolescents, indicating shared beliefs about the possibilities. Although taking and avoiding a risk are logically complementary actions, they did not prove to be psychologically complementary. Other comparisons showed systematic differences in the consequences produced for 1-time and regular (or repeated) versions of the same behaviors, as well as open-ended and closed-ended response modes. These results are discussed in terms of their methodological implications for studying risk perceptions, their practical implications for influencing adolescents' risk behaviors, and their theoretical implications for understanding intellectual development.

Biehl, M., & Halpern-Felsher, B. L. (2001). Adolescents' and adults' understanding of probability expressions. *Journal of Adolescent Health, 28*(1), 30-35.

Abstract: PURPOSE: To examine whether there are differences between adolescents and adults in their interpretation of probability terms. METHODS: Participants were 20 fifth graders, 54 seventh graders, 45 ninth graders, and 34 young adults (mean adult age = 26.24 years, standard deviation = 2.09) from the San Francisco Bay area. They completed a self-administered survey asking them to assign percentage estimates (0% to 100%) to 30 randomly ordered probability terms. RESULTS: Significant age differences in the mean percentage estimates for 8 of the 30 terms were shown. Moreover, we found large variation in the interpretation of most probability terms studied, with larger variation among the adolescents than adults. Finally, all age groups had some difficulty correctly differentiating between "possibly" and "probably." CONCLUSIONS: Owing to wide variation in the interpretation of probability terms, both within and across age groups, we suggest health practitioners use percentages rather than probability terms to convey risk to both adolescents and adults.

Boekeloo, B. O., Schamus, L. A., Simmens, S. J., & Cheng, T. L. (1998). Ability to measure sensitive adolescent behaviors via telephone. *American Journal of Preventive Medicine, 14*(3), 209-216.

Abstract: Introduction: Difficulty in measuring sensitive behaviors in 12-15-year-old adolescents is a barrier to research. This study determined whether early adolescents reported substance use and sexual activity similarly in assisted paper-and-pencil versus touch-tone telephone responses. Methods: Adolescents 12-15 years old completed confidential, interviewer-assisted questionnaires first in a physician office by paper-and-pencil and then at home by touch-tone approximately 3 months later. Adolescents were from a high-risk urban area, 71% were minority, and all had parent consent to participate. Results: The follow-up participation rate was 94% (follow-up n = 207). Test-retest stability was generally poor for low-frequency behaviors such as injection drug use, anal intercourse, and sexual behaviors in 12-13-year-olds. Test-retest stability was fair to good for common substance use items. Test-retest stability was generally good among females and 14-15-year-old adolescents, and poor to fair among males and 12-13-year-olds, for common sexual experiences in the last 3 months. Test-retest stability was generally good to excellent for all lifetime sexual experiences except among 12-13-year-olds in which it was generally poor. Internal consistency of the self-esteem scale was high using both response technologies. Both response technologies reproduced correlations between substance use and lifetime sexual experience. Conclusion: A high participation rate and reliable data capture were achieved when assessing sensitive behaviors of 14-15-year-olds using touch-tone telephone response. Sexual behaviors were more reliably captured using a "lifetime" versus "last 3-month" reference period. Low prevalence contributed to poor reliability in 12-13-year-olds.

Brener, N. D., Collins, J. L., Kann, L., Warren, C. W., & Williams, B. I. (1995). Reliability of the Youth Risk Behavior Survey Questionnaire. *American Journal of Epidemiology, 141*(6), 575-580.

Abstract: The Centers for Disease Control and Prevention's Youth Risk Behavior Survey (YRBS) has been used on a biennial basis since 1990 to measure health risk behaviors of high school students nationwide. The YRBS measures behaviors related to intentional and unintentional injury, tobacco use, alcohol and other drug use, sexual activity, diet, and physical activity. The authors present the results from a test-retest reliability study of the YRBS, conducted by administering the YRBS questionnaire to 1,679 students in grades 7 through 12 on two occasions 14 days apart. The authors computed a kappa statistic for each of 53 self-report items and compared group prevalence estimates across the two testing occasions. Kappas ranged from 14.5% to 91.1%; 71.7% of the items were rated as having "substantial" or higher reliability (kappa = 61-100%). No significant differences were found between the prevalence estimates at time 1 and time 2. Responses of seventh grade students were less consistent than those of students in higher grades, indicating that the YRBS is best suited for students in grade 8 and above. Except for a few suspect items, students appeared to report personal health risk behaviors reliably over time. Reliability and validity issues in health behavior assessment also are discussed.

Brener, N. D., Kann, L., McManus, T., Kinchen, S. A., Sundberg, E. C., & Ross, J. G. (2002). Reliability of the 1999 youth risk behavior survey questionnaire. *J Adolesc Health, 31*(4), 336-342.

Abstract: PURPOSE: To assess the test-retest reliability of the 1999 Youth Risk Behavior Survey (YRBS) questionnaire. METHODS: A sample of 4,619 male and female high school students from white, black, Hispanic, and other racial/ethnic groups completed the YRBS questionnaire on two occasions approximately two weeks apart. The questionnaire assesses a broad range of health risk behaviors. This study used a protocol that maintained anonymity yet allowed matching of Time-1 and Time-2 responses. The authors computed a kappa statistic for the 72 items measuring health risk behaviors, and compared group prevalence estimates at the two testing occasions. RESULTS: Kappas ranged from 23.6% to 90.5%, with a mean of 60.7% and a median of 60.0%. Kappas did not differ by gender, grade, or race/ethnicity of the respondent. About one in five items (22.2%) had significantly different prevalence estimates at Time 1 vs. Time 2. Ten items, or 13.9%, had both kappas below 61% and significantly different Time-1 and Time-2 prevalence estimates. CONCLUSIONS: Overall, students appeared to report health risk behaviors reliably over time, but several items need to be examined further to determine whether they should be revised or deleted in future versions of the YRBS.

Brown, R. A. (1999). Assessing attitudes and behaviors of high-risk adolescents: An evaluation of the self-report method. *Adolescence, 34*(133), 25-32.

Abstract: This study evaluated the self-report method in the assessment of attitudes and behaviors. Forty-two problem youth from diverse ethnic and socioeconomic backgrounds were surveyed. In addition, their parents were surveyed and school and police data were collected. Five self-report factors were compared against parental report factors and police and school records. Significant relationships were found only for self-report factors that contained more positively oriented items. Self-report factors that contained items inquiring directly into high-risk behaviors were not significantly associated with parental report factors or school and police data. The implications of these findings are discussed.

Busen, N. H., & Kouzekanani, K. (2000). Perspectives in adolescent risk-taking through instrument development. *Journal of Professional Nursing, 16*(6), 345-353.

Abstract: Understanding the high-risk adolescent's perception of risk taking is essential for health professionals to determine appropriate interventions. The purpose of this study was to examine the psychometric properties of the revised Adolescent Risk-Taking Instrument (ARTI) designed to measure the high-risk adolescent's perception of risk taking. This study also examined the variables that are most predictive of social adaptation and risk taking. An ex post facto design was used to standardize data collection and to assess the psychometric properties of the revised ARTI. The nonprobability sample consisted of 167 adolescents attending school in an urban, health-underserved area. Exploratory factor analysis supported construct validity, and Chronbach's Coefficient Alpha supported internal consistency reliability. The reliability coefficient for the risk taking and social adaptation constructs were .80 and .77, respectively. Current perspectives on adolescent risk taking and implications for the use of the ARTI in clinical practice are addressed. *J Prof Nurs 16: 345-353, 2000.*

Centers for Disease Control and Prevention (CDC). (1990). *Youth Risk Behavior Surveillance System (YRBSS) Questionnaire.*

Abstract: The YRBSS Questionnaire is used for the National and State Youth Risk Behavior Surveys. The focus of the YRBSS is to determine incidence and prevalence of specific behaviors in six areas that contribute to leading causes of morbidity and mortality in adolescents and adults. These six areas are: unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviors that contribute to unintended pregnancy and STD; dietary behaviors that result in disease; and physical inactivity. It is a self-report questionnaire containing 75 multiple choice questions.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Cheong, Y. F., & Raudenbush, S. W. (2000). Measurement and structural models for children's problem behaviors. *Psychological Methods, 5*(4), 477-495.

Abstract: This article considers an analytic strategy for measuring and modeling child and adolescent problem behaviors. The strategy embeds an item response model within a hierarchical model to define an interval scale for the outcomes, to assess dimensionality, and to study how individual and contextual factors relate to multiple dimensions of problem behaviors. To illustrate, the authors analyze data from the primary caregiver ratings of 2,177 children aged 9-15 in 79 urban neighborhoods on externalizing behavior problems using the Child Behavior Checklist 4-18 (T. M. Achenbach, 1991a). Two subscales, Aggression and Delinquency, are highly correlated, and yet unidimensionality must be rejected because these subscales have different associations with key theoretically related covariates.

Fischhoff, B., Nightingale, E. O., & Iannotta, J. G. (Eds.). (2001). *Adolescent risk and vulnerability: Concepts and measurement*. Washington: National Academy Press.

Abstract: In Table of Contents: 1. Introduction: Adolescent risk and vulnerability: approaches to setting priorities to reduce their burden -- 2. Perceptions of risk and vulnerability -- 3. Vulnerability, risk, and protection -- 4. Modeling the payoffs of interventions to reduce adolescent vulnerability -- 5. Adolescent vulnerability: measurement and priority setting

Fossati, A., Barratt, E. S., Acquarini, E., & Di Ceglie, A. (2002). Psychometric properties of an adolescent version of the Barratt Impulsiveness Scale-11 for a sample of Italian high school students. *Perceptual & Motor Skills, 95*(2), 621-635.

Abstract: The purpose of this study was to extend the development of the Italian version of the Barratt Impulsiveness Scale for use with adolescents. The analyses which led to the development of this version were based on data from 563 high school students (209 boys and 354 girls, aged 13-19 yrs). The internal consistency was good. A confirmatory factor analysis identified six first-order factors which converged into two second-order factors, a General Impulsiveness factor and a Nonplanning Impulsiveness factor. The General Impulsiveness factor included motor and attention or cognition items. The second-order factors differed from those obtained with the adult Italian version as well as the American version. Possible reasons for these differences are discussed. The new version correlated significantly with self-report measures of aggression and Attention-Deficit/Hyperactivity Disorder as well as with frequency of alcohol use and cigarette smoking.

Gullone, E., Moore, S., Moss, S., & Boyd, C. (2000). The Adolescent Risk-Taking Questionnaire: Development and psychometric evaluation. *Journal of Adolescent Research, 15*(2), 231-250.

Abstract: Compared to other life periods, adolescence is characterized by a heightened potential for risky behaviors. This study reports the systematic development and psychometric evaluation of a comprehensive Adolescent Risk-Taking Questionnaire (ARQ). It was developed using reports of 570 adolescents and was psychometrically evaluated with a sample of 925 adolescents between 11-18 yrs of age. Principal components analyses yielded a 4-factor risk structure, and these factors were substantiated via a confirmatory factor analysis. One week test-retest and internal consistency indices were demonstrated to be sound. Age and gender differences were found to be consistent with reported trends in accident data. Older adolescents and boys reported lower risk perceptions and a higher frequency of risky behaviors than younger adolescents and girls, respectively, supporting the validity of the ARQ. Furthermore, consistent with past research, perceiving higher levels of risk typically related to lower levels of engaging in the respective behaviors.

Gullone, E., Paul, J., & Moore, S. M. (2000). A validation study of the Adolescent Risk-Taking Questionnaire. *Behaviour Change. Special Issue: Adolescent Health*, 17(3), 143-154.

Abstract: Investigated the convergent and discriminant validity of the Adolescent Risk-Taking Questionnaire (ARQ) by comparing responses of 52 male adolescents (aged 14-18 yrs) from a juvenile justice centre and 211 school-attending male adolescents (aged 13-18 yrs). Consistent with past research, the juvenile justice centre youth reported significantly higher levels of depression and less optimal levels of parent attachment compared to school-attending youth. Convergent validity of the ARQ was demonstrated through significant relationships between attachment and risk-taking. Specifically, those adolescents with less optimal parent attachment were more likely to engage in risk-taking behaviour and were less likely to perceive the behaviours included in the ARQ as risky compared to those with more optimal levels of parent attachment. Discriminant validity of the ARQ was demonstrated through significant differences between the two groups on risk beliefs and behaviours. Responses on the ARQ indicated that youth from the juvenile justice centre were significantly more likely to engage in risky behaviours, if given the opportunity, than school-based youth. They also perceived the behaviours to be less risky. The authors concluded that the ARQ has good convergent and discriminant validity.

Kann, L., Brener, N. D., Warren, C. W., Collins, J. L., & Giovino, G. A. (2002). An assessment of the effect of data collection setting on the prevalence of health risk behaviors among adolescents. *Journal of Adolescent Health*, 31(4), 327-335.

Abstract: PURPOSE: To examine the effect of data collection setting on the prevalence of priority health risk behaviors among adolescents. METHODS: Analyses were conducted using data from two national probability surveys of adolescents, the 1993 national school-based Youth Risk Behavior Survey (YRBS) and the 1992 household-based National Health Interview Survey (NHIS/YRBS). Forty-two items were worded identically on both surveys. RESULTS: Thirty-nine of the 42 identically worded items (93%) showed that the YRBS produced estimates indicating higher risk than the NHIS. Twenty-four of these comparisons yielded statistically significant differences. The prevalence estimates affected most were those for behaviors that are either illegal or socially stigmatized. CONCLUSIONS: School-based surveys produce higher prevalence estimates for adolescent health risk behaviors than do household-based surveys. Each has advantages and disadvantages, and both can play a role in assessing these behaviors.

Perkins, K., Ferrari, N., Rosas, A., Omar, H., & Bessette, R. (1996). Development of a scored adolescent risk assessment. *Journal of Adolescent Health*, 18(2), 134.

Abstract: OBJECTIVE: to develop a comprehensive, brief and objective risk assessment to be included in routine adolescent visits to provide time for guidance and impetus for intervention. BACKGROUND: A biopsychosocial history previously used here for adolescent patients revealed significant numbers of problems not otherwise disclosed in a routine medical visit such as 13% prior abuse, 32% family problems but time-study (35+/-9 min.) precluded general use. DESIGN: The Risk Score devised is a single sheet grid with a row of 16 categories followed by 3 columns of phrases which the provider circles indicating No Risk, Moderate Risk, or High Risk (scoring 0,1, 2 respectively). The categories are: body mass index, nutrition, exercise, tobacco use, drug use, alcohol abuse, sexual activity, school problems, depression, prior abuse, violence, safety, friends, family dysfunction and self-perception. RESULT: The resulting Adolescent Risk Assessment takes 8+/-2 minutes to administer, is considerably shorter than the previous biopsychosocial history (35+/-9 min.), yet covers all the same topics. It is more inclusive than similar screening programs studied: AMA Guidelines for Adolescent Preventive Care, H. Shubiner's Safe Times Questionnaire, and Cavanaugh's HEADS FIRST. CONCLUSION: This brief and comprehensive Risk Assessment may increase the number of adolescents screened and improve the guidance they receive related to identified problems.

Reininger, B., Evans, A. E., Griffin, S. F., Valois, R. F., Vincent, M. L., Parra-Medina, D., et al. (2003). Development of a youth survey to measure risk behaviors, attitudes and assets: Examining multiple influences. *Health Educ Res, 18*(4), 461-476.

Abstract: Currently, most surveys assessing adolescent health concerns focus primarily on risk behaviors and negative influences rather than positive influences such as assets. The purpose of this paper is to describe the development and validation of the Adolescent Health Attitude and Behavior Survey (AHABS). This instrument was developed to measure the prevalence of youth health risk behaviors, attitudes towards adolescent sexual behavior, and youth assets in a statewide evaluation effort. The questionnaire was completed by 4,368 public high school students in Grades 9-12. Content validity was established through an extensive review of literature, a group process and factor analyses. Reliability was established through Cronbach's alpha coefficients. Factor loadings ranged from 0.48 to 0.84 for scales measuring attitudes towards adolescent sexual behavior and alpha coefficients ranged from 0.61 to 0.81. Factor loadings ranged from 0.34 to 0.90 for scales measuring youth assets and alpha coefficients ranged from 0.69 to 0.85. Because of several limitations (e.g. construct validity was not measured), additional development work is needed. Therefore, the AHABS is still in a developing, but promising, state. Additional psychometric work will provide program practitioners and evaluators with a psychometrically sound tool to measure behaviors, attitudes and assets.

Shaw, D. S., Wagner, E. F., Arnett, J., & Aber, M. S. (1992). The factor structure of the Reckless Behavior Questionnaire. *Journal of Youth & Adolescence, 21*(3), 305-323.

Abstract: Examined the relative fits of 3 factor-structure models of adolescent reckless behavior, using J. Arnett's (unpublished) Reckless Behavior Questionnaire (RBQ) with 1,357 college students (60% female) and 181 high school students (53.3% female). Both 1- and 2-factor models were satisfactory representations of the RBQ with both samples. To test the construct validity of the 1- and 2-factor models, relations between instruments generally associated with reckless behavior were examined by gender. Using the 2-factor model, gender differences were found for both the college and high school Ss. Thus, it was determined to be the more parsimonious fit of the data. Findings are discussed in terms of current conceptualizations of factor patterns of adolescent problem behavior and implications for future investigations.

Siegel, A. W., Cousins, J. H., Rubovits, D., Parsons, J. T., Lavery, B., & Crowley, C. (1994). *Risk Involvement and Perception Scale (RIPS)*.

Abstract: The RIPS is a self-report questionnaire addressing 19 risk taking behaviors in six topic areas (factors): alcohol, illegal drugs, sex, stereotypic male behaviors, socially acceptable behaviors, and imprudent behaviors.

Cited at <http://ag.arizona.edu/fcs/cyfernet/nowg/ythriskmeas.html>

Siegel, A. W., Cousins, J. H., Rubovits, D., Parsons, J. T., Lavery, B., & Crowley, C. (1994). Adolescents perceptions of the benefits and risks of their own risk-taking. *Journal of Emotional and Behavioral Disorders, 2*, 89-98.

Abstract: Assessed 126 adolescents' (aged 18-21 yrs) perceptions of and involvement in the benefits and risks of risk taking behaviors. Ss completed the Risk Involvement and Perception Scale (RIPS) by J. T. Parsons et al (in press). The RIPS was found to be highly reliable and internally consistent. Ss reported a wide range of involvement across the behaviors. In general, Ss' perceived benefits were strongly and positively related to their reported involvements; their perceived risks were negatively and less strongly related. A factor analysis of Ss' involvement yielded 6 independent clusters of risk taking behaviors: alcohol use, illegal drug use, sexual activity, stereotypical male behaviors, imprudent behaviors, and socially acceptable behaviors. Perceived benefits accounted for most of the variance in Ss' involvement in these clusters of behaviors.

Witte, K., Cameron, K. A., McKeon, J. K., & Berkowitz, J. M. (1996). Predicting risk behaviors: Development and validation of a diagnostic scale. *J Health Commun, 1*(4), 317-341.

Abstract: The goal of this study was to develop and validate the Risk Behavior Diagnosis (RBD) Scale for use by health care providers and practitioners interested in promoting healthy behaviors. Theoretically guided by the Extended Parallel Process Model (EPPM; a fear appeal theory), the RBD scale was designed to work in conjunction with an easy-to-use formula to determine which types of health risk messages would be most appropriate for a given individual or audience. Because some health risk messages promote behavior change and others backfire, this type of scale offers guidance to practitioners on how to develop the best persuasive message possible to motivate healthy behaviors. The results of the study demonstrate the RBD scale to have a high degree of content, construct, and predictive validity. Specific examples and practical suggestions are offered to facilitate use of the scale for health practitioners.

7.0 General Youth Development

Adams, G. R., & Marshall, S. K. (1996). A developmental social psychology of identity: Understanding the person-in-context. *J Adolesc*, 19(5), 429-442.

Abstract: This essay focuses on the socialization of identity formation. It provides a theory about the developmental social psychology of identity. A set of propositions are derived from the authors' reading, research, cultural observations and clinical experience regarding adolescent identity formation. The essay covers the socialization process, nature of the self, processes of growth and development, person-in-context, and a statement on the linkage between macro- and micro-environmental influences on identity. The theoretical propositions are offered for their potential heuristic utility in the study of identity formation during adolescence and young adulthood.

Arnett, J. (1992). Reckless behavior in adolescence: A developmental perspective. *Developmental Review*, 12, 339-373.

Abstract: The author presents a multidimensional, developmental theory of adolescent reckless behavior which focuses on the influence factors of sensation seeking and adolescent egocentrism. Socialization influences including peer influence also are discussed. Several types of reckless behavior, as well as their decline, are discussed in light of this theory. In addition, the model discussed in this article is compared to Jessor and Jessor's Problem Behavior Theory.

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469-480.

Abstract: Emerging adulthood is proposed as a new conception of development for the period from the late teens through the twenties, with a focus on ages 18-25. A theoretical background is presented. Then evidence is provided to support the idea that emerging adulthood is a distinct period demographically, subjectively, and in terms of identity explorations. How emerging adulthood differs from adolescence and young adulthood is explained. Finally, a cultural context for the idea of emerging adulthood is outlined, and it is specified that emerging adulthood exists only in cultures that allow young people a prolonged period of independent role exploration during the late teens and twenties.

Arnett, J. J. (2002). Developmental sources of crash risk in young drivers. *Injury prevention: Journal of the International Society for Child and Adolescent Injury Prevention* (Suppl. 2), ii17-21; discussion ii21-3.

Abstract: OBJECTIVE: To outline various sources of crash risk among young drivers that are developmental (age based) factors. METHODS AND RESULTS: First, a distinction is made between adolescence (ages 10-18) and emerging adulthood (ages 18-25) in order to shed light on the reasons for especially high crash rates among 16-17 year old drivers relative to 18-25 year olds. Then various developmental sources of risk in adolescence are described, including the power of friends, the optimistic bias, and adolescent emotionality. The reasons for especially high crash rates among young males are discussed, with an emphasis on how American ideas about manhood promote driving risks. Finally, a cross national comparison between adolescents in the United States and Denmark shows how developmental risks interact with driving policies. CONCLUSIONS: The high crash rates of adolescents relative to emerging adults and of emerging adults relative to older drivers can be explained in part by developmental factors.

Bachanas, P. J., Morris, M. K., Lewis-Gess, J. K., Sarett-Cuasay, E. J., Flores, A. L., Sirl, K. S., et al. (2002). Psychological adjustment, substance use, HIV knowledge, and risky sexual behavior in at-risk minority females: Developmental differences during adolescence. *Journal of Pediatric Psychology, 27*(4), 373-384.

Abstract: OBJECTIVE: To assess developmental differences in the psychological functioning, substance use, coping style, social support, HIV knowledge, and risky sexual behavior of at-risk, minority adolescent girls; to assess developmental differences in psychosocial correlates of risky sexual behavior in older and younger adolescents. METHOD: Participants included 164 minority teens, ages 12-19, who were receiving medical care in an adolescent primary care clinic. Teens completed measures of psychological adjustment, substance use, coping style, social support, religious involvement, and HIV knowledge and attitudes. In addition, they answered questions regarding their sexual history, family situation, school status, and psychiatric and legal history. RESULTS: Younger teens (ages 12-15) reported more symptoms of depression and earlier sexual debuts than older teens (ages 16-19). However, older teens reported significantly more substance use and were more likely to have been pregnant and to have contracted a sexually transmitted disease (STD) than younger teens. Older teens also reported more religious involvement and using more adaptive coping strategies than younger teens. Developmental differences in the correlates of risky behaviors were also found between younger and older teens. Specifically, conduct problems and substance use were significantly associated with risky sexual behavior for younger teens, but not for older teens. Similarly, younger teens whose peers were engaging in risky behaviors reported engaging in more risky sexual behaviors; however, these same relations were not found for older teens. CONCLUSIONS: Young minority adolescents exhibiting conduct problems and using substances seem to be at highest risk for contracting HIV and STDs as a result of risky sexual behavior. Prevention interventions should target teens in high-risk environments during late elementary school or early middle school to encourage teens to delay intercourse, practice safer sex, and avoid drug and alcohol use. An interdisciplinary model of care in primary care settings is clearly indicated to provide these services to at-risk youths.

Bell, N. J., Forthun, L. F., & Sun, S. W. (2000). Attachment, adolescent competencies, and substance use: Developmental considerations in the study of risk behaviors. *Substance Use & Misuse, 35*(9), 1177-1206.

Abstract: Social-control-based deviance theories highlight parental bonding as a protective factor for problem behaviors in that bonds are viewed as reflecting the adolescent's adoption of conventional societal attitudes and values. Developmental theory and research suggest an alternative conceptualization of the linkages between family bonding and adolescent risk behaviors. This conceptualization requires concurrent examination of a range of adolescent competencies as well as consideration of parent and peer contexts. Support is found for several hypotheses derived from a developmental approach proposing: (a) positive associations between adolescent-parent attachment and adolescent competencies--autonomy, peer relationship competency, and coping; (b) coherence in the pattern of negative associations between attachment/competencies and substance use problems; and (c) a disjunctive pattern of associations with substance use reflected by positive associations with peer competencies but not with parental attachment.

Bierman, K. L., & Montminy, H. P. (1993). Developmental issues in social-skills assessment and intervention with children and adolescents. *Behav Modif, 17*(3), 229-254.

Abstract: In recent years, social-skills training has become an increasingly common intervention. Recipients of skill training programs have included children of all ages as well as adults, yet relatively few systematic attempts have been made to incorporate developmental considerations into program design and evaluation. Developmental research indicates that significant normative changes take place during the preschool, grade school, and adolescent years in domains such as the complexity of children's social reasoning, the focus and duration of their peer interactions, the nature of peer-approved (and disapproved) behaviors, the organization of the peer group, and the extent and nature of peer influence. Although a full understanding of the impact that these developmental changes may have on the effectiveness of various social-skills interventions awaits future research, the potential implications are numerous. In this article, developmental changes in children's peer relationships are reviewed. The implications that these changes may have for the assessment of social skills, for the design of skill training programs, and for future research are discussed.

Blows, W. T. (2003). Child brain development. *Nurs Times*, 99(17), 28-31.

Abstract: Although the human brain is formed before birth, it continues to develop for at least 20 years. Four main developmental stages are described: before birth; birth to five years; five to 10 years; and 10 to 20 years. Specific developmental skills are attained by an individual at each of these stages. Familiarization by caregivers and healthcare professionals of what is normal for each stage will aid in the identification of potential problems in a child's cognitive development.

Bongers, I. L., Koot, H. M., van der Ende, J., & Verhulst, F. C. (2003). The normative development of child and adolescent problem behavior. *J Abnorm Psycho*, 112(2), 179-192.

Abstract: The aim of this study was to identify normative developmental trajectories of parent-reported problems assessed with the Child Behavior Checklist (CBCL; T. M. Achenbach, 1991) in a representative sample of 2,076 children aged 4 to 18 years from the general population. The trajectories were determined by multilevel growth curve analyses on the CBCL syndromes in a longitudinal multiple birth-cohort sample that was assessed 5 times with 2-year intervals. Most syndromes showed a linear increase or decrease with age or a curvilinear trajectory, except for thought problems. Trajectories for most syndromes differed for boys versus girls, except those for withdrawn, social problems, and thought problems. These normative developmental trajectories provide information against which developmental deviance in childhood and adolescence can be detected.

Borgers, N., Leeuw, E., & Hox, J. (2000). Children as respondents in survey research: Cognitive development and response quality. *Bulletin de Méthodologie Sociologique*, 66, 60-75.

Abstract: Although children are no longer a neglected minority in official statistics and surveys, methodological knowledge on how to survey children is still scarce. Researchers have to rely mainly on ad-hoc knowledge from such diverse fields as child psychiatry and educational testing, or extrapolate from methodological knowledge on how to survey adults. In this article, we review the available literature on children as respondents and present the first results of a secondary analysis of the influence of cognitive development on response quality. We end with recommendations for surveying children.

Burt, M. R. (2002). Reasons to invest in adolescents. *Journal of Adolescent Health*, 31(Suppl. 6), 136-152.

Abstract: PURPOSE: To discuss the frequent failure of the United States (and other countries) to make the types of investment in youth that would increase the future prospects of youth from high-risk backgrounds. I argue that these investments are worth making, and describe the types of research and knowledge dissemination that will be necessary to promote such investments. APPROACH: I begin with a framework for thinking about and working with adolescents. I review theories of youth development, the developmental tasks of adolescence, risk and resilience, and the strong tendency of current approaches to address single problems and symptoms rather than underlying conditions. A conceptual framework is presented that combines known elements of risk and protective factors, such as antecedents, system markers of current or potential difficulties, risk behaviors, and outcomes. I briefly review what we know about youth risk behavior and outcomes in various domains, including combined prevalence and patterning. I then examine what we know about the payoffs that we can expect from investing in activities that promote adolescent health. I end with a set of recommendations for researchers and practitioners, and discuss the information that they need to put these recommendations into practice.

Cauffman, E., & Steinberg, L. (2000). (Im)maturity of judgment in adolescence: Why adolescents may be less culpable than adults. *Behavioral Sciences & the Law*, 18(6), 741-760.

Abstract: A crucial step in the establishment of effective policies and regulations concerning legal decisions involving juveniles is the development of a complete understanding of the many factors-psychosocial as well as cognitive-that affect the evolution of judgment over the course of adolescence and into adulthood. This study examines the influence of three psychosocial factors (responsibility, perspective, and temperance) on maturity of judgment in a sample of over 1,000 participants ranging in age from 12 to 48 years. Participants completed assessments of their psychosocial maturity in the aforementioned domains and responded to a series of hypothetical decision-making dilemmas about potentially antisocial or risky behavior. Socially responsible decision making is significantly more common among young adults than among adolescents, but does not increase appreciably after age 19. Individuals exhibiting higher levels of responsibility, perspective, and temperance displayed more mature decision-making than those with lower scores on these psychosocial factors, regardless of age. Adolescents, on average, scored significantly worse than adults, but individual differences in judgment within each adolescent age group were considerable. These findings call into question recent arguments, derived from studies of logical reasoning, that adolescents and adults are equally competent and that laws and social policies should treat them as such.

Cicchetti, D., & Rogosch, F. A. (2002). A developmental psychopathology perspective on adolescence. *J Consult Clin Psychol*, 70(1), 6-20.

Abstract: Developmental psychopathology offers an integrative framework for conceptualizing the course of development during adolescence, with particular relevance for understanding continuity and the emergence of psychopathology during this and subsequent developmental periods. In this article, the utility of a developmental psychopathology perspective for informing the design of research, prevention, and intervention is highlighted. Interdisciplinary, organizational models of development, emphasizing the dynamic relations between the developing individual and internal and external contexts, are discussed. Examination of boundaries between abnormal and normal development during adolescence offers important vantage points for articulating diversity in the developmental course during this period. Conceptualizing divergence and convergence in developmental pathways, continuity and discontinuity in development, and the transactions of risk and protective processes leading to maladaptation, psychopathology, and resilience are highlighted.

Culbertson, J. L., Newman, J. E., & Willis, D. J. (2003). Childhood and adolescent psychologic development. *Pediatr Clin North Am*, 50(4), 741-764, vii.

Abstract: Child and adolescent psychologic development is a complex process that is governed by the interactions of multiple biological, genetic, sociocultural, and environmental variables. Viewed from an ecological context, the individual influences, and is influenced by, a multilayered set of systems, including the family, school, neighborhood, and peer group, as well as the more indirect effects of the workplace, health care and social services systems, and the larger cultural belief and value systems of the society in which the individual lives. This article reviews the major developmental themes and transitions through which children and adolescents must move on the path to adulthood. Primary developmental tasks are reviewed within each age period from birth to adulthood, with a discussion of several risk factors that present challenges to normal development at the individual, family, community, and societal levels. The important roles of pediatricians and other health care professionals in helping children and families negotiate these developmental challenges is also reviewed.

Dehne, K. L., & Riedner, G. (2001). Adolescence--a dynamic concept. *Reproductive Health Matters*, 9(17), 11-5.

Abstract: The World Health Organization (WHO) defines adolescents as persons between 10 and 19 years of age (WHO 1998). Although adolescents make up about 20 per cent of the world's population (of whom 85 per cent live in developing countries), they have traditionally been neglected as a distinct target group and subsumed under the promotion of family, women's and child welfare and health. This has at least partially been because adolescents were seen as a relatively healthy age group, one that did not have a heavy 'burden of disease', at least as compared with young infants or older adults. However, there is increasing recognition that adolescents have special health-related vulnerabilities. Among the major causes of morbidity and mortality in young people are suicide, road accidents, tobacco use and sexual and reproductive ill-health (WHO 1998). Furthermore, adolescents are increasingly seen as 'gateways to health' because behavioural patterns acquired during this period tend to last throughout adult life--roughly 70 per cent of premature deaths among adults are due to behaviours initiated in adolescence (WHO 1998). This paper describes the social, economic, cultural, legal and health issues which affect the experience of adolescence. It shows that while young people around the world may experience the same physical changes and sensations during adolescence, the manner in which these are interpreted and give rise to social and legal prescriptions varies tremendously.

Duncan, S. C., Duncan, T. E., & Strycker, L. A. (2000). Risk and protective factors influencing adolescent problem behavior: A multivariate latent growth curve analysis. *Annals of Behavioral Medicine*, 22(2), 103-109.

Abstract: This study examined the dynamic relations between adolescent problem behaviors (alcohol, marijuana, deviance, academic failure) over time and predictors of these behaviors. Data from the National Youth Survey (1) included 1,044 adolescents (53.5% male; mean age at year 1 = 13.20). Dependent measures were adolescent alcohol use, marijuana use, deviance, and academic failure, assessed annually over 4 years. Independent measures included age, gender, marital status, income, family time, family support, time with friends, friend deviance, knowledge of friends, activities, and neighborhood problems. An associative latent growth modeling (LGM) analysis showed significant increases and relations between the four behaviors in both initial status and development. Second-order multivariate LGM analyses indicated that the four behaviors could be modeled by a higher-order problem behavior construct. Significant effects on the common problem behavior intercept or slope included time with friends, deviant friends, age, marital status, family time, and support. Additional effects were found to be specific to the initial status and slopes of individual problem behaviors. Overall, results indicate the importance of assessing the relations between adolescent problem behaviors as they change over time and identifying the risk and protective factors that have both common and individual influences on these behaviors.

Fischhoff, B. (1992). Risk taking: A developmental perspective. In J. F. Yates (Ed.), *Risk-Taking behavior*. Oxford, England: John Wiley & Sons.

Abstract: In this chapter the author discusses the complex interaction between risk taking and adolescent development. Cognitive, affective and social development are considered and examined regarding their influence on the risk taker. A decision making perspective is discussed whereby risk taking is viewed as a deliberate choice.

Hill, R. F., & Fortenberry, J. D. (1992). Adolescence as a culture-bound syndrome. *Soc Sci Med*, 35(1), 73-80.

Abstract: In keeping with an expanded definition of culture-bound syndromes, this paper argues that adolescence in American society has been 'medicalized' into a full-blown symptom complex or pathologic condition. Culture-bound syndromes in highly differentiated societies such as the U.S., may be taxonomically sorted by distinctive cultural identity system domains of age, gender, family, vocation and ethnicity.

Irwin, C. E. Jr., Burg, S. J., & Uhler Cart, C. (2002). America's adolescents: Where have we been, where are we going?. *Journal of Adolescent Health, 31*(6 Supp 1), 91-121.

Abstract: PURPOSE: To determine historical trends and current status of the health of America's youth. METHODS: A thorough literature review was conducted to establish the best sources for adolescent data across a wide range of health-related issues using major national data sources. Data were collected and synthesized to create a comprehensive overview of adolescent health and demographic trends. RESULTS AND CONCLUSIONS: Adolescence is a distinct developmental stage posing unique challenges. Although generally considered a time of health and well-being, traditional health indicators often overlook areas specific to adolescence. Despite encouraging improvements in recent years, this population continues to have high rates of morbidity and mortality owing to violence, injury, and mental health disorders. Also, potentially health-damaging behaviors, such as premature and unprotected sexual behavior and substance use, pose significant threats. Fortunately, adolescence is a time of great behavioral plasticity. Because the vast majority of adolescent health risks are the result of behavioral causes, much of this morbidity and mortality is preventable. The adolescent population is projected to greatly increase over the next 2 decades. However, older age groups are increasing more rapidly, reducing the proportion of adolescents in the overall population. The aging population will likely demand increased access to scarce resources. The public needs to be educated about the need to support programs for youth. If resources are properly allocated, and health professionals trained to deal with adolescents' unique needs, America's youth have the potential to benefit greatly from successful implementation of new knowledge, developing healthy, positive, life-long behaviors.

Lenz, B. (2001). The transition from adolescence to young adulthood: A theoretical perspective. *J Sch Nurs, 17*(6), 300-306.

Abstract: Life transitions are periods in time when individuals experience major changes. Transitions may occur during periods between two relatively stable states of human development. The associated changes with the transition bring instability as the person passes through the period. During this period, the individual is typically required to make major adjustments, to develop new skills, or to learn to cope with new experiences. One major life transition begins during the final year or years of high school. This transition, unlike childhood transitions, for many individuals will include a move from one's childhood home and away from their family of origin and from an established network of friends. A successful transition to young adulthood will form a foundation for the individual in future stages of development and transitions. Three frameworks of transition, developmental psychology, counseling, and nursing, are described.

Lerner, R. M., & Castellino, D. R. (2002). Contemporary developmental theory and adolescence: Developmental systems and applied developmental science. *J Adolesc Health, 31*(Suppl. 6), 122-135.

Abstract: PURPOSE: To discuss developmental systems models of human development and explain how they offer a productive frame for research, policies, and programs aimed at understanding adolescents' development and enhancing their health and positive development. Contemporary developmental theory stresses that the multiple levels of organization involved in human life (ranging from biology through culture, the natural and designed ecology, and history) are systemically integrated across ontogeny. Relations within this developmental system are the focus of developmental analysis and application. METHODS: The key features of developmental systems theories are reviewed, and their use for framing scholarship about and applications for improving adolescent development are assessed. RESULTS: We demonstrate the potential of contemporary developmental theory for understanding the character and dynamics of adolescent development and for using this knowledge for the design of effective policies and programs that promote positive youth development. CONCLUSIONS: An adequate and sufficient science of adolescent development, and one that is able to help in the development of successful policies and programs for youth, must integratively study the relations between individuals and contexts in an integrated, systemic, and temporal manner.

Lerner, R. M., & Galambos, N. L. (1998). Adolescent development: Challenges and opportunities for research, programs, and policies. *Annual Review of Psychology, 49*, 413-446.

Abstract: The basic process of adolescent development involves changing relations between the individual and the multiple levels of the context within which the young person is embedded. Variation in the substance and timing of these relations promotes diversity in adolescence and represents sources of risk or protective factors across this life period. The key risk factors of the contemporary American adolescent period are discussed. Behavioral risks involve drug, alcohol, and substance use and abuse; unsafe sex, teenage pregnancy, and teenage parenting; school underachievement, failure, and dropout; and delinquency, crime, and violence. Poverty among youth exacerbates these risks. The features of youth programs effective in preventing the actualization of risk or in promoting positive adolescent development are discussed, as are the characteristics of public policies that may enhance the life chances of the diverse youth of America and the world.

Maggs, J. L., Almeida, D. M., & Galambos, N. L. (1995). Risky business: The paradoxical meaning of problem behavior for young adolescents. *Journal of Early Adolescence, 15*(3), 344-362.

Abstract: Examined concurrent and longitudinal relations among 96 young Canadian adolescents' (mean age at Time 1 was 11.6 yrs) problem behavior (PB; disobeying parents, school misconduct, substance use, antisocial behavior); self-image (SI); and peer relations (involvement, acceptance). Ss completed various questionnaires, including 3 subscales from the Self-Image Questionnaire for Young Adolescents, on 4 occasions over 3.5 yrs. A 2 x 4 x 4 (gender x domain x time) ANOVA showed increases with age in disobedience, school misconduct, and substance use among female Ss, and significant increases with age in school misconduct among male Ss. Longitudinal increases in PB were associated with decreases in positive SI and increases in peer acceptance and involvement. Ss who rated each domain as being more fun engaged more frequently in risk behaviors. Discussion focuses on the paradox that PB may have constructive and destructive aspects.

Maggs, J. L., Frome, P. M., Eccles, J. S., & Barber, B. L. (1997). Psychosocial resources, adolescent risk behaviour and young adult adjustment: Is risk taking more dangerous for some than others? *Journal of Adolescence, 20*(1), 103-119.

Abstract: Examined whether social and personal resources predicted adjustment both as a main effect and in interaction with risk behavior among 693 12th graders (mean age 17.79 yrs). Ss completed the self-report measures, representing 5 domains, in Grade 12 and 2 yrs later. Results showed that personal and social resources predicted success in occupational, relational and health domains. High school risk behaviors predicted decreased success in relational domains, and alcohol use predicted higher educational attainment, independent of the relations with psychosocial resources. Interactions of resources with risk behaviors predicting adjustment were inconsistent, but resources predicted decreased risk behaviors in young adulthood among adolescent risk-takers. The discussion focused on the value of, and challenges to, research on consequences of adolescent risk taking.

Maggs, J. L., Schulenberg, J., & Hurrelmann, K. (1997). Developmental transitions during adolescence: Health promotion implications. In J. Schulenberg, J. L. Maggs, & K. Hurrelmann (Eds.), *Health risks and developmental transitions during adolescence* (pp. 522-546). New York, NY: Cambridge University Press.

Abstract: (From the chapter) illustrated a framework that centers on the links between health risks and normative and nonnormative developmental transitions during adolescence / provide a summary of the developmental transitions of adolescence and briefly discuss some of their health promotion implications / basic issues concerning adolescent health promotion programs are presented, followed by a discussion of health promotion in schools and the broader community

Murray, J. S. (2000). Conducting psychosocial research with children and adolescents: A developmental perspective. *Appl Nurs Res*, 13(3), 151-156.

Abstract: In the past 10 years, childhood has become a focal point of concern. Children are viewed as symbolizing an investment in the future of societies around the world. In the past, knowledge about children's views was realized through objective measures or from representative accounts by adults (e.g., parents and teachers) who were thought to know the child best. Current research suggests that most adult representations and interpretations are only attempts to describe something that more or less represents the child's world. The literature suggests that in the past, children have been perceived mainly as objects rather than subjects of research interest. This perhaps reflects the viewpoint held by many that children are unable to comprehend and describe their world and life experiences because of developmental immaturity and/or that there are intrinsic difficulties in researching children. The purpose of this article is to describe how a child's developmental level affects the research process. Specifically discussed are developmental differences in responses to research including psychosocial research methods, assent, and consent with children.

Oras, R. (1999). Adolescent developmental psychology. *Med Arh*, 53(3), 171-174.

Abstract: Adolescence can be described as "the second individuation." It is agreed that the cultural setting will have a decisive influence on the development from preadolescence to post adolescence which is summarised in the article. It seems as though the Western culture allows more acting out and provides a subculture to the teenagers which is not found elsewhere. The adolescent period is also much longer nowadays in our culture for many reasons.

Rudan, V. (2000). Adolescent development and external influences. *Coll Antropol*, 24(2), 585-596.

Abstract: There are two different approaches to the definition of "normal" in adolescence: psychoanalytic interpretation and empirical research. They are not necessarily at odds but can complement each other if normalcy is viewed as a dependent variable. Its definition depends also on cultural rules, social values and expectancies, professional orientations, personality traits and political climate, which all determine the tolerance level for aberrance. The adolescent development including biological, cognitive and psychosocial changes is related to the existing social formations and processes. It is affected by family, peer groups, neighborhood, work and wider community. The paper describes the adolescent development in particular social contexts.

Schulenberg, J. E., & Maggs, J. L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood. *Journal of Studies on Alcohol. Special Issue: College drinking, what it is, and what do to about it: Review of the state of the science* (Suppl. 14), 54-70.

Abstract: **OBJECTIVE:** This article offers a developmental perspective on college drinking by focusing on broad developmental themes during adolescence and the transition to young adulthood. **METHOD:** A literature review was conducted. **RESULTS:** The transition to college involves major individual and contextual change in every domain of life; at the same time, heavy drinking and associated problems increase during this transition. A developmental contextual perspective encourages the examination of alcohol use and heavy drinking in relation to normative developmental tasks and transitions and in the context of students' changing lives, focusing on interindividual variation in the course and consequences of drinking and on a wide range of proximal and distal influences. Links between developmental transitions and alcohol use and other health risks are discussed in light of five conceptual models: Overload, Developmental Mismatch, Increased Heterogeneity, Transition Catalyst and Heightened Vulnerability to Chance Events. We review normative developmental transitions of adolescence and young adulthood, focusing on the domains of physical and cognitive development, identity, affiliation and achievement. **CONCLUSIONS:** As shown in a selective review of empirical studies, these transitions offer important vantage points for examining increasing (and decreasing) alcohol and other drug use during adolescence and young adulthood. We conclude with a consideration of research and intervention implications.

Siegel, A. W., & Scovill, L. C. (2000). Problem behavior: The double symptom of adolescence. *Development & Psychopathology*, *12*(4), 763-793.

Abstract: In this article we address several issues regarding problem or antisocial behavior in adolescents. First, we discuss conceptualizations of adolescent problem behavior to answer the question "What do we think we know so far?" Then, we briefly characterize current interventions designed to reduce these behaviors, and their relative success in doing so. Next, we examine earlier attempts to prevent and ameliorate problem behavior (including juvenile delinquency), situating them in the historical context of America from the turn of the century to World War II. Here, we attempt to answer the questions "How did we get to where we are?" and "How can we learn from the past?" Following this, we try to answer the question "Where do we go from here?" and articulate some research and policy implications relevant to developmental psychopathology that arise from these considerations. We argue that problem behavior is viewed most productively in its double aspect, which John Hughlings Jackson called a "double symptom," with the positive aspect of the symptom reflecting adolescents' attempts to satisfy their developmental needs.

Steinberg, L., & Morris, S. A. (2001). Adolescent development. *Annu Rev Psychol*, *52*, 83-110.

Abstract: This chapter identifies the most robust conclusions and ideas about adolescent development and psychological functioning that have emerged since Petersen's 1988 review. We begin with a discussion of topics that have dominated recent research, including adolescent problem behavior, parent-adolescent relations, puberty, the development of the self, and peer relations. We then identify and examine what seem to us to be the most important new directions that have come to the fore in the last decade, including research on diverse populations, contextual influences on development, behavioral genetics, and siblings. We conclude with a series of recommendations for future research on adolescence.

Tarter, R. E. (2002). Etiology of adolescent substance abuse: A developmental perspective. *Am J Addict*, *11*(3), 171-191.

Abstract: Approximately 5% of adolescents in the U.S. qualify for a diagnosis of substance use disorder (SUD). Low affect and behavior self-regulation during child development interacting with family, peer and other ecological factors predisposes to substance use in adolescence. Maturation processes during adolescence, particularly involving the brain and reproductive system, exacerbate the low psychological self-regulation evidenced during childhood to promote initiation of alcohol, tobacco, and other drug (ATOD) consumption. This discussion examines the etiology of ATOD abuse and SUD from a developmental perspective. The ramifications of a developmental perspective for clinical practice and social policy are also considered.

Trudeau, L., Lillehoj, C., Spoth, R., & Redmond, C. (2003). The role of assertiveness and decision making in early adolescent substance initiation: Mediating processes. *Journal of Research on Adolescence*, *13*(3), 301-328.

Abstract: This study examined the mediating processes linking assertiveness and decision making to early adolescent substance initiation, along with the moderating effect of gender on those processes. Models specifying negative expectancies and refusal intentions as mediators of individual rights assertiveness and decision-making effects on substance initiation were evaluated across 18 months on a nontreatment cohort of young adolescents participating in a prevention trial (average age 12.3 years at baseline; N=357). Results indicated that individual rights assertiveness and decision making had indirect effects on substance initiation through effects on negative outcome expectancies and refusal intentions. Gender differences were found in both the average level and the pattern of relationships among the variables. For girls, refusal intentions were negatively associated with later substance initiation. For boys, early levels of substance initiation were negatively associated with later levels of negative expectancies and refusal intentions. Implications for prevention programming are discussed.

Udry, J. R. (1994). Integrating biological and sociological models of adolescent problem behaviors. In R. D. Ketterlinus & M. E. Lamb (Eds.), *Adolescent problem behaviors: Issues and research* (pp. 93-107). Hillsdale, England: Lawrence Erlbaum Associates.

Abstract: (From the introduction) sketches [a] "biosocial" theory of adolescent problem behavior, in which both social and biological factors are assigned formative roles in the origins of adolescent problem behaviors / compares the results of several cross-sectional and panel studies [of 13-16 yr olds] testing either additive, intermediate, or interactional models of biological and social processes before concluding that biologically based predispositions--primarily temperament--may play a more fundamental role in the etiology of problem behaviors than the environmental factors that act to shape the manifestation of these predispositions / presents some . . . preliminary data from a longitudinal study of 350 women who were born in the 1960s and who have been studied since the prenatal period.