

Risk and protective factors associated with youth problem gambling

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Abstract: Risk factors for youth gambling problems are best understood within an ecological model recognizing the interwoven relationship that exists between the individual and their environment. Empirical studies covering individual, relationship, community, and societal factors associated with adolescent gambling problems are reviewed. The cumulative body of research suggests that males who are exposed to gambling at an earlier age are at greater risk of developing gambling problems. Individuals who report poor family cohesion, have family members or friends who also gamble, and those exposed to and engaged in a wider variety of gambling options are at greater risk. Adolescents with impulsive, high sensation-seeking personalities and exhibit emotion-focused coping styles are more likely to experience gambling problems. Anxiety, depression, ADHD, poor academic performance, substance use, and delinquency are also strong predictors. Many of these risk factors appear to predict a general behavior syndrome encompassed by overall mental health problems, substance abuse, delinquency, and problem gambling. Increased exposure to gambling opportunities and marketing of gambling is recognized as a potential risk factor at a community level while gambling-permissive cultures may instill positive attitudes and beliefs toward gambling. A call is made for more research that can identify the causal risk factors that lead to gambling problems among youth which will ultimately improve our prevention efforts.

Keywords: Youth, adolescents, gambling problems, risk factors

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INTRODUCTION

The field of gambling research has grown enormously over the past two decades but there remains a paucity of research on risk factors associated with problem gamblers (1). While there is a growing body of literature, there remains a lack of consensus regarding the risk factors and their relative weight in contributing to problem gambling among youth. Studying the risk factors among youth is particularly important given

that severe gambling problems often originate in childhood and adolescence (2). A better understanding of the factors contributing to the acquisition and the development of disordered gambling behavior among youth will ultimately help clarify the etiology of gambling problems in the general population.

Some strides have been made to foster a better understanding of the onset and developmental course of gambling problems

that form the basis of this review. This growing body of research focuses upon identification of the biopsychosocial mechanisms underlying excessive gambling behavior among youth. As risk factors that contribute to gambling problems are better elucidated, the information can be used to improve assessment, treatment, and prevention programs. With more knowledge about which youth are at the highest risk of becoming problem gamblers, these programs will be able to better target specific types of youth with the goals of stopping or minimizing gambling problems before they occur and improving the effectiveness of treatment for those who suffer from gambling problems.

Examination of the factors associated with youth gambling problems provides a more complete description of the nature of these problems, their onset, and how they are maintained. Knowledge about these risk factors is also critical for identifying the potential warning signs of gambling problems. This information can be used to develop prevention initiatives geared toward youth with gambling problems. For example, public service announcements aimed at youth gambling prevention can incorporate aspects that appeal to youth who are at greatest risk of becoming heavily involved in gambling activities. Such an approach has been taken by developers of anti-drug media campaigns in designing public service announcements with high sensation value to appeal to high sensation-seeking youth who are at greater risk for substance use problems (3).

As risk factors become better understood, a complementary understanding of resiliency can be achieved. Risk factors tend to represent extremes on certain biopsychosocial dimensions such that opposing ends of the same dimensions may represent important protective factors. For

instance, if lack of family cohesion is associated with gambling problems, greater family connectedness should lower the risk of developing a gambling problem. Thus, risk factors can help to extrapolate significant protective factors that offset their impact and increase resiliency.

In addition, raising public awareness of the factors that contribute to the development and maintenance of problem gambling among youth will ultimately bolster the advancement of services for young problem gamblers (4). The more society at large understands about disordered gambling, the more likely it will be viewed as an important public health concern. Parents, teachers, health professionals, policy makers, and the public in general need to stay informed about risk factors in order to help youth avoid and overcome gambling problems.

This review outlines existing research on risk factors associated with child and adolescent problem gambling. Empirical studies covering several categories of risk factors are examined. These categories of risk factors are presented using an ecological model to recognize the multiple interacting contexts in which gambling problems occur. The ecological model addresses individual risk factors as well as overlapping inter-personal, community, and societal systems that create the conditions for youth to develop gambling problems (5). At an individual level, personal attributes that increase the likelihood of gambling problems are examined. Interpersonal level influences address the potential of close others to shape an individual's gambling behavior including risk factors related to relationships with family and friends. Community level factors encompass the influences of the greater environment in which the individual lives and interacts with others. When considering youth

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gambling behavior, the availability and marketing of gambling within a community are the most relevant community level factors. Finally, at the societal level, the influence of broad, macro-level factors are examined. These risk factors address the cultural beliefs, societal norms, and worldwide trends that can potentially lead to gambling problems among children and adolescents. The ecological model provides an appropriate framework for understanding the multitude of risk factors that contribute to youth gambling problems and the complex interactions that exist between factors nested within different ecological systems.

DEMOGRAPHIC FACTORS

Adolescent problem gamblers are more likely to have reported gambling for the first time at a younger age (approximately 10 years of age) compared with their peers who report gambling but experience few gambling-related problems (6-8). Similarly, adults with gambling problems report having been introduced to gambling earlier in their childhood compared with adults who do not experience problems (9). Together, these findings suggest that youth who are exposed to their first gambling experience at an earlier age are at increased risk of developing problems which makes intuitive sense given that children who initiate gambling when they are 10 years of age will likely have more opportunity to become involved in further gambling activities compared with children who do not initiate gambling until they are in later adolescence. In addition, older children without gambling experience have more opportunity to develop more mature, realistic perspectives about gambling before initiating gambling compared with younger children. Delaying the onset of gambling exposure as long as possible appears to be

an important protective factor, especially given the fact that, among adolescents, the transition between social gambler and problem gamblers is more rapid compared with adults (10).

GENDER

The cumulative body of gambling research clearly shows that gambling is more popular amongst males than females and males are more likely to experience problem or pathological gambling behaviors (11,12). This gender difference has been found in adolescents as well (8,13-15). More frequent gambling among boys compared with girls has also been shown in a sample of primary school children (16). In a recent study of middle and high school students, males were found to be almost six times more likely than females to be identified as having a gambling problem and twice as likely to be classified as at-risk gamblers, endorsing a number of criteria for gambling problems but not meeting the clinical cut-off for pathological gamblers (17).

A study by Gupta and Derevensky (7), testing Jacobs' General Theory of Addictions (18), which proposed that disordered gambling is a habitual coping response to abnormal physiological resting states, revealed that male and female adolescents may be differentially predisposed to gambling problems. Among males, high excitability and total dissociation while gambling predicted categorization as problem or pathological gamblers, whereas among females, depressed mood, dissociation, and stimulant drug use were strong predictors. These findings suggest that among adolescents who gamble to relieve chronic stress conditions, males and females generally differ in terms of how they experience and manifest abnormal resting states.

RACIAL AND ETHNIC GROUPS

There is mounting evidence that adult members of racial/ethnic minority groups and lower socioeconomic classes are at a significantly greater risk of developing gambling problems (19), a finding that has been replicated in adolescent studies (20,21). In a sample of United States (U.S.) adults, gambling problems were significantly more common among minority groups, with Blacks, Hispanics, Asians, and Native Americans being 3 to 5 times more likely to experience at least some gambling problems compared with Whites when holding gender, age, and socioeconomic status (SES) constant (19). However, a study of adolescents showed contradictory results (13). After controlling for socioeconomic status, Black youth actually reported gambling less frequently than White youth. A study of youth in Montreal, Canada (22) revealed that a group comprised of Allophone adolescents (neither French nor English being the primary language) had the highest proportion of youth who reported weekly gambling and experienced self-reported gambling problems, followed by Anglophones and Francophones. Overall, the paucity of research and the lack of consensus regarding the potential influence of minority status on youth gambling, racial/ethnic group cannot necessarily be considered a strong, overriding risk factor for youth gambling problems. Further research is necessary to determine the impact on youth of racial/ethnic group, socioeconomic status, and their interaction.

PERSONALITY

Research has pointed toward the presence of dispositional attributes of problem gamblers (23-25). The suggestion is that certain personality characteristics, most of which emerge at a young age and are fairly

stable over the lifespan, likely contribute to problem gambling. Examining personality traits associated with problem gambling among youth is particularly useful in terms of determining the direction of the relationship between gambling problems and personality traits. As gambling behavior is relatively new among youth, it is unlikely to have significantly impacted their personalities. Thus, if certain personality traits are found to be over-represented in youth with gambling problems, they are likely to be underlying traits that lead to gambling problems rather than having been caused by a pattern of excessive gambling.

Whereas most studies on personality risk factors have focused on specific personality variables, a recent study examined a multitude of personality factors to identify those most highly associated with gambling problems in youth (26). High school students in the Montreal region with moderate to severe gambling-related problems obtained scores that deviated significantly from the normative means on four personality traits—excitability, conformity, self-discipline, and cheerfulness. These findings suggest that adolescents with gambling problems exhibit less self-regulatory behavior (i.e., impulsivity, distractibility, over-activity, self-indulgence, difficulty conforming to group norms) while exuding the impression of being carefree, sociable, and happy. The adolescents with the most severe gambling problems reported the highest levels of frustration, impulsivity, anxiety, impatience, and irritability. In addition, adolescents with gambling problems obtained higher scores on the Disinhibition and Boredom Susceptibility subscales of the Sensation Seeking Scale, indicating that they have higher risk-taking tendencies.

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IMPULSIVITY

It has been proposed that gambling among youth is the product of an impulsive personality type (27-30). Impulsivity can be described as behavior carried out in a spontaneous or unintentional manner without thought or self-control. This definition describes many of the features of disordered gambling; accordingly, pathological gambling is currently classified as a disorder of impulse control in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision (DSM-IV-TR) (31). Indeed, research has consistently shown that adults with gambling problems exhibit higher scores on both self-report and behavioral measures of impulsivity (23,25).

Studies have shown that the relationship between impulsivity and problem gambling has direct implications for youth as well (29,30,32,33). A study of 754 adolescent boys from low socioeconomic environments investigated the relationship between impulsivity and problem gambling severity (27). Self-report and teacher ratings of impulsivity when the boys were 13 years old were compared with problem gambling status in later adolescence at the age of 17 years. Non-gamblers had the lowest impulsivity scores followed by recreational gamblers, low problem gamblers, and high problem gamblers.

Vitaro and his colleagues reported findings in two papers based on a sample of young low SES boys who were assessed on various personality variables when they were 12 to 14 years old and again at age 17. Disinhibition and response modulation deficits in early adolescence predicted gambling problems at a later age (28). In addition, problem gamblers with substance use problems were more likely to have high self-reports of impulsivity and exhibit impulsivity-related behaviors at a younger

age compared with those with only gambling problems (30). Together, the findings of these prospective studies emphasize the significance of impulsivity as a personality trait among youth that is highly predictive of gambling problems at a later age. It also raises the possibility that impulsivity may be an important focal point of treatment for youth with gambling problems. For example, treatment for adolescents might aim to help them develop skills for delaying immediate gratification and placing more weight on the long-term consequences of their behavior.

RISK BEHAVIOR

Risk-taking is an intrinsic element of gambling. Problem gamblers tend to take more risks in general and on gambling tasks in particular (23). Both gambling and problem gambling have been shown to be associated with high sensation-seeking behavior (23) as indicated by a high degree of seeking out novel, exciting experiences with an element of risk. A study of middle- and high school students found that risk propensity was a particularly strong predictor of being at-risk or having a gambling problem, even after controlling for other predictors (17). Youth who perceive their involvement in risky activities as highly positive while not appreciating the costs and negative consequences of such activities are at greater risk of developing gambling problems. Accordingly, adolescents who exhibit "devil-may-care" attitudes should be viewed as a high-risk group and youth gambling prevention efforts will likely benefit from targeting this audience.

COPING STYLES

The way in which people deal with life circumstances is a function of both personality and experience. Some individuals use

gambling as a form of maladaptive coping in response to problems in their lives (34). Problem gamblers commonly report 'gambling to escape', achieved through mood modification as a means of coping with stressful life events and negative mood states. Accordingly, problem gamblers are hypothesized to face more life challenges and use less-effective coping styles that employ avoidance or mood modification tactics rather than dealing with the cause of the problem. Indeed, adolescents with gambling problems report more stress, daily hassles, and major traumatic life events (35) and have poor general coping skills (10,17,32).

A pattern of more stressful life events and ineffective coping among adolescent problem gamblers was also demonstrated in a study that examined stress, coping, and gambling severity in a sample of 11- to 20-year-olds (36). Adolescents with gambling problems reported more negative life events and major life events compared with social and non-gamblers. In addition, adolescents with gambling problems used less task-focused coping and more avoidance-focused coping. Males with gambling problems reported using more emotion-focused coping strategies but there were no differences among females in terms of emotion-focused coping. A study of gambling and childhood maltreatment showed that, among adolescents and young adults, reports of maltreatment increased as gambling severity increased (35). At-risk and pathological gamblers reported childhood maltreatment of all types (physical, and verbal abuse and neglect) and that the effects of their maltreatment had negatively impacted their daily behavior suggesting that they may be gambling as a means to cope with psychological problems and "escape" from past experiences. In sum, youth who experience more stressful life

events with a tendency to use ineffective coping strategies, particularly emotion-focused strategies among males, are at greater risk of turning to gambling as a maladaptive outlet to deal with their problems.

The existing body of research on personality variables and youth gambling problems suggests that there are qualitative differences in personality traits across adolescents with varying severity of gambling behavior. Adolescents who generally exhibit less self-regulatory behavior, higher risk-taking tendencies, and ineffective coping styles are more susceptible than others to developing gambling problems.

MENTAL HEALTH FACTORS

As described, some individuals engage in gambling in order to modify undesirable mood states (32,34). For these individuals, gambling becomes a form of negative reinforcement by alleviating unwanted emotions such as anxiety and depression. Consistent with the Pathways Model of problem gambling (37) and Jacobs' General Theory of Addictions (18) that some problem gamblers engage in the activity to cope with abnormal physiological resting states, adolescents with severe gambling problems experience higher levels of state and trait anxiety (7,8,35,38). For these adolescents, the experience of anxiety may be diminished as gambling provides an "escape" allowing individuals to disengage from stressful life events or problems. This hypothesis is supported by findings that adolescent problem gamblers score higher on measures of dissociation and are more likely to report gambling in order to achieve feelings of dissociation (10).

In addition to increased anxiety levels, adolescent problem gamblers report lower self esteem and greater depressive sympto-

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matology compared with non-gambling and social gambling adolescents (7,8,10, 26,35,39). Likewise, older adolescents with serious gambling problems are at a heightened risk for suicide ideation and suicide attempts (7). For these youth, gambling may provide emotional relief from symptoms of depression by inducing positive feelings of well-being. Indeed, youth with gambling problems report that they gamble for excitement, to escape problems, and alleviate depression (7,35,38). Another adolescent study showed that probable pathological gamblers and at-risk gamblers more heavily anticipated pleasure and excitement from gambling and expected to feel good about themselves as a result of gambling compared with social and non-gamblers (40).

ADHD

There has been a great deal of research interest in the possible association between Attention Deficit Hyperactivity Disorder (ADHD) and pathological gambling. Given that ADHD is normally diagnosed during childhood, the potential link between these two psychiatric conditions is particularly important for understanding risk factors for problem gambling among youth. Notably, existing knowledge about the progression of ADHD can provide a developmental framework for understanding risk factors for gambling problems among youth.

Studies have reported a relationship between gambling problems and ADHD (41,42), and more recently, a study by Hardoon, Gupta, and Dervensky (43) has shown that there are similar traits that underlie ADHD and gambling problems. Adolescent problem gamblers in high school were found to be similar to those adolescents with ADHD on several dimensions (26). Youth with gambling problems tended to score high on the

Excitability factor of the High School Personality Questionnaire, comprised of items that query the extent to which respondents are easily distracted, frustrated, annoyed, overactive, and impulsive. These characteristics match up to the criteria for ADHD, as outlined in the DSM-IV-TR (31).

A prospective study examined a sample of children diagnosed with ADHD at two points in time—initially between the ages of 7 and 11 and later between the ages of 18 and 24 (33). At the follow-up assessment, participants were identified as either still meeting the criteria for a diagnosis of ADHD or no longer meeting the criteria. No differences were found between the participants with persistent ADHD, non-persistent ADHD, and a group of controls in terms of gambling participation or frequency. However, those with persistent ADHD were significantly more likely to be classified as pathological gamblers when compared with those with non-persistent ADHD or no ADHD. The findings suggest that symptoms of ADHD that persist into young adulthood are particularly significant risk factors for gambling problems among youth.

ACADEMIC ACHIEVEMENT

Among adults, a negative consequence commonly associated with gambling problems is poor performance at work. Apart from absences and lateness due to gambling, the quality of work can suffer as individuals become preoccupied with gambling, thinking about their next gambling activities and experiencing negative emotional consequences in response to losses. Similarly, children and adolescents are subject to poor school performance as a result of excessive gambling. Dickson et al (17) found in a sample of adolescents that the report of school problems predicted at-risk and

probable pathological gambling with a large proportion of probable pathological gamblers (43.5%) experiencing significant school problems. Likewise, the proportion of students with below average self-perceived grades increased linearly as gambling severity increased with almost one quarter of probable pathological gamblers perceiving that they performed worse than other students at school compared with only 6.5% of non-gamblers. Meanwhile, feeling welcome and integrated into the school environment was a protective factor such that lower school-connectedness was associated with adolescent problem gambling. A link between gambling problems and poor school performance has been demonstrated in several studies (8,15,43).

Given that the above findings are correlational in nature, it is not possible to determine whether school problems arise as a result of gambling problems or if problems in school tend to lead to gambling problems. It has been shown that a high proportion of youth with gambling problems report having a learning disability (43) suggesting that innate academic difficulties may precede gambling problems. However, the relationship is most likely reciprocal with excessive gambling activity leading to poorer performance in school which, in turn, contributes to increased gambling involvement. The extent to which one causes the other cannot be determined without prospective data that examines the sequential nature of these problems.

SUBSTANCE ABUSE

Problem gambling is often conceptualized as a non-pharmacological "addiction" because, although one does not ingest a substance with chemically addictive properties when gambling, it shares several defining features

with substance use disorders. For example in the DSM-IV-TR (31), substance dependence and pathological gambling are both characterized by preoccupation, a need to increase the behavior to achieve the desired effect, symptoms of withdrawal, loss of important social, occupational, or recreational activities, and continuation despite knowledge of its negative consequences. Among adults, there is a high co-occurrence between substance use disorders and gambling disorders (44), which is not surprising given the striking similarities in their defining features, suggesting that common variables contribute to the development of both disorders.

Research on adolescents mirrors the finding of a significant association between substance abuse and gambling problems in adults. A number of studies have shown that adolescent problem gamblers are at increased risk for the development of multiple addictions (7,10,15,19). In a sample of Minnesota youth, those with greater gambling involvement were more likely to be regular drug users (15). Similarly, among New York State adolescents, heavy drinking males were significantly more likely than non-drinkers or moderate drinkers to gamble at least weekly (13). As well, studies assessing alcohol, tobacco, illicit drug, and marijuana use among Minnesota youth showed them to be reliable predictors of gambling frequency (14,45) as did a study of Washington State youth demonstrating a positive association between tobacco, alcohol, and drug use and both gambling frequency and gambling problems (46). Clearly, data on adolescent substance use and gambling indicate that these behaviors tend to co-occur in youth suggesting that substance use should be viewed as a warning sign for comorbid gambling problems and vice versa.

DELINQUENCY

Despite prohibitions against youth gambling, prevalence data indicate that the majority of youth have gambled (8,10,14, 15), suggesting that many youth view gambling as a normative activity. Notwithstanding the high rates of gambling participation among youth, government restrictions tend to categorize underage gambling along with underage drinking, deeming them both adult activities that pose a significant risk to youth. Disordered gambling among youth is delinquent behavior, not only in the sense that it normally involves repeated violation of the law, but also because many of the associated problems relate to other delinquent activity to fulfill gambling intentions. In fact, when one overlaps the typical personality features of problem gambling over norms for delinquent behaviors on the High School Personality Questionnaire, the profiles look remarkably similar (26).

One of the DSM-IV-TR criteria for pathological gambling is the commission of illegal acts to finance gambling including forgery, fraud, theft, or embezzlement (31). Adolescent research has likewise demonstrated a strong association between delinquency and gambling problems (8,10, 15). For some youth, gambling may be an outgrowth of a more general behavior problem syndrome. Youth who have difficulty following rules and behaving in socially acceptable ways are more likely to engage in delinquent activities that include gambling (13). Antisocial tendencies among youth are characteristic of conduct disorder representing a persistent pattern of behaviors that violate age-appropriate social norms (31). A recent study showed a strong comorbidity between conduct disorder and gambling problems, particularly among younger respondents in a sample of 14- to 21-year-olds (47). Further evidence of a

relationship between youth gambling and antisocial behavior was found in an analysis of Minnesota public school students which revealed that antisocial behavior—including vandalism, physical fights, stealing, and getting thrills from dangerous activities—was the strongest predictor of gambling frequency (14). Stinchfield and his colleagues posited that frequent gambling may be a part of a collection of deviant behaviors including violence, vandalism, shoplifting, and substance use. This type of young gambler fits with Blaszczynski and Nower's (37) "anti-social impulsivist" pathway of problem gambling. Youth who are prone to "acting-out" behaviors, violence, deceitfulness, and consistent violation of rules may be at risk for gambling problems.

RELATIONSHIPS

Children and adolescents spend a large portion of their lives with their immediate family with behaviors being modeled by family members having a strong impact on the future behavior of young people. Consequently, gambling by family members contributes to the gambling behavior of youth. For example, most youths become exposed to gambling by their parents (43). Gupta and Derevensky (6) administered questionnaires to children between the ages of 9 and 14 to assess their gambling activities, including where and with whom the gambling occurs. A large majority (86%) of those who gambled regularly reported gambling with family members. Other studies have also reported that youth with greater gambling involvement are more likely to have parents or family members that gamble (8,15,21).

In another study, a sample of adolescents from middle and high school were examined to test the extent to which various protective factors increased resilience to adolescent problem gambling (17). Problem

gamblers were less likely to report feeling connected to their families compared to at-risk gamblers, social gamblers, and non-gamblers. Self-reported ratings of family cohesion decreased from non-gamblers across each level of gambling severity group. Family cohesion remained a significant predictor when tested along with other protective factors in their ability to predict participant classification as either non-problem gamblers (i.e., non-gamblers and social gamblers) or problem gamblers (i.e., at-risk and probable pathological gamblers). These results support previous findings in which youth with gambling problems were more likely to report having poor family connectedness, family dysfunction, low perceived social support, and low parental supervision (8,43,29).

In the same study (17), several family-related risk factors were also examined. Probable pathological adolescent gamblers were more likely to report having family members with gambling problems compared with other adolescents, and the proportions generally decreased as severity of problems diminished. When tested with other risk factors to predict problem gambling status, only having a sibling with a gambling problem remained a significant predictor. Other family factors related to stressful life events were examined for their ability to differentiate between gambling severity groups but were not tested in the overall prediction models. The death of a friend or close family member and the arrest of a family member differed across groups with probable pathological gamblers having generally higher rates. Parental divorce and/or remarriage of parents, moving to a new town/city, loss of a parent's job, and a close family member having a serious illness did not differentiate between gambling severity groups.

Poor caregiving can also contribute to future gambling of youth. In a study of childhood maltreatment and youth gambling, pathological gamblers reported significantly higher emotional and physical neglect as children compared with at-risk, social, and non-gamblers (35). Living in a non-nurturing family environment appears to be an additional risk factor for gambling problems among youth.

PEERS

Friends play an important role in shaping the risky activities of young people. Before adolescents are allowed to participate in regulated forms of gambling (e.g., casinos, lotteries, machine gambling), they often begin gambling amongst friends. When gambling becomes a regular activity among friends, it may become viewed as a normative activity that is both desirable and safe. Indeed, one study found that only 10% of students aged 13 to 14 years feared being caught for gambling by parents suggesting that gambling is generally regarded as a socially acceptable activity among adolescents (6). As such, having friends who gamble makes gambling less likely to be perceived as a high-risk activity and adolescents may exhibit less caution when considering their involvement in future gambling behavior. In the same study (6), 75% of 9- to 14-year olds who regularly gambled reported that they gambled with their friends and the tendency to gamble more at a friend's home and at school increased with age. Not only does having friends who gamble increase the likelihood of gambling involvement, clinical testimony suggests that adolescents who develop gambling problems tend to lose their non-gambling friends as they spend more time with gambling associates (48). This pattern has the potential to be particularly harmful

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given the protective factor of high-quality friendships is replaced with a friendship milieu in which gambling is both socially acceptable and the predominant extra-curricular activity.

Having a friend with a gambling problem has also been found to differentiate youth based upon their gambling severity groups in that over 40% of probable pathological gamblers and over one third of at-risk gamblers had a friend with a gambling problem compared with only 10% of social gamblers and 6% of non-gamblers (17). In addition, it was a significant predictor of problem gambler status over and above all other risk and protective factors. Also of note was the finding that having friends with substance use problems increased with increasing problem gambling severity, suggesting that having friends who engage in any addictive behavior, and not just gambling, poses a significant risk factor. Similarly, having friends who engage in delinquent behaviors is predictive of gambling problems among youth (13,29).

The general quality of peer relationships also appears to predict problem gambling severity among youth. A study of Australian adolescents revealed that problem gamblers have poorer relationships with non-friend peers in their class, despite reporting having as many close friends as non-problem gamblers (39). Problem gamblers indicated that they dislike twice as many classmates as non-problem gamblers and also reported that significantly more classmates dislike them. Among various measures of psychological well being, social alienation was the strongest predictor of gambling severity with adolescent problem gamblers being significantly more disillusioned with society. Regardless of the quality of close friendships, it appears that poor relationships with peers, in general, is a risk factor for youth problem gambling.

COMMUNITY

At a community level, the most obvious risk factor for problem gambling is the presence of gambling opportunities that are accessible to community members. Research is currently inconclusive regarding the impact of gambling availability on the prevalence of gambling problems. While conventional wisdom predicts that more gambling opportunities within communities lead to higher incidences of gambling problems, findings are mixed in this regard and it has been suggested that the relationship between exposure to gambling and the prevalence of gambling-related problems is non-linear, varying across people, place, and time (49). Accordingly, it is difficult to determine whether youth who are exposed to more gambling opportunities in their communities are at greater risk of developing problems. However, among young people who gamble, there is evidence suggesting that specific types of gambling activities pose a greater risk than others (50).

A national sample of U.S. youth between the ages of 14 and 21 were interviewed to assess their gambling activities and severity of gambling problems. Youth who have had experience with more types of gambling over the previous year were more likely to have gambling problems (50). When involvement in other games was controlled, card playing, games of skill, and casino gambling were highly associated with increased risk of gambling problems. These data merely examine the association between specific forms of gambling and gambling-related problems among youth, making it difficult to determine whether exposure itself leads to more problems or if youth with gambling problems are more likely to participate in multiple forms of gambling, which is likely the case. Nonetheless, the results suggest that certain gambling

activities and overall level of gambling engagement can be useful predictors of gambling problems among youth. High gambling versatility appears to be a particularly salient risk factor for youth problem gambling (39). When youth are presented with and have access to more gambling options they may be more likely to find a preferred form of gambling which can increase the risk of developing a problem.

MARKETING

Related to the availability of gambling within communities is the way gambling is marketed toward community members. Although most jurisdictions have laws that prohibit minors from participating in regulated forms of gambling, youth are exposed to the same messages advertising gambling opportunities as adults. A broad range of marketing strategies are typically used to promote gambling opportunities to the public. Television and radio commercials, billboards and other signage, point-of-sale advertisements, sponsorship deals, and promotional products are examples of marketing efforts that use various forms of media to endorse gambling opportunities (51). These advertisements tend to focus on the fun, entertainment, and possibility of "winning big" with no mention of the potential consequences of gambling. Adolescents report that these advertisements portray gambling as a rewarding and enriching activity that leads to a happier lifestyle (52).

Not only do these advertisements increase the availability of gambling within communities by providing information about local gambling opportunities, they normalize gambling by portraying it as an acceptable and harmless form of entertainment. As youth are exposed to more and more gambling advertisements, they are more likely to perceive it as a normative

activity within their respective communities. In addition, the central message of these advertisements, that gambling is a thrilling and worry-free activity, is more likely to be accepted and pursued by children and adolescents. Derevensky et al (52) found that 47% of adolescent males and 38% of adolescent females reported that gambling advertisements made them want to try gambling. In addition, problem gamblers were much more likely to report "sometimes" or "often" gambling after seeing an advertisement (32%) compared with social (3%) or non-gamblers (0%). Such findings have led researchers to suggest that the presence of gambling advertisements is a strong risk factor for youth gambling involvement (51). Accordingly, community-level regulation of these advertisements that reduces exposure to youth and prohibits overly positive portrayals of gambling should reduce the normalization of gambling and lead to subsequent reductions in gambling problems among youth.

SOCIETY

Beyond individual-, interpersonal-, and community-level factors that have an impact on youth gambling behavior, there are macro-level risk factors that reflect the wider culture and society. Throughout history, cultural norms have dictated the legality and availability of gambling opportunities. At several points in time, widespread belief that gambling is sinful led to its prohibition in many parts of the world. To this day, gambling remains outlawed in most Muslim countries and public opposition, often from religious organizations, has led to the removal of gambling machines in certain jurisdictions. However, as gambling revenues have been shown to be lucrative sources of funds for governments, charities, and businesses,

gambling opportunities have expanded. Coinciding with this expansion, conservative attitudes toward gambling have loosened, and gambling continues to gain acceptance in society as a socially acceptable, even charitable, form of entertainment. Consequently, this prevailing attitude poses a serious risk for youth. Children and adolescents who identify strongly with the ideological, social, economic, and political values of a gambling-permissive society will be more likely to see it as a normative activity themselves, and thus something they may choose to pursue.

As outlined in the previous section, the availability and marketing of gambling are important determinants of youth gambling within communities. However, differences in gambling rates across communities can also be attributed to cultural differences of geographic regions (53). In addition, differences between cultural groups within the same geographic region can at least partially explain variations in gambling attitudes and behaviors. Thus far, the majority of the review has consisted of Western studies. Although few non-Western studies have specifically examined risk factors for youth gambling problems, it is instructive to examine some of the cultural factors known to impact the initiation and maintenance of gambling.

Existing research suggests relatively high rates of gambling among certain cultural groups including Jewish, Chinese, and Indigenous peoples (53). And as outlined previously, there is some evidence that racial/ethnic minority groups are at greater risk of developing gambling problems. While these higher gambling rates may be caused to some extent by non-cultural factors such as low socioeconomic status, there is evidence that cultural issues also play a unique role. For example, Zitzow (54) found that American Indian

adolescents reported more gambling involvement and gambling-related problems compared with non-American Indian adolescents, which was partially attributed to cultural acceptance of magical thinking among American Indians. Thus, cultural beliefs that emphasize an external locus of control and a reliance on 'fate' or 'luck' may encourage more gambling among youth.

Traditional family configurations may also influence gambling behavior. For example, Raylu and Oei (53) suggested that children in Chinese families with a traditional patriarchal family system have increased exposure to and parental approval of gambling. Certain cultures also pass on general attitudes toward gambling to its members. Whereas gambling is perceived as part of the lifestyle, history, and tradition of Chinese people, it has been met with steadfast disapproval in Muslim cultures. Clearly, children growing up in a Chinese culture will be more likely to develop positive attitudes and have increased exposure to gambling compared with Muslim children.

Whereas cultural issues represent important macro-level factors that influence youth gambling, global trends in gambling are another significant consideration. Most notably, the Internet gambling industry has experienced large-scale expansion which some researchers posit will lead to higher rates of gambling and related problems among youth (55). While the presence of more gambling venues represents a potential risk factor at a community level, the emergence of Internet-based gambling circumvents the accessibility issue and allows access to gambling to virtually anyone, virtually anywhere in the world. The high accessibility of Internet gambling presents new societal concerns, particularly for youth who may engage in Internet gambling despite being prohibited from

land-based gambling opportunities.

Although no empirical studies have tested the causal relationship between the availability of Internet gambling and gambling problems among youth, the results of at least two correlational studies suggest that youth who gamble on the Internet are much more likely to experience significant gambling problems (56,57). These findings are alarming given that youth continue to have increased exposure to the Internet and its evolving set of applications. The academic and extra-curricular activities of youth have become well integrated into advancing technologies. As the popularity and accessibility of Internet gambling has increased, so has Internet usage and computer access among youth. These combined elements make Internet gambling a potentially high-risk form of gambling with its own set of unique risk factors worthy of increased scrutiny among researchers. In addition, much of the appeal of Internet gambling appears to be related to the game of poker which has garnered an incredible amount of international attention as a "sport" that anyone can pursue. As global interest in poker continues to grow in the form of increased television exposure, multi-million dollar tournaments, and the creation of pseudo-celebrity poker professionals, children and adolescents are more likely to seek out Internet gambling sites as an opportunity to test their own poker skills. Societal acceptance of poker as a legitimate and harmless past time poses a risk for youth gambling.

DISCUSSION

A myriad of factors are implicated in the development of gambling problems among children and adolescents. Individual, relationship, community, and societal factors all play a role in the cause and maintenance

of youth gambling problems. However, variables at each of these levels cannot be considered in isolation. Rather, all risk factors should be examined in the context of other risk factors that could potentially lead to over-involvement with gambling. At the individual level, demographic, personality, and psychological factors influence youth's susceptibility to developing gambling problems. Relationship-level factors encompass family and friends, whereas community-level factors include availability and marketing within the community where the child lives. Finally, at a societal level, cultural factors and worldwide trends in gambling (i.e., Internet gambling) are considered important large-scale forces that can impact the level of risk. Although these risk factors cover a wide range of variables, it is far from being a comprehensive review of factors that are relevant to youth gambling prevention.

The current review highlights research studies on risk factors that, for the most part, focus on examining the negative factors associated with gambling problems among youth. However, efforts to prevent tobacco, alcohol, and drug use among youth have focused on not only decreasing risk factors but also increasing protective factors (58). The success of these initiatives in preventing high-risk behaviors highlight the importance of designing youth gambling prevention efforts to enhance resiliency. Although the results of one study suggested that the absence of risk factors contributes more significantly to the prediction of gambling problems among youth than the presence of protective factors (17), another study demonstrated that risk and protective factors each contribute uniquely to the prediction of youth gambling problems (59). Accordingly, youth gambling research should go beyond a basic risk prevention framework to one that fosters protective

factors when helping develop youth gambling prevention initiatives. One category of potentially instructive protective factors is positive development constructs. Current evidence is limited on the extent to which such constructs, including cognitive and emotional competencies, serve as protective factors for youth gambling. Parker et al (60) found that higher emotional intelligence among youth was associated with lower scores on a problem gambling measure. Among the different components of emotional intelligence, interpersonal abilities had the highest negative correlation with problem gambling severity, suggesting that youth with better interpersonal skills are less likely to spend considerable amounts of time gambling.

However, the direction of this relationship was undetermined. Cognitive competencies and their relation to youth problem gambling have been left unexplored for the most part as well. One study showed that a higher score on knowledge of randomness, self-monitoring, and coping skills among older adolescents was associated with lower scores on a problem gambling measure (61). In addition, an intervention designed to improve these competencies was shown to result in significant increases in scores on randomness, self-monitoring, and coping skills knowledge compared with a control group. In sum, preliminary evidence suggests that positive development constructs warrant further investigation as potential protective factors for youth gambling problems.

Much of the research reviewed tended to examine the factors that co-occur with gambling problems among youth. That is, most existing research on risk factors provides an account of the characteristics and situational factors observed in youth who already exhibit signs of disordered

gambling. While these correlational findings are useful for secondary prevention measures, they are less helpful for primary prevention efforts aimed at preventing the onset of gambling problems. More prospective research is needed to establish the antecedents of problem gambling among youth. Such studies should take a longitudinal approach to determine which factors are present before gambling problems emerge. Although more costly and difficult to undertake, such research would provide valuable knowledge about how gambling problems develop in youth and the resiliency factors that can help make children more resistant to gambling problems before they are initiated to gambling activities.

Most existing research on risk factors has focused on demographic and behavioral correlates of youth gambling. Much less work has been devoted to examining the unique thoughts and attitudes that are prevalent among youth with gambling problems. These factors represent a crucial area of study given that thoughts and attitudes encompass the motivation to gamble. Current evidence suggests that children and adolescents with positive attitudes toward gambling are more likely to develop gambling problems (21). In addition, adolescent problem gamblers hold more irrational beliefs about gambling, often failing to understand the true risks associated with gambling and believing that they have more control over gambling outcomes than chance dictates (62,63). Future research on risk factors should closely examine the thoughts and attitudes that contribute to gambling problems among youth. By revealing how gambling-related thoughts and attitudes develop, such studies will ultimately improve prevention efforts that aim to counter these beliefs before they become more firmly entrenched with age.

Another area of inquiry that warrants further exploration is Internet gambling and its unique set of risk factors. The daily lives of children and adolescents are becoming increasingly immersed in technology, particularly the Internet, bringing into question the extent to which Internet usage poses a risk factor for youth gambling. With the rapid expansion of Internet gambling over the past 10 years, these concerns have become a reality. Qualitative data suggests that young people are the fastest growing segment of Internet gamblers (64). Yet, the risk factors associated with Internet gambling among youth remain largely unexplored. Video game playing—an activity that has become more technologically advanced and interactive—may also be related to problem gambling among youth. One study found that adolescents in grades 7 to 11 who experienced gambling problems were more likely to spend excessive amounts of time playing video games compared with non-problem and social gamblers (65). Future studies should investigate the risk factors that have emerged with advancing technology, such as video games and Internet gambling.

It is noteworthy that many of the risk and protective factors associated with problem gambling are predictive of multiple other problem behaviors, including substance abuse and delinquency, suggesting that gambling may be part of a larger constellation of high-risk behaviors that is caused by common underlying factors. Studies on risk factors for gambling problems, delinquency, and substance use among youth suggest that all three high-risk behaviors are well predicted by a common set of risk factors, supporting the notion of a general problem behavior syndrome (13,29,39). Prevention efforts will benefit most from research that focuses on

identifying risk factors that contribute to this general problem behavior syndrome, which will ultimately have a positive impact on the overall development of youth (17).

Improving youth gambling prevention efforts will require the involvement of parents to consider their own children's level of risk and to develop open and honest communication with their children about gambling. But before parents can engage in frank discussions about gambling with their children they need to become aware of the seriousness of gambling as an issue among teens. Unfortunately, research suggests that parents are in much need of further education about youth gambling. Parents tend to underestimate the probability that their own children have gambled or have a gambling problem (66), and gambling remains very low (in fact, the lowest concern among 13 potential adolescent risk behaviors) on their priority list of teen concerns (67). It is hoped that prevention can begin with a better understanding of the risk factors for gambling problems among youth. New directions in research and the application of corresponding findings to prevention efforts will help achieve the overall goal of minimizing or reducing problems associated with gambling among youth.

Gambling behavior among youth reflects an ongoing trend in society which could be best understood within an ecological model recognizing the interwoven relationship that exists between the individual and their environment. While it is true that individuals are responsible for instituting and maintaining a healthy lifestyle necessary to reduce risk and improve health (thus the need for prevention and education), individual behavior is also largely determined by one's social environment in regard to interpersonal relationships in addition to

community and cultural norms, values, regulations, and policies. The mosaic and opportunities for gambling in general, and youth gambling in particular, are rapidly changing. Governments throughout the world are entering a phase of expansion to offset the economic downturn. Youth gambling will no doubt represent an important social policy issue.

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