

Chapter 16

Gambling Behaviors and Adolescent Substance Use Disorders

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INTRODUCTION

Never before have we witnessed on an international scale, the widespread legalization of a multitude of different forms of gambling. Gambling opportunities have become so widespread that it is difficult to find jurisdictions in which some form of gambling is not government controlled, regulated, organized, or owned. In those jurisdictions where legalized gambling is banned, underground gambling, Internet gambling, and mobile gambling remain readily accessible. Gambling throughout the world has become a socially acceptable form of entertainment, in spite of the recognized social costs associated with excessive gambling.

There remains little doubt that excessive gambling can result in numerous negative personal, financial, social, interpersonal, and legal problems. In 1980, the American Psychiatric Association in its *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III) officially recognized pathological gambling as a disorder of impulse control. Subsequent revisions of the DSM (DSM-III-R; DSM-IV) have maintained its classification as an impulse control disorder. Yet, many clinicians continue to view pathological and compulsive gambling as an addiction. In fact, if one compares the diagnostic criteria for substance abuse disorders and pathological gambling, the parallels in diagnostic criteria remain quite similar (Derevensky, 2007).

ADOLESCENT GAMBLING BEHAVIOR

Traditionally viewed as an activity for adults, gambling has become a popular form of recreation among adolescents. While in most cases, explicit legislative statutes prohibit children and adolescents from engaging in government-sponsored and/or regulated forms of gambling (e.g., lottery, casinos, horse racing, machine gambling), there remains little doubt that many youth engage in both regulated and nonregulated (e.g., card games and sports wagering among peers, etc.) forms of gambling.

Studies completed in a wide variety of jurisdictions throughout North America, Europe, Australia, New Zealand, Iceland, and South Africa all point to the popularity of gambling and wagering money in order to win money by adolescents. Survey findings and reviews of prevalence studies examining youth gambling behavior have consistently revealed that adolescents (12 to 17 years of age) have managed to participate, to some degree, in practically all forms of social, government-sanctioned, and nonregulated gambling available in their homes and communities. Such games include cards, dice, and board games with family and friends; betting with peers on games of personal skill (e.g., pool, bowling, basketball, and other sports); arcade or video games for money; purchasing lottery tickets; sports betting through the lottery where permissible or through Internet gambling sites; wagering at horse and dog tracks; gambling in bingo halls and card rooms; playing slot machines and table games in casinos; gambling on video lottery/poker terminals; wagering on the Internet; and placing bets with a bookmaker (Derevensky & Gupta, 2004a; Derevensky, Gupta, Messerlian, & Gillespie, 2004; Jacobs, 2004). Adolescents' wagering behaviors are often dependent upon a number of factors including the local availability of games, the geographical proximity of gaming locations; the child's gender and type of game (gambling is more popular among males than females; males prefer sports wagering whereas girls report engaging in lottery purchases more often); the individual's age (older adolescents are more likely to engage in video lottery terminal/video poker and casino playing as it remains easier to access these venues); and cultural/ethnic background (see Abbott, Volberg, Bellringer, & Reith, 2004; Chevalier, Deguire, Gupta, & Derevensky, 2003; Ellenbogen, Gupta, & Derevensky, 2007; Gupta & Derevensky, 1998a, 2004; National Research Council (NRC), 1999; Stinchfield, 2000; Volberg, 1998).

Gambling behavior for adolescents, similar to adults, can be best viewed along a continuum ranging from nongambling to social/occasional/recreational gambling to problem and pathological gambling (there is no differentiation in gambling abuse versus gambling dependency similar to that found

for alcohol and substance use, although the term "at-risk" gambler often denotes individuals exhibiting some gambling-related problems but not reaching the diagnostic criteria for pathological gambling on a gambling severity screen). The most popular games that emerge repeatedly among adolescents include cards, dice and board games with family and friends, games of personal skill with peers, sports betting (primarily with peers but also through lottery outlets and/or with a bookmaker), bingo, and lottery purchases (primarily scratch cards) (Derevensky & Gupta, 2004a; Jacobs, 2004).

ADOLESCENT PROBLEM GAMBLING

As noted previously, adolescent gambling is on a continuum with those at the extreme end experiencing numerous personal, academic, mental health, social, and financial problems. While there is a lack of consensus as to the actual prevalence rate among adolescents experiencing severe gambling problems (e.g., these youth are often referred to in the literature as problem, compulsive, probable pathological, disordered, pathological, or Level III gamblers), the results of most prevalence studies, large-scale meta-analyses, and reviews conducted internationally have been remarkably consistent and have concluded that adolescents-as-a-group constitute a high-risk population for gambling problems, with males more likely to gamble, experience gambling-related problems, and reach criteria for pathological gambling (Abbott et al., 2004; Jacobs, 2000, 2004; National Gambling Board of South Africa, 2005; Shaffer & Hall, 1996; NRC, 1999; Volberg, 1998). Recent research has revealed that between 60 and 80 percent of adolescents report having engaged in some form of gambling during the past year (Abbott et al., 2004; Adlaf & Ialomiteanu, 2000; Derevensky & Gupta, 2004a; Jacobs, 2004; NRC, 1999), with most best described as social, recreational, and occasional gamblers. Nevertheless, there remains ample evidence that between 3 and 8 percent of adolescents have a very serious gambling problem with another 10 to 15 percent at-risk for the development of a gambling problem (Abbott et al., 2004; Derevensky & Gupta, 2000; Jacobs, 2004; NRC, 1999; Shaffer & Hall, 1996). Acknowledging difficulties in comparisons of the data sets, the NRC (1999, p. 89) report concluded, "The proportion of pathological gamblers among adolescents in the United States could be more than three times that of adults (5.0 versus 1.5 percent)."

Recently, the issue concerning the validity of the prevalence rates of adolescent pathological gambling has been questioned (Ladouceur, 2001; Ladouceur et al., 2000). Ladouceur and his colleagues contend that the current reported rates of serious gambling problems among adolescents may be

overestimated. They have highlighted the importance of discrepancies observed in a number of screening instruments and the number of youth being clinically identified as pathological gamblers as an important issue that needs to be addressed. In a detailed analysis, Derevensky, Gupta, and Winters (2003) addressed the predominant issues underlying their arguments and concluded that given the current definitions of youth gambling problems, there appears to be ample evidence that prevalence rates are likely not over-inflated and that a small but appreciable and identifiable number of adolescents are experiencing significant gambling-related problems.

Derevensky and colleagues (2003) acknowledged that the wide variability of reported prevalence rates of youth problem-gambling remains troubling from a scientific standpoint, yet they concluded that differences in prevalence rates are likely affected by a number of situational and measurement variables including varying sampling procedures (e.g., telephone surveys versus school-based screens, community versus convenience samples), use of different instruments and measures, varying cut-off scores associated with instruments, the use of modified instruments, the lack of consistency in terms of availability and accessibility of gambling venues, gender distributions, the age of the target population, and cultural differences (for a more thorough explanation, see the reviews by Derevensky & Gupta, 2000; Derevensky, Gupta, & Winters, 2003; Stinchfield, 2002; Volberg, 2001; and Winters, 2001).

While nomenclature, instrumentation, and methodological issues exist in the measurement of adolescent pathological gambling and need to be directly addressed (see Abbott et al., 2004; Derevensky, 2007; Volberg, 2001, for reviews concerning instrumentation and screening measures), there remains an overwhelming consensus that gambling and wagering among youth is a relatively common and popular activity (one can observe the current surge in Texas Hold'em poker playing by adolescents) and that a small, identifiable, population experiences serious gambling-related problems (Derevensky & Gupta, 2000, 2004a, 2004b; Gupta & Derevensky, 2004; Jacobs, 2004; NRC, 1999; Stinchfield, 2000; Stinchfield & Winters, 1998; Shaffer & Hall, 1996).

Adolescents with gambling problems, similar to their adult counterpart, experience a wide range of social, economic, personal, and legal problems. They have also been shown to experience increased delinquent and criminal behavior, disruption of familial relationships, poor academic and work performance, and disrupted familial and peer relationships (Derevensky & Gupta, 2004b; Haroon, Derevensky, & Gupta, 2002; Magoon, Gupta, & Derevensky, 2005). As well, youth pathological gamblers have been re-

ported to have high rates of suicide ideation and suicide attempts (Nower, Gupta, Blaszczyński, & Derevensky, 2004) and a wide variety of mental health and behavioral problems (Derevensky & Gupta, 2004a; Hardoon et al., 2002; Hardoon, Gupta, & Derevensky, 2004; Lynch, Maciejewski, & Potenza, 2004).

Derevensky and Gupta (2000) using the DSM-IV-J gambling screen, found that among adolescents identified as pathological gamblers, 91 percent reported a preoccupation with gambling; 85 percent indicated chasing their losses; 70 percent lied to family members, peers, and friends about their gambling behavior; 61 percent used their lunch money and/or allowance for gambling; 61 percent became tense and restless when trying to reduce their gambling; 57 percent reported spending increasing amounts of money gambling; 52 percent indicated gambling as a way of escaping problems; 27 percent reported missing school (more than five times) to gamble in the past year; 24 percent stole money from a family member to gamble without their knowledge; 24 percent sought help for serious financial concerns resulting from their gambling; 21 percent developed familial problems resulting from their gambling behavior; and 12 percent reported having stolen money from outside the family to gamble.

It has been suggested that some types of gambling may be more likely to lead to problem gambling. For example, Abbott and colleagues (2004) and Griffiths (1999) have suggested that games that are continuous in nature and involving elements of either skill, or perceived skill, have been more closely associated with problematic gambling. While individuals who are prone to engaging in a number of different types of gambling activities have received considerable investigation in the past (e.g., horseracing, slot machines, or other forms of electronic gambling machines, casino gambling), other forms of gambling have had relatively little research to identify their potentially addictive nature (e.g., scratch cards, bingo). Still further, while there is some evidence for adults that individuals with a preference and frequent participation in certain forms of gambling (e.g., slots, electronic gambling machines, casino games, Internet gambling) may have a higher probability of being a problem gambler (Abbott & Volberg, 2000; Abbott et al., 2004; Petry, 2003; Productivity Commission, 1999; Schrans, Schellinck & Walsh, 2000), no evidence is available for adolescent pathological gamblers. Given the more restricted opportunities for gambling (accessibility, geographical distances, and financial requirements), little is currently known about the impact of the attributes of specific games upon adolescent pathological gambling. It has been generally assumed that adolescent play-

ing behavior is much less stable, transitory, and is often more dependent on their age (related to accessibility) and availability of the game. One further point is necessary when examining adolescent pathological gambling. There seems to be a growing movement toward acceptance that pathological gamblers are not a homogeneous group. Not only do they differ in terms of gender and gambling preferences but also that there may be specific subtypes of pathological gamblers, with each subtype having a different etiology and different accompanying pathologies.

MEASURING PATHOLOGICAL GAMBLING AMONG ADOLESCENTS

Despite advances in our understanding of the etiology and correlates associated with problem gambling in the past decade, new screening instruments assessing adolescent problem gambling are still lacking. Most adolescent gambling screens have been adapted from adult instruments, having incorporated adult criteria while modifying the questions to make them more age/developmentally appropriate. Such instruments include the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA) (Winters, Stinchfield, & Fulkerson, 1993), DSM-IV-J (Fisher, 1992) and its revision the DSM-IV-MR-J (Fisher, 2000), and the Massachusetts Adolescent Gambling Screen (MAGS) (Shaffer, LaBrie, Scanlan, & Cummings, 1994). Similar to adult instruments (the DSM-IV being the gold standard), there exist common constructs underlying the instruments including both psychological factors and the negative financial and behavioral costs associated with excessive gambling (see Derevensky & Gupta, 2007, for a more complete profile). Stealing money to support gambling, occupational/school-related problems, disrupted relationships, chasing losses, lying or deception about one's gambling problems, disrupted familial relationships, the need to increase the frequency and amount wagered, preoccupation with gambling, and concern/criticism from others are common constructs examined among these instruments. Differences in prevalence rates as well as divergent findings among different cultural groups may be due to variability in instrumentation. As such, Derevensky and Gupta (2004b, 2007) have argued for the need for a greater standardization and the development of new instruments that reflect our current knowledge.

**CORRELATES AND RISK FACTORS
ASSOCIATED WITH PROBLEM GAMBLING:
OUR CURRENT KNOWLEDGE**

Similar to other mental health disorders and social problems, problem gambling has multiple risk factors and no single constellation of risk factors can alone predict with a great deal of certainty that a particular problem will exist. Over the past ten years, we have been trying to identify those risk factors associated with excessive gambling problems and to identify possible protective factors as a way of minimizing the problems. In several reviews (Dickson, Derevensky, & Gupta, 2002, 2004), we have noted that it is essential to remember that some risk factors associated with problem gambling are common to multiple disorders, including other addictive behaviors (see Romer, 2003), while others may be unique to gambling problems (Dickson, Derevensky, & Gupta, 2002, 2004). While there are multiple constellations of risk factors that, in conjunction with a lack of specific protective factors, likely place certain individuals at high risk for a specific problem, there is a growing recognition that the etiology underlying gambling problems is not universal, that the constellation of risk factors may be different for individuals, and that a number of pathways may exist that lead to pathological gambling (the reader is referred to Nower and Blaszczynski's [2004] pathways models for etiological explanations).

There is substantial empirical support and a growing body of research focusing upon behavioral patterns, correlates, and risk factors associated with adolescent gambling and problem gambling. These findings include the following:

- Gambling is more popular among males than among females, and more adolescent males than females exhibit pathological gambling behaviors (Abbott et al., 2004; Derevensky & Gupta, 2004a; Gupta & Derevensky, 1998a; Jacobs, 2004; NRC, 1999; Stinchfield, 2000; Volberg, 1998). Pathological gambling among male adolescents has been found to be anywhere from two to four times as prevalent as among females (Derevensky & Gupta, 2004a; Moore & Ohtsuka, 1997; Stinchfield, 2000; Stinchfield & Winters, 1998; Volberg, 1998). Males have also been found to make higher gross wagers (Derevensky, Gupta, Dickson, & Deguire, 2001), gamble earlier, gamble on more games, gamble more frequently, spend more time and money, and experience more gambling-related problems than do females (Jacobs, 2000, 2004). It also appears that parents are more likely to encourage their son's gambling, as more males than females report gambling

with their parents (Ladouceur, Boisvert, Pepin, Loranger, & Sylvain, 1994).

- Among adolescents, there often is a rapid movement from social gambler to problem gambler (Derevensky & Gupta, 1996, 1999; Gupta & Derevensky, 1998a).
- Adolescent problem gamblers report initiating gambling at an early age (approximately 10 to 11 years of age) as compared with peers who report gambling but have few gambling-related problems (Gupta & Derevensky, 1997; 1998b; Vitaro, Wanner, Ladouceur, Brendgen, & Tremblay, 2004; Wynne, Smith, & Jacobs, 1996).
- Many youth problem gamblers report having had very early gambling experiences and an early big win (Griffiths, 1995; Gupta & Derevensky, 1997; Wynne et al., 1996).
- Research has shown that adolescent pathological gamblers' initial gambling experiences often originate with family members in their own homes (Gupta & Derevensky, 1997), with older siblings being an early predominant influence. As children get older, their patterns of gambling change such that youth gamble less with family members and more with friends. Adolescents with gambling problems in general population surveys are also more likely to report having parents who they perceive gamble excessively, are involved in other addictive behaviors, and/or have been involved in illegal activities (Abbott & Volberg, 2000; Fisher, 1993; Griffiths, 1995; Gupta & Derevensky, 1998a; Hardoon et al., 2004; Raylu & Oei, 2002; Wood & Griffiths, 1998).
- Similar to adults (Azmier, 2000), children and adolescents often have a positive attitude toward gambling. While they can fail to completely understand the risks or odds associated with gambling, many are cognizant of the problems associated with excessive gambling but view them as long-term consequences and not of immediate concern (Gillespie, Gupta, Derevensky, Pratt, & Vallerand, 2005).
- While there is a paucity of research examining cultural differences among adolescents, Stinchfield (2000) in a large-scale study of Minnesota adolescents reported that 30 percent of American Indian adolescents gambled weekly, followed by Mexican-American and African-American youth (22 percent), compared to 4 to 5 percent of Asian and Caucasian youth. Wallisch (1993), in sampling adolescents in Texas, reported that Hispanics gambled more frequently than did Caucasians, and most recently, Ellenbogen and colleagues (2007) reported significant cultural differences among Francophones, Anglophones, and Allophones in Quebec, Canada.

- Personality traits reveal that adolescent pathological gamblers are more excitable, extroverted, anxious, tend to have difficulty conforming to societal norms, and experience difficulties with self-discipline (Hardoon et al., 2002). Adolescents with severe gambling problems also exhibit higher scores on measures of state and trait anxiety (Gupta & Derevensky, 1998b; Ste-Marie, Gupta, & Derevensky 2002), are more impulsive (Nower, Derevensky, & Gupta, 2004; Vitaro, Ferland, Jacques, & Ladouceur, 1998), are greater risk-takers (Abbott et al., 2004; Derevensky & Gupta, 2004a; Nower, Derevensky, & Gupta, 2004; Powell, Hardoon, Derevensky, & Gupta, 1999; Zuckerman, 1994), and are more self-blaming and guilt prone (Gupta & Derevensky, 2000). Although there is some literature suggesting that obsessive compulsive disorders are related to adult pathological gambling (e.g., Black & Moyer, 1998; Black, Moyer, & Schlosser, 2003) and psychoticism, neuroticism, borderline disorders, histrionic, and narcissistic personality disorders have been found to be elevated among adult pathological gamblers (Blaszczynski & Steel, 1988; Raylu & Oei, 2002), there is no evidence supporting these findings among adolescent problem gamblers.
- Research data and clinical testimony suggest that adolescent pathological gamblers have lower self-esteem compared to other adolescents (Gupta & Derevensky, 1998b, 2004).
- Adolescent pathological gamblers have been found to have increased physiological resting states, to have a greater need for sensation seeking, and to be more likely aroused and excited when gambling (Gupta & Derevensky, 1998b; Nower, Derevensky & Gupta, 2004).
- Genetic studies, with adults, seem to suggest that there may be a number of genes associated with pathological gambling but that the variance accounted for by genetic components varies widely depending upon the statistical models employed (Shah, 2005).
- Individuals with gambling problems are more likely to experience a multiplicity of school-related problems including increased truancy and poor academic performance (Hardoon et al., 2004; Wallisch, 1993), are more likely to have repeated a grade in school (Hardoon et al., 2004), and report a greater frequency of attention-deficit/hyperactive disorder and conduct-related problems (Derevensky, Pratt, Hardoon, & Gupta, 2007; Hardoon et al., 2004).

Psychiatric and Mental Health Correlates

Kaminer, Burleson, and Jadamec (2002) using 97 substance-abusing adolescents attending an outpatient treatment center failed to find a significant relationship between substance abuse and pathological gambling. Following these findings, Kaminer and Haberek (2004), using the Gambling Treatment Outcome Monitoring System (GAMTOM), similarly failed to find a significant relationship between substance-abusing teens and pathological gambling. Nevertheless, there is a growing body of evidence that suggests strong associations with excessive alcohol and other drug use among adolescent pathological gamblers (Derevensky & Gupta, 2004b; Gupta & Derevensky, 1998a, 1998b; Hardoon et al., 2004; Lesieur & Klein, 1987; Lynch, Maciejewski, & Potenza, 2004; Winters & Anderson, 2000) and among youth seeking treatment for marijuana abuse. (It is important to note that we do not know the directions of causality.) It may well be that individuals seeking treatment for some forms of substance abuse disorders are more prone to use their money for purchasing substances than for gambling. Similarly, Gupta and Derevensky (2004) report that adolescent pathological gamblers prefer to use their money on gambling activities, thus likely minimizing the potential for substance abuse. While it is not within the scope of this chapter to discuss the concept of an "addictive personality," there appears to be some commonality between the use of substances and/or gambling (see Jacobs, 2004, for a discussion). Ernst et al. (2003) suggest that these findings may be interpreted as reflecting aspects of adolescent risk-taking in general, poor decision-making processes, and experiential learning.

Gupta and Derevensky (2004), through their clinical work, have long suggested that adolescents with gambling problems often use gambling as a way of escaping past and current problems including daily hassles and major traumatic life events (Bergevin, Derevensky, Gupta, & Kaufman, 2005). Given their poor or maladaptive general coping skills (Bergevin et al., 2005; Gupta, Derevensky, & Marget, 2004; Nower et al., 2004), it is not surprising that they turn to high alcohol consumption, drug use, and excessive gambling. Lynch and colleagues (2004) have suggested that these findings need to be considered from a neurodevelopmental framework, but also with excessive gambling placed within a public health framework (see Messerlian & Derevensky, 2005, and Messerlian, Derevensky, & Gupta, 2005, for more information).

There remains an abundant number of studies that have reported that adolescents with gambling problems exhibit greater depressive symptomatology compared to both nongambling adolescents and those described as social/occasional gamblers, with a large percentage reaching criteria for

clinical depression (Gupta & Derevensky, 2004; Gupta et al., 2004). Equally disturbing is the finding that children of adult problem gamblers exhibit a number of mental health, substance abuse, and psychosomatic problems and remain at heightened risk for long-term mental health problems, including gambling problems (Gupta & Derevensky, 1998a; Jacobs et al., 1989; Lesieur & Rothschild, 1989). While there is currently minimal longitudinal data, the adult data does not forebode well for the long-range mental health prospects of pathological gamblers. Nevertheless, it is important to note that similar to the use of other substances, individuals likely will stop gambling over time (with and without therapy) but the relapse rate remains high. As well, Gupta and Derevensky (2004) argue that the severity of the personal, social, familial, and legal consequences associated with adolescent pathological gambling are likely to have altered the life and career trajectories of these adolescents.

PROTECTIVE FACTORS

Most recently, while prospective studies are extremely limited in the field, researchers have begun to focus their attention on the protective and buffering factors, which are thought to reduce the incidence of adolescent pathological gambling. Using Jessor's (1998) general theory of adolescent risk behaviors, which conceptualizes the interactive nature of risk and protective factors as a way of predicting the likelihood of the acquisition or maintenance of particular risky behaviors, Dickson, Derevensky, and Gupta (2002) expanded their model to include excessive adolescent gambling. Of importance is the study of protective factors and their interaction with risk factors in predicting high-risk behaviors. While there are some specific unique risk factors associated with problem gambling, many of the risk factors found in adolescent pathological gamblers cut across a number of risky behaviors (e.g., drug and alcohol use and abuse, cigarette smoking, unprotected sex, including gambling). In a large study with adolescent problem gamblers Dickson, Derevensky, and Gupta (in press) attempted to test whether specific protective factors common to other adolescent risky behaviors was applicable to youth with gambling problems. In their study of 2,179 youth, using self-report measures, they reported that poor family and school connectedness was symptomatic of adolescent problem gambling, with family cohesion playing a significant role as a protective factor.

In another study, Lussier, Derevensky, and Gupta (2004) examined resilience in the presence of identified risk factors as a possible protective factor for youth gambling problems. Their results revealed that adolescents perceived to be vulnerable (high-risk/low protective factors) had a mean gambling severity score that was nine times larger than the resilient group (high-risk/high protective factors), eight times larger than the fortunate group (low-risk/low protective factor), and 13 times larger than the ideal group (low-risk/high protective factors). They concluded that those youth identified as vulnerable were at greatest risk for experiencing gambling problems. Interestingly, their results revealed that all (100 percent) of youth classified as pathological gamblers and 86.7 percent classified as at-risk (exhibiting a number of clinical problems but not reaching clinical criteria for pathological gambling) for problem-gambling scored on the resilient measure as being vulnerable, while only 4.3 percent of youth identified as resilient were identified as at-risk gamblers and none were pathological gamblers despite their reporting high levels of risk exposure. These data were strongly supported by Gupta and colleagues (2004) and Nower and colleagues (2004) revealing poor coping and adaptive behaviors among adolescent pathological gamblers.

Although a number of individual, situational, environmental risk, and protective factors have been found to be related to youth problem-gambling behaviors, it is important to note that the causal links have not yet emerged. Abbott and colleagues (2004) correctly suggested that the availability, accessibility, and structural features (e.g., schedules of reinforcement, speed of the game, colors, and sounds associated with arousal levels) of specific games most likely combine with an individual's psychosocial characteristics in various ways to create rather complex patterns of risk. Our current knowledge remains limited as to the combinations of risk and protective factors, which interact to increase the likelihood of specific individuals engaging in gambling excessively. Similarly, our understanding of those protective factors that may minimize and reduce the risk of excessive gambling remains limited. Longitudinal and prospective studies are only the beginning; they will be needed to help discern where the lines of risk and resilience intersect within individuals and the wider population, and their interactions with different types of gambling.

Given the pervasiveness of the problems associated with youth gambling problems and the concomitant mental health, social, economic, educational, and legal problems, there is a need to clearly identify the risk factors associated with problem gambling. We require a better understanding of the effects of accessibility and availability of gaming venues, the structural characteristics of games, and the ever-changing forms of gambling (e.g., Internet and

mobile gambling) on future gambling behaviors. Specific research also needs to focus on the impact of gambling advertisements and their relationship to the onset and maintenance of adolescent gambling and problem gambling.

TREATMENT

The current treatment paradigms for adolescents and young adults have in general been based upon a wide variety of theoretical approaches that parallel those used for adults including psychoanalytic or psychodynamic (Miller, 1986; Rosenthal, 1987; Rugle & Rosenthal, 1994), behavioral (Blaszczynski & McConaghy, 1993; Petry & Roll, 2001; Walker, 1993), cognitive and cognitive-behavioral (Bujold, Ladouceur, Sylvain, & Boisvert, 1994; Ladouceur & Walker, 1998; Toneatto & Sobell, 1990; Walker, 1993), pharmacological (Grant, Chambers, & Potenza, 2004; Grant, Kim & Potenza, 2003; Haller & Hinterhuber, 1994; Hollander, Sood, Pallanti, Baldini-Rossi, & Baker, 2005; Hollander & Wong, 1995), physiological (Carlton & Goldstein, 1987), biological/genetic (Comings, 1998; DeCaria, Hollander, & Wong, 1997; Hollander, Frenkel, DeCaria, Truong, & Stein, 1992; Saiz, 1992), addiction-based models (Lesieur & Blume, 1991; McCormick & Taber, 1988), or self-help models (Brown, 1986, 1987; Lesieur, 1990). (For a more comprehensive overview of these models the reader is referred to the reviews by Griffiths & Macdonald, 1999; Ladouceur & Shaffer, 2005; Lesieur, 1998; National Research Council, 1999; Petry, 2005; Rugle, Derevensky, Gupta, Winters, & Stinchfield, 2001; Potenza, 2005; and Toneatto & Ladouceur, 2003).

Current treatment paradigms have incorporated a narrow focus depending upon the therapist's theoretical orientation of the etiology of a gambling problem and their background work in the field of addictions and whether or not one believes in "controlled gambling" versus abstinence. Abbott and colleagues (2004), in reviewing the scarce treatment literature, concluded that the ability to design effective treatment programs for problem gamblers has been hampered by a lack of theoretical understanding of the etiology underlying problem gambling. They further argue that while the biomedical model has dominated the treatment community within the United States, the cognitive-behavioral model or social learning theory model has dominated other countries. Currently, there exist fewer than 12 randomized psychotherapeutic comparative studies within the literature and only a handful of randomized double-blind short-term psychopharmacological trials (Blaszczynski, 2005; Hollander et al., 2005). This shortage of empirically

based studies has resulted in a lack of consensus on what constitutes best practices or empirically validated treatment (EVT) approaches for treating both adolescents and adults with gambling problems (Nathan, 2001, 2005; Toneatto & Ladouceur, 2003). Whether or not all individuals with gambling problems should be treated as a homogeneous group has also been seriously questioned (Blaszczynski & Nower, 2002, Gupta & Derevensky, 2004; Nower & Blaszczynski, 2004).

There is considerable empirical support suggesting that gambling involves a complex and dynamic interaction between ecological, psychophysiological, developmental, cognitive, and behavioral components and that problem gamblers are not a homogeneous group. Given these assumptions, Gupta and Derevensky (2000, 2004) contend that in the absence of empirically validated treatment programs, a dynamic interactive approach needs to take into account the multiplicity of interacting factors into a treatment paradigm for youth experiencing significant gambling problems. Empirical support for Jacobs' general theory of addiction for adolescent problem gamblers (Gupta & Derevensky, 1998b) further suggests that adolescent problem and pathological gamblers exhibit evidence of abnormal physiological resting states, report significantly greater emotional distress and anxiety, have increased levels of dissociation when gambling, demonstrate erroneous cognitions when gambling (e.g., they believe that they can predict the outcome of the game even when the outcome is based purely on randomness, they perceive to have exaggerated levels of skill, they have little understanding of randomness and independence of events), display depressive symptomatology, and are more likely to have higher rates of comorbidity with other addictive behaviors. As such, Gupta and Derevensky contend that treating gambling problems in isolation of other pressing social, physiological, developmental, cognitive, and emotional difficulties may lead to short-term success but ultimately will lead to relapse. It is also interesting to note that only a small percentage of individuals scoring in the pathological gambling range on multiple screening instruments perceive themselves as having a gambling problem (Gupta & Derevensky, 2004; Hardoon, Derevensky, & Gupta, 2003).

Current treatment studies have generally been case studies with small sample sizes and have been criticized for not being subjected to rigorous scientific standards (Abbott et al., 2004; Blaszczynski, 2005; Nathan, 2005; National Gambling Impact Study Commission, 1999; NRC, 1999; Potenza, 2005; Toneatto, 2005). Ladouceur and his colleagues have long argued for a cognitive-behavioral approach to treating both adults and youth with gambling problems (e.g., Bujold et al., 1994; Ladouceur, Boisvert, & Dumont, 1994; Ladouceur, Sylvain, Letarte, Giroux & Jacques, 1998; Toneatto &

Ladouceur, 2003). Underlying the cognitive-behavioral approach is the assumption that pathological gamblers continue to gamble in spite of repeated losses as they maintain an unrealistic belief that losses will be recovered. This perspective assumes that it is the individual's erroneous cognitions and beliefs (i.e., a lack of understanding of the notion of independence of events, erroneous perceptions concerning the level of skill required to be successful in predicting the outcome of chance events, and an illusion of personal control and skill) that ultimately fosters and promotes their persistent gambling behavior (Ladouceur & Walker, 1998). While the empirical literature examining treatment paradigms for adolescents is scant, Ladouceur and colleagues (1994), using four adolescent male pathological gamblers, reported clinically significant improvements in the individuals' beliefs about the perception of control when gambling and a significant reduction in the number and severity of gambling problems post intervention. Three of the adolescents reportedly sustained initial treatment gains and were abstinent at six months. As a result, Ladouceur and his colleagues concluded that the cognitive-behavioral approach shows promise as a treatment intervention for adolescents (as well as with adults) exhibiting gambling problems.

Gupta and Derevensky (2000, 2004) have presented a treatment model predicated upon their research and clinical findings with youth problem gamblers. Their results suggest that adolescent pathological gamblers generally exhibit depressive symptomatology, somatic disorders, anxiety, attention deficits, academic, personal and familial problems, high risk-taking, poor coping skills ultimately using gambling as a form of stress-reduction and way of escaping daily and long-term problems. Though Gupta and Derevensky acknowledge that adolescent pathological gamblers experience numerous erroneous cognitive beliefs and distortions, they contend that clinicians must simultaneously address the underlying psychological problems as well as the presenting gambling problem.

Although not empirically tested, Gupta and Derevensky (2004) see great promise in Nower and Blaszczynski's (2004) pathways approach to treating youth gamblers. On the basis of Blaszczynski's (1998) and Blaszczynski and Nower's (2002) pathways model, they contend that a multifaceted constellation of risk and protective factors differentially influence adolescents who otherwise display similar phenomenological features and patterns, which in turn, results in their following alternative and distinct pathways leading toward a gambling disorder. Originally proposed for adult pathological gamblers, their adapted model for adolescents appears as a plausible explanation for adolescent gambling problems. This model proposes that at least three subgroups of adolescent problem and pathological gamblers

exist, each having distinct clinical features and etiologies, and as such, requires different treatment interventions.

While all youth pathological gamblers are subject to ecological variables, operant and classical conditioning, and cognitive distortions, Nower and Blaszczynski (2004) contend that differences between subgroups have major implications for both diagnosis and treatment. They suggest that pathway 1 (behaviorally conditioned) problem gamblers have a normal temperament but lose control when gambling as a result of the intermittent reinforcement schedules, the speed of play, and probabilities of success common in most forms of gambling. In contrast, pathway 2 (emotionally vulnerable) problem gamblers are characterized by having disrupted and/or poor familial and personal histories, affective instability and disorders, and inefficient coping and problem-solving skills. As a result, these problem gamblers perceive gambling as an effective means of emotional escape and mood regulation. Finally, those adolescent problem gamblers in pathway 3 (antisocial impulsivist) exhibit distinct biological vulnerabilities toward impulsivity, have heightened arousal-seeking and sensation-seeking behaviors, are more likely to have had an early onset of gambling, and exhibit significant attention deficits and antisocial traits. While empirical research is needed to determine the relative proportion of youth in each pathway, to assess the validity of this model, and to determine its implications for treatment, identifying the appropriate pathway for youth gamblers should provide a useful clinical framework that ultimately leads to a differential treatment approach and improvement in treatment outcomes.

Recently, Hodgins and his colleagues (Hodgins, 2005; Hodgins & el-Guebaly, 2000; Hodgins, Currie, & el-Guebaly, 2001) have argued that Prochaska and DiClemente's transtheoretical model of intentional behavior for adults may be useful in helping to understand treatment and natural recovery of pathological gamblers. DiClemente, Story, and Murray (2000) and DiClemente, Delahanty, and Schlundt (2004) have also suggested that the stages of change model represents a viable conceptual framework for explaining an effective treatment paradigm for adolescent pathological gamblers. This model has been highly useful in working with tobacco, alcohol, and substance users and may have important implications for youth problem gamblers, however, little empirical support currently exists that confirms its utility.

Hodgins and his colleagues have also empirically evaluated short-term brief motivational enhancement therapy and telephone counseling with and without manuals developed for adult pathological gamblers. Their results suggest that brief telephone counseling and the use of a home-based manual

may be effective, especially for those with less severe gambling problems (Hodgins, 2005; Hodgins & el-Guebaly, 2000; Hodgins et al., 2001). Given that many adolescents fail to seek treatment in traditional therapeutic settings (see Derevensky, Gupta, & Winters, 2003 for a discussion as to why adolescents do not seek treatment for gambling problems), the use of telephone counseling and manuals, which can be mailed to an individual's home, may be an important innovative and promising approach to helping adolescents with gambling problems. Given the widespread use of the Internet by adolescents, the International Centre for Youth Gambling Problems and High-Risk Behaviors at McGill University is embarking on a project using interactive chat helplines for youth with gambling problems. The feasibility of this project will be rigorously assessed.

The research on the effective treatment of adolescent pathological gamblers is extremely limited and is in its very early stages. Calls for multisite treatment efficacy studies are becoming more widespread. Much research into the efficacy of alternative treatment models for youth problem gamblers is necessary before best practices can be reliably established. It may well be that some of the previously established treatment models for other mental health disorders and addictive behaviors can be applied to youth with gambling problems, given the significant comorbidity and overlap in risk factors.

The issue of natural recovery is increasingly important. While pathological gambling is currently viewed as a continuous and progressive disorder, there is clinical support suggesting that in fact, it may be episodic where individuals engage excessively for a limited time, experience difficulties, and then stop for undetermined amounts of time. If most youth are not seeking professional treatment (as is the case with adults), then the issue of understanding the process of natural recovery remains critical. Only longitudinal studies will be able to examine the path that natural recovery takes among adolescents experiencing significant gambling problems and its potential impact.

The field of psychopharmacology may provide a promising complementary strategy for working with adolescents experiencing significant gambling problems. While the current pharmacological strategies for treating pathological gambling in adults suggests the use of serotonin selective reuptake inhibitors (SSRIs), mood stabilizers, and naltrexone for adults (Grant et al., 2003), little is known about their success with adolescents (Grant, Chambers, & Potenza, 2004). Grant and others (2004) and Hollander and others (2005) contend that while the data suggest positive short-term effects for adults, such studies have methodological challenges. Nevertheless, poten-

tially promising pharmacological treatments for adolescent pathological gambling must await completion of controlled treatment studies.

Combinations of behavioral and drug therapies have been demonstrated in other addictive disorders to be superior to treatment alone (Carroll, 1997). Until further research and refinement in matching treatment strategies with gambler typologies is realized, it is likely that best practices for treating adolescents with gambling problems will not be realized. Nevertheless, Abbott and colleagues (2004), when reviewing treatment outcome studies, concluded that there is evidence suggesting that individuals who have received treatment for a myriad of mental health disorders and addictions generally do better than controls who do not receive any formal treatment. On the basis of the existing literature, they concluded that "irrespective of the particular type of therapy, most clients who show initial improvement maintain it, albeit that probability of relapse increases with time" (p. 138). Further research in understanding the barriers to treatment, whether or not controlled gambling versus abstinence is a realistic goal, and working toward empirically supported treatments for youth is much needed.

PREVENTION INITIATIVES

Although limited progress has been made in understanding the treatment of problem adolescent gambling and the characteristics of those seeking help, empirical knowledge concerning the prevention of gambling problems and its translation into science-based prevention initiatives is similarly scarce (Derevensky, Gupta, Dickson, & Deguire, 2001). However, in our attempts to understand the best models for prevention of gambling problems, prevention specialists have drawn extensively upon the substantial alcohol and substance abuse prevention research. Current prevention efforts in the fields of alcohol and drug abuse have focused on the concepts of risk and protective factors and their interaction (Brounstein, Zweig, & Gardner, 1999). These efforts seek to prevent or limit the effects of risk factors while enhancing resilience through established protective factors. Although few scientifically validated prevention initiatives currently exist for problem gambling (see Abbott et al., 2004; and Derevensky, Gupta, Dickson, & Deguire, 2001, for a comprehensive review and list of current programs), the increasing widespread use of a harm-reduction/harm-minimization approach in the field of alcohol and substance abuse may be a useful strategy in preventing gambling problems (Dickson, Derevensky, & Gupta, 2004). Such programs have been based upon empirical evidence of common risk and protective factors across adolescent risky behaviors, which resulted in

prevention initiatives that are considerably inclusive and target multiple risk behaviors (Costello, Erkanli, Federman, & Angold, 1999; Jessor, 1998; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998) including problem gambling (Dickson et al., 2004).

As an overarching framework, harm-reduction (also referred to as harm-minimization) drawn from the alcohol literature includes strategies, policies, and programs designed to promote reduction and responsible gambling without requiring abstinence (Riley et al., 1999). While controversial to some (recovering pathological gamblers often prefer that abstinence be emphasized), this framework includes secondary prevention strategies predicated upon the belief that it is not only feasible but also highly unlikely that one can prevent individuals from participating in particular risky behaviors (Baer, MacLean, & Marlatt, 1998), tertiary prevention strategies (DiClemente, 1999), as well as a public health movement strategy (Denning & Little, 2001; Heather, Wodak, Nadelmann, & O'Hare, 1993). It is important to note that a responsible approach in preventing adolescent gambling problems incorporating a harm-minimization approach does not, in and of itself, preclude abstinence, especially for young children. Nevertheless, gambling has become so socially acceptable, widely available, and often promoted by governments as an enjoyable form of entertainment that attempts to only incorporate an abstinence approach would be viewed as unacceptable by many adolescents (approximately 80 percent of youth report gambling in their lifetime with another 30 percent gambling weekly).

Acceptance of harm-reduction as a health strategy and as an interim step toward an abstinence model remains value-neutral and supports initiatives designed to reduce and minimize the harmful negative consequences incurred through involvement in risky behaviors (Dickson et al., 2004; Messerlian, Derevensky, & Gupta, 2004). Dickson and colleagues (2004) have suggested that it may not be realistic to expect youth to stop gambling when there is ample research suggesting that most adolescents engage in this behavior and that if done in a responsible manner (setting and maintaining time and financial limits, not excessive frequency, not breaking any laws), there may be no harmful consequences, given that the vast majority of adolescent gamblers do so without developing any significant gambling-related problems.

Despite the complexities of using a risk-protective factor model (see Coie et al., 1993; Dickson et al., 2002, 2004), this model can be used as the theoretical basis for a harm-reduction approach because of its role in science-based prevention and its empirical validity for a variety of adolescent risky behaviors. DiClemente's (1999) theory of intentional behavioral change has also been used to understand the initiation of health-related behaviors includ-

ing gambling, along with the modification of problem behaviors such as excessive alcohol use and problem gambling (DiClemente et al., 2000, 2004).

A strength of the risk-protective factor model is that it enables prevention specialists to create, evaluate, and refine harm-reduction prevention programs based on changes in risk and protective factors that have been shown to account for changes in targeted behaviors, attitudes, and more (Coie et al., 1993), rather than merely relying on traditional means of measuring effectiveness: quantitatively measuring change rates of harmful consequences of risky behaviors (Dickson et al., 2004). Thus, drawing from the alcohol and substance abuse literature would provide a valuable framework for both the techniques for implementation and the actual content of the program.

In light of the need for prevention programs, a number of gambling-specific curricula material, videos, student-developed screenplays and productions, poster and public service announcement contests, interactive CD-ROMS, and videos have been developed. Such school-based curricula are generally aimed at secondary school children, although the McGill University Centre for Youth Problem Gambling and High-Risk Behaviors has extended its curricula material downward into the later elementary school grades based upon the evidence that problem gamblers often report initiating gambling by age 9 to 11 years. The center's prevention efforts include school-based workshops, a paper-pencil curriculum (Count-Me-Out), interactive CD-ROMs (The Amazing Chateau for primary school; Hooked City for secondary school), a docudrama (*Clean Break*) VHS/DVD movie, and poster and public service announcement contests. Other jurisdictions have initiated roaming student-written, produced, and performed screenplays.

A number of early efforts (e.g., Costello et al., 1999; Dickson et al., 2002; Galambos & Tilton-Weaver, 1998; Loeber et al., 1998) have suggested the positive utility of incorporation of a general mental health prevention curriculum that addresses multiple adolescent risky behaviors (e.g., substance abuse, gambling, risky driving, smoking, truancy, and risky sexual activity) simultaneously. While adolescent risky behaviors have many common risk factors, the activities themselves can differ on several important dimensions. Nevertheless, a harm-reduction prevention approach seems plausible for targeting those risky activities that lie on a continuum of harm (when engaged in responsibly and moderately, they yield no significant negative consequences), and for behaviors deemed socially acceptable when done in a responsible manner.

Whether harm-reduction prevention programs are designed specifically for problem gambling or incorporated into a general mental health curricu-

lum targeting multiple high-risk behaviors, the need for merging an abstinence approach with a harm-reduction prevention model is exemplified by the apparent contradiction that arises when the principles of the harm-reduction paradigm are applied to adolescents. Given that the age of onset of gambling behavior represents a significant risk factor, incorporating some abstinence may be a fundamental component in a successful prevention paradigm. Nevertheless, teaching "responsible" gambling through fostering effective cognitive reasoning, coping skills, and by providing tools and strategies to enhance cognitive decision making is deemed desirable. Such programs could be school-based and be incorporated into existing mental health prevention curricula. These prevention programs also need to include components that enhance salient protective factors and resources that are so necessary for adolescent development. Educating adolescents on becoming good consumers of the multitude of advertisements encountered is similarly necessary.

CONCLUSIONS

While knowledge of youth gambling behaviors and the risk and protective factors associated with problem gambling continues to grow, our understanding remains incomplete. Faced with evolving changes in the types of gambling, the use of videogame technology in many of the games, their widespread accessibility, and the lure of the excitement, entertainment, and possibility of making money, it seems incongruent that gambling opportunities would not be attractive to adolescents. The fact that most adolescents fail to perceive the risks of becoming a pathological gambler is consistent with our understanding of youth at this developmental stage.

While not viewed by parents or adolescents themselves as a problem, this "hidden addiction" is similar to other addictions and comes with a host of negative consequences and problems. Years of research have suggested that adolescence as a developmental period is marked by significant physical, social, cognitive, and emotional changes. It has been traditionally viewed as a transitional period from childhood to adulthood, replete with experimentation, an increase in risk-related behaviors, and a concomitant perspective that they are immune to the harms associated with excessive risky behaviors. Adolescents represent a high-risk group for engaging in a multiplicity of potentially risky behaviors, with gambling problems being one more in a myriad of exciting and enjoyable but potentially problematic activities.

Given that it takes several years to go from occasional/recreational gambling to a significant gambling problem, the true social impact and long-term consequences on youth will likely take many years to realize. Today's generation of youth will likely spend their entire lives in an environment where gambling is prolific, government supported and regulated, and viewed as a socially acceptable form of entertainment. While parents often view adolescent gambling as an innocuous form of entertainment with few negative consequences, greater awareness is needed. Equally important is that, while under most governmental laws children and adolescents are prohibited from engaging in regulated forms of gambling, most youth have little difficulty accessing many of these regulated gambling venues (Jacobs, 2004). A serious effort must be made to ensure that vendors and gaming operators adhere to existing laws and regulations.

Much research will be needed to help identify common and unique risk and protective factors for gambling problems and other addictive behaviors; longitudinal research to examine the natural history of both regular and pathological gambling from childhood to adolescence through later adulthood; and molecular, genetic, and neuropsychological research to help understand the changes in gambling progression and to identify high-risk individuals. Other areas of research will need to provide a better understanding of the effects of accessibility and availability of gaming venues on future gambling behaviors, the impact of gambling advertisements, and availability of gambling opportunities, and their relationship to the onset and maintenance of adolescent gambling and problem gambling, as well as the impact of structural characteristics of different games upon adolescent pathological gambling. Simultaneously, changes in prevalence rates, development of more sensitive screens, and cultural and ethnic differences require more in-depth examination. A variety of treatment and prevention models need to be tested and validated before best practices can be scientifically established.

Many other more highly visible adolescent mental health problems have prompted social policy interventions (e.g., tobacco use, alcohol and substance use and abuse, increased rates of suicide, teenage pregnancy, and unprotected sex). Issues surrounding youth gambling problems have been largely ignored. Problem gambling during adolescence remains an important, growing social and public health issue. As previously noted, while the incidence of severe gambling problems among youth remains relatively small and the negative consequences are viewed as minor, the large number of children gambling remains a concern. The short-term and long-term consequences for youth with gambling problems are significant.

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