Chapter 4

Gambling and Drug Abuse in Adolescence[1]

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In recent literature, adolescent gambling has become a hot topic of discussion. There are several reasons for this phenomenon. During the past decade, legalized gambling, such as lotteries, high-stakes casinos, and video lottery terminals have expanded rapidly. In the developmental course, adolescents are susceptible to the engagement of health risk behaviors and frequently disregard their possible negative consequences (Clayton, 1992). With regard to gambling, the predominant belief is that it is a mode of entertainment and it has very few, if any, negative consequences. It is partly due to this perception that implementing programs to treat adolescents with gambling problems have not been widely accepted or developed in the past. It is known that some adolescent problem behaviors are connected with morbidity and mortality (e.g., automobile accidents resulting from drinking and driving) (Chassin & DeLucia, 1996).

The prevalence data on adolescent gambling behaviors are provocative. Among young people, gambling involvement is common, with some gambling occurring among most American adolescents (Jacobs, 1989a, 2000, in this volume; Stinchfield & Winters, 1998). The estimates of problem or

1. Support for this chapter was partially provided by a grant from the National Center for Responsible Gaming.

pathological gambling rates among youth, while not excessive, range from 1–9% past year (median = 6%), while pathological gambling rates are two to four times higher than that of adult populations (Gupta & Derevensky, 1998a; Jacobs, 2000; National Research Council, 1999; Shaffer, Hall & Vander-Bilt, 1997). Youth who are in psychiatric hospitals, chemical dependency programs and juvenile detention centers display gambling rates that are approximately double that of adolescents from school or community samples (Stinchfield & Winters, 1998). The young person who is considered to have a gambling problem or who is a compulsive gambler has been connected to a rise in criminal activities and delinquency, familial difficulties, and poor academic performance (Fisher, 1993; Gupta & Derevensky, 1997). It is therefore safe to assume that gambling behaviors can lead to delinquency and that delinquent behaviors can lead to gambling among youth (Gupta & Derevensky, 1998a). In retrospective reports of adult pathological gamblers, a higher percentage of these individuals have indicated that they began their gambling during adolescence (National Research Council, 1999). Discussions about the origins and course of adolescent gambling often point to the apparent connection between adolescent gambling and drug use.[2] Researchers have noted that the prevalence rates of general gambling involvement and drug use are in most cases are comparable, and that many behavioral and social consequences of each domain are similar. Researchers have also recognized that several psychosocial factors linked to adolescent drug behaviors have emerged as correlates of gambling behaviors as well (Lesieur, Blume & Zoppa, 1986; Stinchfield, in this volume; Stinchfield & Winters, 1998).[3]

This chapter explores the extent to which insights about adolescent gambling behaviors can be enhanced by studying the relationship between gambling and drug use behaviors. Clearly, we are a distance from knowledge parity with respect to these two behavioral domains. Relatively little is known about the origins, course, and responsivity of the treatment of gambling compared to that of drug involvement. In this chapter, we will focus on five issues pertaining to the relationship of gambling and drug use: definitions and measurement, prevalence of the two domains including their co-occurrence, psychosocial factors that may mediate and moderate these behavioral domains, and prevention and treatment implications.

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2. The terms drugs and substances are used throughout this chapter to refer to alcohol and other drug use.
3. Many points of overlap between adult pathological gambling and substance use disorders have been noted in the literature as well (see National Research Council, 1999).

Definitions and Measurement

At an elemental level, there is not a great deal of controversy in defining *general* drug and gambling involvement for adolescents. Conventional definitions of gambling behavior (playing games of chance for money) and drug use (self-administration of a psychoactive substance) are appropriate when applied to young people. However, there is a greater controversy and more uncertainty as to how we define, classify and measure the varying levels of involvement in these two behavior domains. The specific classification system that is typically chosen, the definitions and criteria subsumed under that system, and the instruments to measure the phenomena are fundamental to how we conceptualize a behavior disorder (Kendell, 1975). A discussion of substance abuse disorders is useful in the discovery of the connection between drug abuse and gambling problems.

Recent literature has given attention to the validity of formal diagnostic criteria for substance use disorders among adolescents. The DSM-IV's (American Psychiatric Association, 1994) two-category system of substance *abuse* and *dependence* are presumed to be indirectly appropriate for youth given that youth-specific criterion are not offered. It is therefore presumed that the validity data cited for substance abuse disorders in the DSM-IV are relevant across age groups. This research is generally supportive with regard to the usefulness of abuse and dependence diagnostic criteria when applied to adolescents. As an example, studies by Stewart and Brown (1995) and Martin and colleagues (Martin, Kaczynski, Maisto, Bukstein, & Moss, 1995) have indicated that youth who are multiple or chronic drug users frequently report abuse and dependence symptoms. Winters and colleagues (Winters, Latimer & Stinchfield, 1999) reported external validity that supported the DSM-IV distinctions of abuse and dependence for both alcohol and cannabis. Those who met the dependence criteria consistently scored higher on independent ratings of problem severity by clinicians compared to those meeting abuse criteria.

Regardless of this milieu of validity evidence, there are rising concerns that the adult-based criteria for substance use disorders are less than ideal when applied to youth. Martin and Winters (1998) have discussed several failings of the DSM-IV criteria for alcohol use disorders in adolescents. Examples of these weaknesses include weaknesses that are not typically experienced by adolescent problem drinkers (e.g. withdrawl and alcohol-related medical problems); some criteria have limited value because they tend to only occur in particular subgroups of youth (e.g. hazardous use of alcohol while driving is essentially limited to youth old enough to drive); and one symptom that is tolerance, has a questionable specificity for adolescents given that its rate is roughly equivalent in both non-problem drinking and problem drinking groups.

When applied to gambling problems, several terms and classification systems have been proposed to describe the levels of adolescent gambling. However, very little validity data has been reported to date. Some investigators have utilized the South Oaks Gambling Screen (SOGS) in adolescent surveys. In these cases, the problem severity groups have naturally been delineated with accordance to the SOGS criteria (e.g., a score of 5 or higher identifies a probable pathological gambler). Because the SOGS is based on American Psychiatric Association's definition of pathological gamblers, using these categories demonstrates the opinion that severe-end gamblers might suffer from a chronic and progressive failure to resist the temptation to gamble, and they indicate negative personal consequences in the face of continued gambling. Investigators have been faced with making subjective classification decisions when SOGS-adapted measures have been used in surveys. Winters and colleagues (Winters, Stinchfield & Fulkerson, 1993a) provided a good example of this difficulty by defining their "problem" gamblers as those who had a higher score on the SOGS-RA *or* those who reported daily gambling, regardless of the SOGS-RA score. The use of the term problem gambler was meant to consider a broadly defined group at the extreme end of the distribution of scores. In other instances, researchers have used the problem gambler label to reflect a sub-pathological group, who are, nonetheless, more disordered in their behavior than the occasional or recreational gambler (National Research Council, 1999; Shaffer et al., 1997). The second example offers the problem gambling category as a similar function as the abuse category provides in the classification of substance use disorders.

Shaffer and Hall (1996) have proposed a five-level classification system for groups of adolescent gamblers (see Table 1). Levels 0 (no gambling history) to 3 (pathological or compulsive gambling based on formal guidelines) indicate an increased involvement and produce signs of impairment due to gambling. Level 4 is assigned to the individuals who meet Level 3 guidelines but are prepared to undertake treatment for their problem. This system is enticing due to the fact that it offers two levels of gambling that are sub-threshold in nature. Level 1 shows recreational gambling while Level 2 distinguishes the "in-transition" or "problem" gambler who is exhibiting signs of over-involvement and may progress toward the more impaired level of pathological gambling. Shaffer and Hall (1996) appropriately noted the proposed five-level classification system has use for advancing communication among researchers and policy makers. However, important research work is necessary to prove the system's validity.

Instrumentation for assessing gambling problems has yet to fully evolve. The increasing and rather abundant assessment literature for the adolescent drug abuse field has been summarized elsewhere (Leccese & Waldron, 1994; Martin & Winters, 1998; SAMHSA, 1999). Countless screening and

Table 1. Shaffer and Hall's (1996) Proposed Classification System for Levels of Adolescent Gambling

Levels of Gambling Involvement and Experience	Operational Definition
Level 0: No Gambling History	Individual has never gambled.
Level 1: Non-Problem Gambling	Individual has gambled recreationally and does not experience any signs or symptoms of gambling-related disorder.
Level 2: In-Transition or Problem Gambling	Individual experiences symptoms or displays signs of problems related to gambling activity; may be progressing either toward more serious or intense symptoms (i.e., progression) or away from these symptoms (i.e., during recovery).
Level 3: Gambling-Related Disorder with Impairment, such as Pathological or Compulsive Gambling	Individual meets diagnostic criteria (e.g., DSM-IV, MAGS, SOGS) for biologic, sociologic, or psychologic impairment.
Level 4: Pathological/Compulsive Gambler Who Displays Willingness to Enter Treatment	Individual satisfies Level 3 requirements and, in addition displays interest in entering the health care domain (with or without existing obstacles).

all-inclusive questionnaires and interviews exist for researchers and clinicians, with a few including effective psychometric properties (SAMHSA, 1999). Contrary to this is the fact that only a limited number of instruments in the literature pertain to adolescent problem/pathological gambling, and none can be thought of as multi-dimensional, comprehensive tools. Prevalence studies with adolescents have used the SOGS (Lesieur & Blume, 1987) or variations of it (e.g., SOGS-RA; Winters, Stinchfield & Fulkerson, 1993b). Other investigators have created their own instrument (e.g., Massachusetts Gambling Screen; Shaffer, LaBrie, Scanlan & Cummings, 1994) or have assessed youth with the DSM criteria for pathological gambling (e.g., DSM-IV-J; Fisher, 1992). The validity data for these tools are in the early stages of development, and the data indicates a general consistency in terms of discriminant validity. For example, when researchers have compared infrequent gamblers with those who gamble habitually, group differences are consistent with expectations (Derevensky & Gupta, 2000). These studies have found that the SOGS-RA, DSM-IV-J, and Gamblers Anonymous (GA) 20 questions were greatly interrelated (range of inter-correlations .61 to .68), while the DSM-IV-J was the most conventional in the identification of the lowest rate of problem/pathological adolescent gamblers (3% compared to 5% and 6% for the previous two instruments) (see Derevensky & Gupta, in this volume).

Screening tools may error substantially in terms of false positives. This fact has been brought to light by a recent study on the validity of the gambling assessment measures. Ladouceur and colleagues (Ladouceur, Bouchard, Rheaume, Ferland, Leblond & Walker, 2000) examined the speculation that the SOGS-RA (Winters et al., 1993b) overestimates the prevalence of pathological gambling. Followed by an individual interview by a researcher, blind to the subjects' prior responses, children in grade school and adolescents were initially given the SOGS-RA. During the interview phase, the children were asked to clarify the meaning of the items. If the child showed a misunderstanding, the researcher explained the item. Each of these participants then completed the SOGS-RA a second time. The outcome of the collected data confirmed the authors' expectations in that the prevalence rates of the potential pathological gambler (i.e., a score of 3+) was reduced by 65% among grade school children. This reduction was found among adolescents to be more than 47% when the results of the second testing were compared to the first testing data. Furthermore, there were no cases in which a second SOGS-RA score was 3 or higher when the first score was below the 3+ threshold. The study by Ladouceur et al. (2000) is significant for two reasons. First, it puts forth a warning to researchers that screening instruments (e.g. SOGS-RA) may produce an increased prevalence of the estimation of pathological gambling among adolescents. Second, the research presents a hint of the urgent need for further investigation concerning the measurement of gambling behaviors, and in particular, problem and pathological gambling in this field. Nevertheless, it is important to note that in a recent paper by Derevensky, Gupta and Winters (2003) Ladouceur and his colleagues work was methodologically challenged and that a replication study with adults failed to substantiate their assertions (see Derevensky & Gupta in this volume for a more complete discussion).

There are more contrasts than similarities in the separate terminology and classification systems that describe the levels of gambling and drug involvement. The area of adolescent drug abuse is much more cultivated in terms of empirically developing and validating a youth-specific classification system. In addition, the field of adolescent drug abuse has benefited from relatively less contention in regards to the organization of the classification, and from a more highly evolved instrumentation when related to the gambling domain. This is not to say that the conceptions of substance abuse and dependence for adolescents are not without faults; there are still concerns that the DSM-IV criteria for abuse and dependence require a developmental modification (Martin & Winters, 1998). However, investigators and clinicians in the gambling area do not gain from a significant empirical base, resulting in several basic classification and measurement issues that are yet to be determined.

Epidemiology of Youth Gambling and Drug Use in the United States

More of the epidemiology of youth gambling and drug use studies comes from local surveys which make it problematic to compare one with the other on a national scale. As a result, we do not have the same national viewpoint of gambling behaviors as those available for adolescent drug use. Moreover, it is only recently that adolescent surveys have included both drug and gambling items to permit a more accurate comparative picture of the relative prevalence of the two behavior domains and the boundary of their co-association.

A recent statewide survey in Minnesota of these two behavior sets offers another comparison among gambling involvement and drug use (Stinchfield, Cassuto, Winters & Latimer, 1997). Health behavior statistics were collected in 1995 from nearly all sixth, ninth, and twelfth grade students who attended Minnesota's public schools. A statistical examination was employed for over 18,000 students who were randomly chosen from the full data set. These numbers are significant for the present discussion because they are (a) reasonably up to date, and (b) the survey included comparable items for both prior year frequency of drug use (across six categories) and gambling involvement (for five gambling activities). Table 2 offers a summary of the results of this research for prior year drug use and gambling, with respect to the following data points: *any* involvement and *weekly/daily* involvement.

These two indices were used because they were mutually included in the response options for both sets of survey items and they provided a comparison at two end points along a continuum of involvement. The data indicate that: (a) between ninth and twelfth grade students, at least some participation in drug use and gambling was the rule rather than the exception; (b) rates of any gambling and any drug use were roughly equivalent across grades and gender, with some exceptions (sixth grade girls and ninth grade boys showed higher gambling rates than drug use rates); (c) weekly and daily gambling participation was not reported by the majority of the students who were surveyed, with sixth graders reporting a very low rate at this level, meanwhile older students reported weekly and daily involvement in the range of 20% –25%; (d) there was a partiality for sixth and ninth graders to report higher weekly/daily gambling rates compared to weekly/daily drug use rates, twelfth graders following the opposite trend; and (e) boys were inclined to report gambling and drug use more often when compared to girls, with these reported differences being relatively larger for gambling. A final detail about gender differences is worthy of discussion. In the Minnesota sample, girls were almost equal to boys in terms

Table 2. Comparison Youth Gambling and Drug Use (Prior Year)

Group	Any Involvement		Weekly/Daily	
	Gambling %	Drug Use %	Gambling %	Drug Use %
6th Graders				
Boys (n=4,104)	19.3	24.0	14.8	2.8
Girls (n=4,417)	46.0	21.7	5 .4	1.2
9th Graders				
Boys (n=3,759)	77.4	50.5	20.4	14.0
Girls (n=3,714)	49.9	49.5	4.5	9.6
12th Graders				
Boys (n=2,309)	82.7	71.7	22.7	28.7
Girls (n=2,354)	58.7	66.3	5.0	16.4

Data based on *1995 Minnesota Student Survey* (Minnesota Department of Children, Families and Learning, 1995).
Gambling = cards, sports teams, games of skill, scratch tabs and lottery.
Drug Use = alcohol, cannabis, amphetamines, barbiturates, cocaine and inhalants.

of any drug use across the three grades, however, girls tended to have about half of the rate of weekly or daily drug use when compared to that of boys. In contrast, the rate of weekly or daily gambling among boys was about three to four times greater than that of girls, and except for sixth graders, boys also indicated significantly more gambling in general. To summarize, the Minnesota Student Survey data provide indications of considerable topographical overlap between gambling and drug use behaviors. Boys showed more involvement in gambling and drug use when compared to girls. Additionally, while there were many similarities when comparing the two behaviors in terms of general and weekly/daily participation, weekly/daily *gambling* was more widespread in the sixth and ninth grade students in comparison to weekly/daily *drug use,* but the pattern shifted at the twelfth grade when the prevalence rate of weekly/daily *drug use* was higher than that of *gambling.*

The discussion of the comparative rates of drug use and gambling behaviors would not be complete without examining the possible similarities of the *consequences* of the two behavior domains. Several behavioral and social consequences have been noted in the literature with regard to drug involvement (SAMHSA, 1999). Of particular note is that alcohol-related motor vehicle accidents account for nearly half (45.1%) of all traffic fatalities among adolescent drivers (Center for Disease Control and Prevention, 1996). Moreover, when substance use disorders begin at an early age, especially when there is no remission of the disorder, they exact substantially

more economic and social costs to society. These costs include a heightened risk for suicide, sexually transmitted diseases, AIDS, and continued criminal activity when compared to those with a later onset of drug use (Children's Defense Fund, 1991).

The empirical picture is uncertain with respect to the consequences linked to adolescent gambling. Even though studies have shown that adolescents who gamble frequently also report elevated rates of poor school performance, legal problems, and loss of interest in normal activities compared to non-gambling peers (Griffiths, 1995; Winters et al., 1993a), it is not clear if these (or other) problems are genuine consequences of gambling involvement. The perceptible difficulty in empirically connecting adolescent gambling to distinguishable consequences may be compounded by several factors, including (a) the possibility that adolescent gambling may hardly ever produce dramatic consequences; (b) the absence in the literature of *clinical studies,* which would possibly draw attention to the presence of severe consequences; and (c) the lack of *prospective studies,* which would help to sort out the temporal relationships between the onset of the disorder and the resulting consequences.

In order to extend our epidemiological examination, we must examine the co-occurrence of the two sets of behaviors. Considerations are given to the extent to which involvement in one behavior domain increases the likelihood of involvement in the other. The literature with regard to adults has indicated that there is a co-association of substance use disorders and pathological gambling. In a review by Crockford and el Guebaly (1998), pathological gamblers were found to have lifetime rates of substance use disorders ranging from 25–63%. Estimates that have been reported by others are comparable (e.g., Lesieur, Blume & Zoppa, 1986; Steinberg, Kosten & Rounsaville, 1992). Studies have additionally discovered that individuals in treatment for alcoholism or drug addition are more likely to report a current or past problem with gambling when compared to those in the general population (National Research Council, 1999). The co-occurrence of gambling and drug use behaviors among youth has been studied on a much smaller scale. The link between adolescent gambling and drug use behaviors has been observed primarily in surveys (Shaffer et al., 1994; Wallisch, 1993; Zitzow, 1996). Conceivably this is also illustrative in the series of Minnesota youth studies that have consistently found an increased link between gambling participation and drug use. For example, a community survey of older adolescents in 1990 found that 62% of problem gamblers reported monthly use of a substance, compared to 28% of the non-problem group (Winters et al., 1993a). Another analysis of statewide data collected in 1992 and 1995 of public school students revealed that lifetime alcohol use was one of the strongest predictors of the highest level of

gambling for both cohorts (Stinchfield et al., 1997). In addition, the outcome from a survey of two colleges in Minnesota indicated that weekly or more frequent use of substances increased the odds of being in the probable pathological gambling group (based on the SOGS score) by a factor that ranged from 4.5 (for illicit use) and 2.3 (for licit use) (Winters, Bengston, Dorr & Stinchfield, 1998).

The degree of co-occurrence between gambling and drug use using a large sample available from the 1995 Minnesota student survey was examined further. The authors computed a separate odds ratio for the two end point variables reported in Table 2 (no involvement and weekly/daily involvement). Students were 3.1 times more likely to have never gambled if the individual had never used drugs compared to those who had used drugs. In addition, students were 3.8 times more likely to be a weekly or daily gambler if they were also a weekly or daily drug user compared to those who used drugs less than that (including no use at all). This information provides additional support that gambling involvement is connected to the level of drug use among adolescents.

Due to the methodological problems noted previously, comparisons of gambling and drug use survey data must be interpreted with caution. The data is ambivalent as to which behavior domain is more commonly engaged in by youth, and which "disorder" is more prevalent than the other. Suffice to say that at this point we can conservatively conclude that for adolescents (at least in the United States), (a) some drug use and some gambling is a common developmental experience, (b) a significant but undersized percentage of youth who engage in these behaviors meet the criteria for the respective disorder, and (c) participation in one behavior predisposes the participation in the other, although the direction of the relationship is not clear at this time. As for the comparisons of behavioral and social consequences, the most remarkable observation is the relative scarcity of documentation in the adolescent gambling area compared with the adolescent drug abuse literature.

Exploring the Dual Function of Psychosocial Factors

The nature of the co-association between drug use and gambling involvement is still clearly open for speculation. As a result, it is relevant to further consider this issue by examining the possible intersection of psychosocial factors for these two behavioral domains.

A current perspective on the genetic, inter-personal and intra-personal risk factors for adolescent drug use behaviors, which begin during the childhood years, are influenced by multiple trajectories (e.g., Cadoret, Yates,

Troughton, Woodworth & Stewart, 1995). An individual attribute, situational condition, or environmental context that increases the probability of participating in the target behavior (in this case, drug use and gambling) and possibly leads the individual to continue that involvement can be conceptualized as a risk factor (Clayton, 1992). In contrast, a protective factor decreases the probability of the onset or severity of the target behavior. While a protective factor is the conceptual opposite of a risk factor, for the sake of frugality, we will incorporate protective factors into this discussion by conceptually recasting them as risk factors. An assortment of literature reviews provide a small consensus as to specific adolescent risk factors that fall within these broad genetic and inter- and intra-personal categories (see Clayton, 1992; Hawkins, Catalano & Miller, 1992; Petraitis, Flay & Miller, 1995; Weinberg & Glanz, 1999). While the level of wisdom regarding the vulnerability to problem gambling is still new compared to that of drug abuse vulnerability literature, is has been noted that these two behavioral domains share similar risk factors and thus may share common etiological processes (Jacobs, 1989a).

Findings from the summaries of the adolescent drug abuse risk literature by Stinchfield and Winters (1998) have been compared to the limited literature on the risk factors of adolescent gambling behavior (Derevensky, Gupta & Della-Cioppa, 1996; Dickson, Derevensky & Gupta, 2002; Gupta & Derevensky, 1997, 1998a; Jacobs, 1989a; Stinchfield et al., 1997; Winters et al., 1993a). It is due to this lack of literature that most studies reviewed did not include appropriate measures of both problem gambling and drug abuse, nor included a comprehensive list of candidate risk factors. One has to keep in mind that the following comparison is far less than ideal from an empirical standpoint. For example, it is not known to what end the list of common risk factors capitalizes on methodological and measurement differences across studies. Furthermore, because adolescent gambling studies have typically borrowed psychosocial measures from the drug abuse vulnerability literature, it is reasonable to assume that research has not adequately or fully studied the extent to which the non-convergence of underlying risk factors occurs.

Despite these cautions, the following variables were identified by Stinchfield and Winters (1998) as having a dual status as a risk factor for both drug abuse and problem gambling: low self-esteem, depressive mood or suicidal, being a victim of physical or sexual abuse, poor school performance, history of delinquency (and the related personality trait of disinhibition or poor impulse control), being male, early onset, parental history of the respective problem, and community and family norms that promote accessibility to the respective activity. As a group, these dual-acting variables represent genetic or biological, personality, familial and/or community factors, suggesting that the

origins of both of these behaviors are heterogeneous and likely characterized by various and combined pathways.

The notable extension of tangible psychosocial risk factors with respect to both adolescent problem gambling and drug abuse suggests that the association of the two behavior patterns is not insignificant. The nature of this relationship however is less clear. As shown in Figure 1, several pathways for risk, substance use disorders and problem gambling are credible.

One direction to consider is that a high-risk status may lead to a developmental disorder (e.g. conduct disorder), which then can influence other disorders such as substance use disorder and problem gambling (path #1). On the other hand, the risk status may increase the vulnerability directly to a substance use disorder and problem gambling independently (path #2). An additional consideration is the plausible interaction between problem gambling and substance use disorders. For example, adolescent problem gambling may be the result of an adolescent substance use disorder (path #3).

We continue to develop this discussion of common psychosocial interactions by contemplating the limit to which hypotheses of early drug use and abuse may generalize to models of vulnerability of gambling involvement. Efforts put forth by social scientists to learn why some adolescents experiment and abuse substances have led to the identification of so many constructs and theories integrating these constructs that it has become difficult to clearly understand this phenomenon. Pertraitis, Flay and Miller

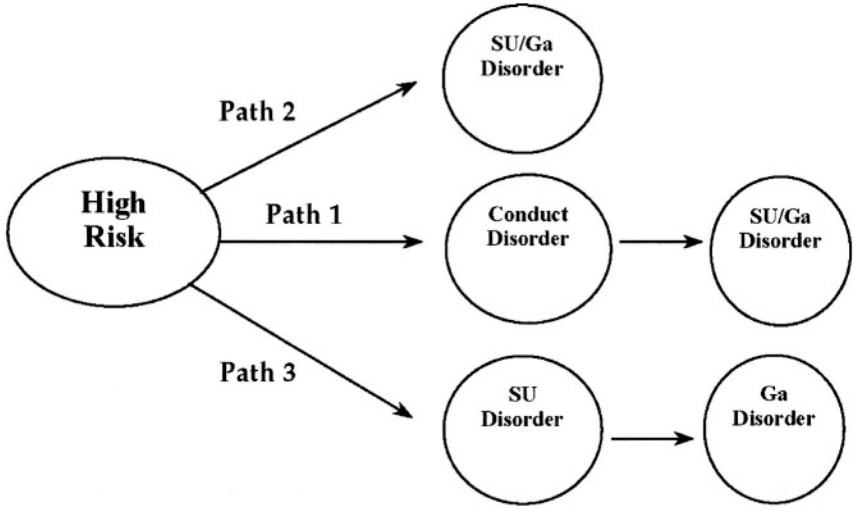

Figure 1. Possible Pathways for Risk and Substance Use (SU) and Gambling (Ga) Disorders

(1995), in their comprehensive review of this research, suggest that "the puzzle of adolescent use is far from complete, and probably few social scientists would argue that existing theories successfully integrate current knowledge about the causes of adolescent substance use, make sense out of seemingly unrelated research findings, lead to accurate predictions regarding adolescent substance use, and form the foundation of effective prevention programs" (p. 67).

How then does one embark on developing reliable theories of adolescent gambling given that this field is in its empirical infancy? While some reliable psychosocial variables have come together as vulnerability factors for adolescent gambling, we are still some distance away from characterizing how all of these concepts are interrelated to form a lucid view of what contributes to the onset and maintenance of gambling behaviors and how to prevent problem gambling among adolescents. As a result, there seems to be evidence of commonalities between adolescent gambling and drug use behaviors. It stands to reason that the familiar theories of adolescent drug abuse may contribute as a foundation from which youth gambling models materialize.

Multivariate theories that exist on adolescent substance use can be structured around four major themes (Lettieri, Sayers, & Pearson, 1980; Moncher, Holden, & Schinke, 1991; Petraitis, Flay, & Miller, 1995; Weinberg & Glantz, 1999). The *cognitive-affective* explanations of drug use are the first group of theories. The primary focus of this hypothesis is how self-perceptions of the costs and benefits of drug involvement are influential with the adolescents' choice to experiment with them. One assumption of this theory is that the individual's expectations and perceptions about a drug's psychological and physiological effects are a primary cause of the decision to use specific drugs. Other influences, such as the individual's personality traits or association with delinquent peers, are mediated through their effects on these drug-specific cognitions (e.g., Fishbein & Ajzen, 1975). A second premise from this literature is based on *social learning theory* (e.g., Bandura, 1982; Krohn, Akers, Radosevich, & Lanza-Kaduce, 1982). The primary factors that endorse drug use, more willingly than cognitive-affective factors are perceived as the interpersonal or social influences. This viewpoint declares that adolescents initially develop delinquent attitudes and behaviors through observation and imitation of role models, especially close friends and siblings (particularly older and same-sex siblings), and in some cases, parents. Social reinforcement for using drugs occurs from encouragement from peers and siblings, which is then followed by expectations of positive social and physiological consequences from drug use in the future. The third theory addresses the role of the *conventional commitment and social attachment.* Within this framework deviant impulses that all people

presumably have as a shared trait are often hindered or controlled by firm attachments to social and interpersonal conventions, (i.e. family and religious beliefs). However, some adolescents are deficient in these controlling influences. Consequently, the adolescents with vulnerable conventional bonds are less inclined to follow the typical standards of behavior (Hawkins & Weis, 1985; Jessor, Donovan, & Costa, 1991). The final leading theme discussed in the literature focuses on how *intra-personal characteristics,* some of which may be genetically influenced, interrelate with the adolescents' social settings and community norms and values to either encourage or discourage drug involvement. This group of theories claims that adolescents will vary from each other in their attachment to drug-using peers and their motivation to use drugs by virtue of differences in personality traits, mental health status, affective states, and behavioral skills (Brook, Gordon, Brook & Brook, 1989; Jessor et al., 1991; Kaplan, Martin & Robins, 1984; Kumpfer & Turner, 1990–1991; Rose, 1998). The empirical defense for these various drug abuse theories are inconsistent (Petraitis et al., 1995; Weinberg & Glantz, 1999), an aspect that is important when evaluating the possible utilization of drug use theories to model the development for adolescent gambling. Furthermore, youth gambling models should include factors that are likely to be exceedingly specific to gambling behaviors, such as attributions of luck and skill (Derevensky et al., 1996), outlook concerning money, and the role of gambling on mood enhancement. Moreover, there is a demand for an increase of our understanding concerning the similarities and differences of existing conceptualizations of adolescent gambling, to what extent they can be integrated into prescribed theories of youth gambling, and what empirical tests are required to investigate their validity.

The most unequivocal attempt at bridging the etiological commonalities of gambling and drug involvement is provided by Jacobs' (1989b) *General Theory of Addictions.* Jacobs argues for the etiological connection between drug use and gambling on the basis of the innermost functionality of each of the behaviors in attaining altered states of identity or consciousness for susceptible individuals. Thus, Jacobs' theory seems reliable with the intra-personal characteristic theories described previously. Specifically, Jacobs hypothesizes that such altered states are manifested by dissociative-like reactions when engaging in the addictive behavior (e.g., "I feel like I am in a trance"; "I feel outside of myself"). The empirical defense for Jacobs' theory is provided by findings indicating that problem gamblers and addicts more often report dissociative-like experiences when gambling and drinking when compared to "normals" (Jacobs 1989b). Additional data from youth surveys in which problem gamblers report increased rates of dissociative-like states when compared to non-problem gambling youth (Jacobs, 1989b; Winters, Stinchfield & Fulkerson, 1990) also defined this theory.

Gupta and Derevensky (1998b) tested Jacobs' theory more comprehensively amongst adolescents. Based upon on data from a large school model (N = 817), problem and pathological gamblers demonstrated more abnormal physiological inactive states and self-reported more emotional distress, greater levels of dissociation, and higher rates of frequent substance use compared to non-gamblers and infrequent gamblers.

An important research priority for improving our understanding of the nature of adolescent gambling is the possible dual role of mediating and moderating the risk factors in the onset of gambling involvement and drug behaviors, as well as in the development of resulting gambling and substance use disorders. The existing literature, however limited, proposes that more than a few psychosocial risk factors may significantly overlap, even as the testing of developmental models that incorporate these factors is in the early stages. It is important to take into account that any discussion about dual risk factors should not disregard the possible influence of each behavior domain on the other. Because the two disorders show a high co-occurrence, the inception or desistence of one disorder may impact the status of the other disorder. Unmistakably, comprehensive prospective research is considered necessary to help classify the precise relationship of the two disorders. Nevertheless, it is due to these commonalities that prevention specialists are initiating the examination of the existing treatment methods for substance abuse and how these tools can be developed to treat adolescents with gambling problems.

Prevention and Treatment Issues

When it comes to prevention and treatment research, the knowledge base concerning the connection of gambling and drug involvement is to a certain extent one-sided. Despite the fact that the past 25 years has witnessed a reasonably broad prevention and treatment literature on youth drug abuse emerge (SAMHSA, 1999), there is very little in the sphere of adolescent gambling prevention and treatment. In a literature review by the authors, only one adolescent gambling study regarding treatment was cited. Ladouceur, Boisvert, and Dumont (1994) reported on the efficacy of cognitive-behavioral treatment for four adolescent male pathological gamblers. The post-treatment findings illustrated that all four adolescents were abstinent from gambling at all follow-up periods (one-, four-, and six-months). Not only is gambling treatment minimally discussed in the literature but very few youth gambling treatment services are in existence. The authors found an entry in the literature regarding a Young Gamblers Anonymous program in New Jersey (Ziegler, 1995), and the McGill research

group has produced and put into practice a clinical intervention for adolescent and young adult problem gamblers (Gupta & Derevensky, 1999, 2000). The virtual absence of literature on the treatment of youth problem gambling may perhaps be due to several factors, including the deficiency of research funding in this area, being incomplete in the of awareness of adolescent problem gambling by the general public and youth service providers, and low base rates of pathological gambling as a presenting problem in youth clinics (see Gupta & Derevensky, this volume).

The prevention area proposes supplementary organization in the areas that overlap with other disorders. Contemporary knowledge recommends that effective youth gambling prevention must capitalize on the *Best Practices* learned from successful drug and alcohol prevention programs (National Research Council, 1999). This may be reasonable given the numerous commonalities between gambling and drug involvement previously discussed. A current review of the prevention research literature by NIDA (1996) highlights the significance that functional prevention programs should (a) recognize that the target behaviors are diverse, (b) integrate into the program what is known in regard to the behavior's psychosocial determinants, and (c) avoid one-shot, one-dimensional prevention efforts (e.g., school-based only effort limited to one grade level).

There are several models of youth gambling prevention programs that have been created (e.g., McGill University, Minnesota Institute on Public Health) (see Derevensky, Gupta, Dickson & Deguire, 2001; this volume for a comprehensive review of programs). One element of prevention efforts presented in the literature emphasizes the mathematical odds of the games and how they significantly disfavor the player. Crites (2003) discusses that if math classes stressed principles of probability and chance, young people may be more prudent when they have opportunities to gambling.

On a limited basis, prevention efforts have been initiated by the gambling industry. The Harrahs' Casino Group developed Project 21 in an effort to prohibit underage youth from gambling in their casinos (Satre, 2003). It was hoped that this project would impact adolescents who live near casinos as well as providing a deterrent to underage gambling in general. The program involves several components, including the training of casino staff to identify and report underage gamblers, collaborating with the media to produce public service announcements, and posting signs within the casino regarding underage gambling. Project 21 also offers scholarships to students who write exemplary articles or develop clever posters about the dangers of underage gambling. Over $70,000 in scholarships have been awarded.

The implementation of a prevention treatment for gambling should include information from the most basic and applicable research to a more

multidimensional approach. By covering all aspects of the researched methods in other areas, one must ensure that the prevention process is developmentally acceptable and appropriate for gambling issues.

Risk and Protective Factors

One area that has received a great deal of attention in the past few years is the examination of individual risk and protective factors. Alcohol and drug abuse interventions often focus on risk and protective factors and how each of these has led to the path of use or abuse. The field of resilience has helped to increase these prevention efforts by expanding the range of their efforts to include the promotion of protective factors and the reduction of risk factors. The expectation of this research is that they will discover ways to increase the resilience among the participants. Research has suggested that protective factors act as a defense against the exposure of risk factors so that the modified course is more positive than it would have been without these added protections (Masten, Best & Garmezy, 1990). Risk and protective factors interact with one another so that the protective factor helps to lessen the intensity of the stressor. Jacobs (1989b) believes that all addictive behaviors satisfy a desire to break away from these stressors. Therefore it becomes necessary to study the connection, among the various addictions, by examining their risk and protective factors as well as the coping techniques that are currently employed.

According to current research, adolescent problem gambling has a quite a few distinctive risk factors. Some of these include a father who experiences pathological gambling, ease of access to gambling facilities, anxiety and depression, inadequate coping skills, poor impulse control and depleted conventionality, continuous risky behaviors and an early inception of gambling experiences (Dickson, Derevensky & Gupta 2002).

Specific protective factors related to the field of adolescent problem gambling have yet to be identified. However it is reasonable to include protective factors such as a "connectedness to one's family and school" as they have been validated in other youth prevention efforts.

There have been numerous studies that focus on the risk and protective factors associated with substance abuse (see Coie et al., 1993; Hawkins, Catalano & Miller, 1992; Rossi, 1994). Oftentimes these studies highlight adolescents who sustain a specific risk factor, for example, a substance-abusing parent. The likelihood that the adolescents will develop a problem with other at-risk behaviors (e.g., gambling) is higher than that for other adolescents who do not possess this risk (Hawkins et al., 1992). As the risk factors increase in number, so does the probability of becoming involved

with other risky behaviors (Gupta & Derevensky, 1998b). It is important to note here that specific risk factors are characteristically unrelated to specific disorders. Risk factors are consistently changing and their effect and importance fluctuates over time. The exposure to multiple risk factors however, appear to have a collective effect on an individual (Coie, Watt, West, Hawkins, Asarnow, Markman, Ramey, Shure & Long, 1993). A few studies have addressed the identifying risk factors for adolescents who have gambling problems (see Derevensky & Gupta, 2000; Griffiths & Wood, 2000). None have examined the protective factors for these individuals. It is noteworthy to examine the connection of both of these issues in a prevention program designed to treat adolescents with gambling problems.

While it makes theoretical sense that gambling interventions take advantage of the lessons learned in the drug abuse field, more research is needed in this area. However, one should be aware of Dr. Robert Cluster's remark that while gambling and drug abuse may be 90% similar, the 10% differences must be effectively concentrated upon when developing helpful prevention programs (Vander-Bilt & Franklin, 2003).

Harm Reduction as a Prevention Tool

In the recent past, harm reduction has been used as a tool with prevention efforts towards drug use in school-based educational programs. On a wider scale, harm reduction has been utilized, for example, to exchange needles or to check the potency and reliability of the drug that an individual was planning to ingest (e.g. ecstasy). Any behavior change that reduces harm is a positive result. By implementing this more accommodating method, it allows help for the adolescent who initially is resistant to change. Harm reduction goals can include changing the means of administration of a substance, reducing opportunities to drive under the influence, providing safe alternative to substances, and a reduction in the frequency and/or intensity of the usage. The harm reduction approach uses the information reported by the adolescent as a tool to effectively target his or her own specific objectives. The theory of a harm reduction approach is to prevent the misuse or abuse of using substances and/or reduce the participation in risky behaviors such as problem gambling. By using individualized goals and personalized feedback, the treatment can be more directly focused for each adolescent's specific needs.

The goals of harm reduction can be reached by using a variety of techniques. One example may include questioning the adolescent about their substance use and helping them to recognize the consequences of this behavior. The harm reduction method helps the individual recognize the

symptoms of abuse themselves and provides guidance towards change. This newly gained knowledge is then used as a platform to expand the awareness when it comes to peers and family members. In a sense, we are teaching these young people to become more critical with their choice to participate in risky behaviors. An examination into the personal risk-taking behaviors and objectives helps to dismiss stereotypes and provide information on how to control and limit the harm of their involvement. The idea is to be non-judgmental, non-labeling, and non-confrontational. The therapist's job is to act as a guide to help the adolescent through the stages of change. The enhancement and support of self-management and coping skills are important aspects of this treatment method.

The difficulty with the harm reduction approach and gambling prevention is that gambling is often viewed as a harmless mode of entertainment and it has very few, if any, visible negative consequences. In addition, gambling does not have the same costs and health risks as other risky behaviors (e.g. smoking). It is due to these issues that preventative pathological gambling requires it's own specific prevention policies that are validated with active research models.

The Stages of Change Model is beneficial in illustrating the level at which young people stand in terms of their degree of involvement and motivation to change. Prochaska and DiClemente (1982) have provided a "stages of change" continuum for the purpose of treating substance abuse. These stages help to explain how changes in one's behavior transpire when applied to the area of substance abuse (Center for Substance Abuse Treatment, 1999). Based on this research, the continuum has been developed into a five-stage model. The U.S. Department of Health and Human Services has provided a clear-cut description of this model (Center for Substance Abuse Treatment, 1999). The stages begin at pre-contemplation where the individual has no intention to change regardless of the possible consequences. The next stage is called contemplation. In this stage the individual has experienced some consequences but is still not committed to change. Preparation comes after contemplation where the person starts to make the preparations for change. Action is next. The person is now putting forth effort to continue the plan to change and is still struggling. The final stage is maintenance. This stage is where the individual begins to learn new behaviors and the long-term objectives are in the process of becoming a permanent part of the individual's behavior.

Much like substance use, gambling involvement can be conceptualized within stage of change theory and incorporated into intervention programs for youthful problem gamblers (Di Clemente, Delahanty & Schlundt, in this volume). Analogous to the field of substance abuse, the harm reduction method may be highly relevant to young people who are in the early

stages of the participation in gambling (e.g., Level 2). While the harm reduction method is not without controversy (Des Jarlais & Friedman, 1993; Kalant, 1999; Mugford, 1999; Newcombe, 1992), this approach may be a viable prevention tool (see Dickson, Derevensky & Gupta, 2004 for a comprehensive discussion).

Concluding Thoughts

Gambling and drug use, not unlike other acting-out or risk-taking behaviors, can equally be viewed as characteristics of the experimentation phase of adolescence. However, some youth (few in terms of absolute percentages) engage heavily in these activities. Additionally, some of these adolescents can evolve to the extent of being identified by formal diagnostic criteria or related operational criteria of pathological gambling and drug use disorders. These youth may be on the path towards adulthood plagued by over-indulgence and disorder.

The sizeable overlap of the psychosocial risk factors for adolescent problem gambling and drug abuse shows that these two behaviors share common characteristics. Additional research is necessary to shed light on how these common factors can lead to the co-existence of drug use and gambling in some adolescents and not in others, to what degree these specific risk factors can be recognized, and if prevention strategies directed at these common factors have favorable results with both behavioral domains.

Adolescent gambling as a field has a considerable lack of documentation in terms of the association with negative conduct and social harm. This is a major barrier towards financial support and credit of prevention methods in this area. Even so, it would be wise for communities to focus on the trends in adolescent gambling and for health clinics serving adolescents to increase the detection of those who are demonstrating problematic gambling involvement. At bare minimum, the political practices that have approved gambling should consider assigning similar attention towards policies and programs that promote rational prevention and intervention strategies.

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