

Chapter 11

Prevention Efforts Toward Reducing Gambling Problems¹

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The National Research Council's (1999) seminal review of the scientific literature for the National Gambling Impact Study Commission noted a trend toward the proliferation of gambling venues, increased expenditures, and the seriousness of the adverse consequences for those individuals with a gambling problem. Current attempts at primary prevention of gambling problems have been limited at best (National Research Council, 1999), nevertheless, the need to reduce the prevalence and risks associated with gambling problems remains an important goal. While such primary prevention programs can be conceptualized for individuals of any age, the vast majority of primary prevention programs intended to prevent gambling problems have focused upon youth, with some being oriented for other particularly high-risk and vulnerable groups (e.g., elderly/seniors, minorities,

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1. A large part of this review is based upon a report prepared by Derevensky, Gupta, Dickson, & Deguire (2001). *Prevention Efforts Toward Minimizing Gambling Problem* for the National Council for Problem Gambling, Center for Mental Health Services (CMHS) and the Substance Abuse and Mental Health Services Administration (SAMHSA), Washington, D.C.; papers by Dickson, Derevensky, & Gupta (2002). The prevention of youth gambling problems: A conceptual model. *Journal of Gambling Studies*, 18, 161–184; and Dickson, Derevensky & Gupta (2004). Harm minimization and youth gambling problems. *Journal of Research on Adolescence*, 19, 233–263.

individuals with low income, and those experiencing other impulse and addictive disorders) (see Derevensky, Gupta, Dickson, & Deguire, 2001 for a list of prevention programs). This chapter summarizes the current literature on the prevention of gambling problems and harm minimization, highlights our current knowledge gaps, identifies issues of concern, presents a viable model for the development and evaluation of prevention programs, and provides recommendations for future directions. It is important to note at the outset that the current scientific knowledge concerning adolescent gambling behavior in general, and problematic gambling in specific, and its social impact is just beginning in earnest. As such, before *Best Practices* can be established, further basic and applied empirical and longitudinal research is necessary.

The Prevention of Youth Gambling

Much of the current primary prevention efforts have been aimed at school-age children. This is typical of primary prevention programs focused upon minimizing and/or preventing multiple mental health, antisocial, and risk-taking behaviors. Recent analyses has suggested that today's youth are at high risk for engaging in a multitude of risky behaviors including substance abuse, adolescent pregnancy, youth violence, school dropout (Bronfenbrenner, McClelland, Wethington, Moen, & Ceci, 1996; Weissberg, Wallberg, O'Brien, & Kuster, 2003) and gambling (National Research Council, 1999). Grasping the severity of the consequences associated with youth problem gambling is often difficult in light of the widespread attitude that youth have little readily available access to money and the perception that few have significant gambling or gambling-related problems. The fact that youth gamble has been well established (see the reviews and meta-analyses by Jacobs, 2000, in this volume; National Research Council, 1999; Shaffer & Hall, 1996, 2001). It is important to note that youth not only gamble for money with their peers and family members, but they have been shown to gamble in most forms of legalized and state sanctioned gambling in spite of legal restrictions and prohibitions. While most adolescents gamble in a socially acceptable manner with few apparent gambling related problems, as a group they have been shown to be particularly susceptible and at-risk for the development of serious gambling problems (Derevensky & Gupta, 1999; Derevensky, Gupta & Winters, 2003; Gupta & Derevensky, 2000; National Research Council, 1999).

Adolescent prevalence rates of problem gambling have been consistently reported to be between 4–8% (two to four times that of adults) (Gupta & Derevensky, 1998a; Jacobs, 2000; National Research Council, 1999; Shaffer & Hall, 1996, 2001), with another 10–15% of youth being at-risk for the development of a serious gambling problem (Derevensky & Gupta,

2000; Derevensky, Gupta & Winters, 2003; Gupta & Derevensky, 1998a; National Research Council, 1999; Shaffer & Hall, 1996). The rapid movement from social gambler to problem gambler (Gupta & Derevensky, 2000; Gupta & Derevensky, 1998a) and the induction of gambling as a rite of initiation into adulthood (Svendsen, 1998) points to the possibility that adolescents are particularly vulnerable.

Similar to adults, our current empirical knowledge of youth problem gambling includes a profile of the adolescent problem gambler that reflects the serious nature of gambling-related problems. (For a detailed summary of the current empirical knowledge of adolescent problem gamblers see the reviews by Derevensky & Gupta, 1999, 2000, 2004; Gupta & Derevensky, 2000; Haroon & Derevensky, 2002; and Stinchfield, in this book). Increased efforts to understand the economic, social, familial and psychological costs of gambling, and the recognition of the adolescent population as being particularly at-risk for developing problem behaviors (Baer, MacLean, & Marlatt, 1998; Jessor, 1998; Luthar, Cicchetti, & Becker, 2000a) and gambling-related problems (Gupta & Derevensky, 1998a; Wynne, Smith, & Jacobs, 1996) amplifies the necessity for effective prevention initiatives targeting vulnerable populations (Dickson, Derevensky, & Gupta, 2002; National Research Council, 1999). While it has been noted that little progress has been made in understanding the efficacy of treatment of adolescent problem gambling, the characteristics of those seeking help (Gupta & Derevensky, 2000, in this book; Rugle, Derevensky, Gupta, Stinchfield & Winters, 2001), and that no scientifically validated *Best Practices* currently exists for the treatment of pathological gambling (Nathan, 2001), empirical knowledge of the prevention of this disorder and its translation into science-based prevention initiatives are particularly scarce (Dickson et al., 2002).

Within the past two decades there has been increased interest in general human development and the prevention of high-risk behaviors (Nation et al., 2003). This research, converging with the examination of causes and remedies for psychological disorders, *prevention science*, has formed the basis of many school-based prevention efforts (Coie et al., 1993; Greenberg et al., 2003). While our current knowledge of the efficacy of prevention of youth gambling problems is limited, the substantial literature on prevention of adolescent alcohol and substance abuse has a rich history of research, program development and implementation, and evaluation which can help to shape future directions for the prevention of gambling problems. As both a mental and a public health issue (see Korn & Shaffer, 1999 for a comprehensive review and the work by Messerlian, Derevensky & Gupta, 2003 for a public health perspective on youth gambling), the conceptualization of problem gambling, as another form of risk-taking behavior, and its adverse consequences substantiates the need for effective prevention initiatives.

Efforts to address adolescent risky lifestyles have traditionally been streamed into prevention programs aimed towards non-users (primary prevention), screening for potential problems (secondary prevention), and treatment (tertiary prevention) for those who have developed problems (e.g., alcohol use and abuse, substance abuse, smoking). In terms of primary prevention, the bulk of resources have been allocated toward initiatives with the goal of preventing or postponing the initial use of substances or activities such as gambling. However, the question of whether the traditional approach of promoting non-use as an adequate means of preventing problems has been increasingly raised (Beck, 1998; Brown & D'Emidio Caston, 1995; Cohen, 1993; Erickson, 1997; Gorman, 1998; Marlatt, 1998; Poulaine & Elliott, 1997; Thombs & Briddick, 2000), especially in the field of alcohol use and gambling (Dickson, Derevensky & Gupta, 2004).

Although few reduction prevention initiatives currently exist for problem gambling, the increasing widespread use of the harm-reduction approach in the field of alcohol and substance abuse calls for an examination of the validity of harm-reduction as it relates specifically to gambling (for a historical overview of the development of harm-reduction see Erickson, 1999 and Marlatt, 1996). It has recently been advocated that initiatives move toward designing prevention strategies that target multiple risk behaviors based on theoretical and empirical evidence of common risk and protective factors across adolescent risky behaviors (Battistich, Schaps, Watson, & Solomon, 1996; Costello, Erkanli, Federman, & Angold, 1999; Galambos & Tilton-Weaver, 1998; Jessor, 1998; Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998) including problem gambling (Jacobs, 1998; Dickson et al., 2002, 2004; Gupta & Derevensky, 1998b). Considering that serious gambling problems result in far-reaching and long-lasting negative consequences and that gambling is largely promoted and easily accessible, the importance of primary prevention takes center stage in addressing this important issue. While prevention efforts are critical in protecting youth, adults and seniors from developing serious problems, the specific type of prevention approach that should be adopted remains unclear.

Researchers, treatment providers, educators, and policy makers would benefit from a conceptual examination of the harm-reduction paradigm for its application in the prevention of problem gambling and other risky behaviors. However, there currently remains insufficient empirical knowledge about how to promote the use of harm-reduction strategies. Furthermore, there are few, if any, program evaluations delineating the potential positive and/or negative outcomes resulting from the implementation of various harm-reduction *prevention* programs for the range of adolescent risky behaviors that have been realized (Ogborne & Birchmore-Timney, 1999; Poulaine & Elliott, 1997; Thombs & Briddick, 2000).

Abstinence Versus Harm Reduction Approaches

There are two global paradigms under which particular prevention approaches can be classified, either *abstinence* or *harm-reduction* (the terms harm-reduction and harm minimization have often been used interchangeably). While these two approaches are not completely mutually exclusive, they are predicated upon different short-term goals and processes. The central question currently being asked is which form of prevention is best for targeting the issue of gambling problems?

Harm-reduction strategies (policy, program, intervention) seek to help individuals without demanding abstinence (Magham, 2001; Riley et al., 1999). Included in such an approach would be secondary prevention strategies, based upon the assumption that individuals cannot be prevented from engaging in particular risky behaviors (Baer, MacLean, & Marlatt, 1998; Cohen, 1993); tertiary prevention strategies (DiClemente, 1999); and a 'health movement' perspective (Denning & Little, 2001; Heather, Wodak, Nadelmann, & O'Hare, 1993; Messerlian et al., 2003).

While negative consequences of excessive gambling are evident (e.g., financial difficulties, depression, suicide ideation and attempts, health problems, academic problems, criminal and antisocial behavior, familial disruptions, peer difficulties, etc.) (Derevensky & Gupta, 2004; Stinchfield, in this volume), it still remains unclear as to whether the costs of legalized gambling outweigh their benefits. By default, most governments seem to have adopted a harm-minimization approach, such that policy efforts have been aimed at reducing or minimizing the negative impact of gambling while not limiting revenues or access for the general public.

Underage youth are, in general, prohibited access to government regulated forms of gambling and venues. While these laws are necessary, research clearly indicates that early gambling experiences mostly occur with non-regulated forms of gambling (e.g., playing cards for money, placing informal bets on sports events, wagering on games of skill or parents gambling for/and with their children (Gupta & Derevensky, 1998a; Jacobs, 2000, in this volume). This highlights both the paradox and the confusion as to which primary prevention approach to promote; abstinence or harm-reduction? If one were to advocate an abstinence approach, is it realistic to expect youth to stop gambling when between 70–80% of children and adolescents report having gambled during the past 12 months (Gupta & Derevensky, 1998a; Jacobs, 2000; National Research Council, 1999). Similar to adults, one could argue that it would be unrealistic to expect youth to stop gambling completely, especially since it is exceedingly difficult to regulate access to gambling activities organized amongst themselves (e.g., card betting, sports betting, wagering on personal games of skill, etc.). And while we remain

concerned about the occurrence of serious gambling problems amongst youth, it is also recognized that many youth, like adults, are able to gamble without developing any significant gambling related problems. Nevertheless, the harm-reduction approach is also questionable because it assumes, as a basic tenet, that youth will gamble in spite of legal restrictions.

Research highlights that age of onset of gambling behavior represents a significant risk factor, with the younger the age of initiation being correlated with the development of gambling related problems (Dickson et al., 2004; Gupta & Derevensky, 1998a, Jacobs, 2000; National Research Council, 1999; Wynne et al., 1996). Thus, delaying the age of onset of gambling experiences would be fundamental in a successful prevention paradigm, consistent with an abstinence approach, and does not adhere to the principles of the harm-reduction model.

The harm-reduction approach, nonetheless, makes intuitive sense on other levels. As gambling has been historically part of our culture (Fleming, 1978) and is consistent with the expansion of gambling sites and types of games offered, the harm-minimization approach seems a sensible approach. Included under the principles of harm-minimization is the promotion of responsible behavior; teaching and informing youth about the facts and risks associated with gambling, changing erroneous cognitions, misperceptions, and beliefs, along with enhancing skills needed to maintain control when gambling. If these skills are encouraged and reinforced for youth through their formative years, it is plausible that they may be less vulnerable to the risks of a gambling problem once gaining legal access to gambling forums.

The application of the harm-reduction paradigm to a broad range of problem behaviors has not been without criticism. However, given that there are a number of socially and widely acceptable risk behaviors (e.g., alcohol consumption and gambling) where involvement in such activities can be viewed as lying on a continuum ranging from no—to significant psychological, social, physical, and financial harm to self and others, the utility of the harm-reduction approach as a means to prevent problem behavior remains promising.

Harm-Reduction for Problem Behaviors Associated with Socially Acceptable Risky Activities

Gambling as a Socially Acceptable Activity

The goal of harm-reduction to prevent problem behavior rather than the risky behavior itself appears appropriate for activities that are very much

a social reality. There is ample reason to believe that involvement in risky behaviors can be approached responsibly, controlling the progression to problem behavior given that the majority of those youth who drink alcohol or gamble do not develop significant problems. Furthermore, research on the patterns of use (Gliksman & Smythe, 1982) and personal and social control mechanisms of various substance use (Boys et al., 1999; Dembo et al., 1981; Kandel, 1985) point to the possibility of achieving controlled involvement in risky behaviors, free from problematic involvement. There is evidence from studies using adults that substance users do in fact make rational choices, weighing the perceived positive gains versus risks of drug or alcohol use, and utilize informal control mechanisms of social networks (Cheung, Erickson, & Landau, 1991; Erickson, 1982; Murphy, Reinerman, & Waldorf, 1989). More research needs to be undertaken with adolescents to examine whether similar processes can be induced.

Research on risk and protective factors offer an important reminder that the cause of such variance results from the interaction of present risk and protective factors operating within complex person-environment-situation interactions. Thus, it can be argued that the continuum of harm is associated with a number of different risk profiles and that harm-reduction is a useful means to prevent normal adolescent gambling behavior to becoming increasingly problematic.

Harm-Reduction Prevention Programs

The strategies of harm-reduction prevention are similar to those associated with other approaches and are consistent with a public health framework (Messerlian et al., 2003). For example, school-based drug education programs and media campaigns are common strategies used regardless of prevention orientation (e.g., abstinence, harm-reduction). To date, universal harm-reduction programs have generally been primarily integrated in the form of school-based drug, alcohol and smoking education and prevention programs. There exist a greater variety of strategies employed in terms of selective prevention, given the variety of at-risk populations that selective programs may target (e.g., street youth at high-risk for drug and alcohol abuse, or entire schools at high-risk for a multiplicity of problems due to socio-cultural factors).

The components of universal harm-reduction prevention programs have the specific objectives of modifying positive attitudes towards risky behaviors, making informed choices about engaging in risky behavior (e.g., by raising awareness of risk factors which may lead to excessive use) and efficient decision-making. It is expected that once an individual has adequate awareness and knowledge about risky activities and have developed

good decision-making skills, they can make appropriate decisions about whether they need to avoid alcohol, tobacco, and illegal drugs completely, how they will be careful if choosing to experiment with risky activities, and when they should seek help for a problem (Beck, 1998).

Resilient Youth

Empirical research focused upon resilient youth, in general, supports a positive profile that includes problem solving skills (the ability to think abstractly and generate and implement solutions to cognitive and social problems), social competence (encompassing the qualities of flexibility, communication skills, concern for others, and pro-social behaviors), autonomy (self-efficacy and self control), and a sense of purpose and future (exhibited in success orientation, motivation, and optimism) (Brown, D'Emidio-Caston, & Benard, 2001). Evidence of resiliency in children (e.g., Garmezy, 1985; Rutter, 1987; Werner, 1986) has expanded the prevention field from a risk-prevention framework to one that includes both risk-prevention and the promotion of protective factors. Masten, Best and Garmezy (1990) have suggested that protective factors can serve to mediate or buffer the effects of individual vulnerabilities or environmental adversity so that the adaptational trajectory is more positive than if the protective factors are not at work. Protective factors, in and of themselves, do not necessarily promote resiliency. If the strength or number of risk factors outweigh the impact of protective factors, the chances that poor outcomes will ensue increases.

Studies have examined the effects of a large number of risk and protective factors associated with excessive alcohol and substance abuse (see Derevensky et al., 2001; Dickson, Derevensky & Gupta, 2003). Such risk and protective factors can be grouped into a number of domains. In their conceptual model, Bournstein, Zweig and Gardner (1999) illustrate that each of these domains interact with the individual, who processes, interprets, and responds to various factors, based upon unique characteristics brought to the situation. The Centre for Substance Abuse Prevention has incorporated this model, as a conceptual framework for targeting high-risk groups and their potential outcomes.

Protective and risk factors have been shown to interact such that protective factors reduce the strength of the relation of the stressor and their outcomes. There are numerous examples as to how protective factors influence positive outcomes. For example, the effects of positive school experiences have been shown to moderate the effects of family conflict, which in turn decreases the association between family conflict and several adolescent problem behaviors (e.g., pathological gambling, alcohol and substance abuse, suicide, and delinquency) (Jessor, Van Den Bos, Vanderryn, Costa & Turbin, 1995).

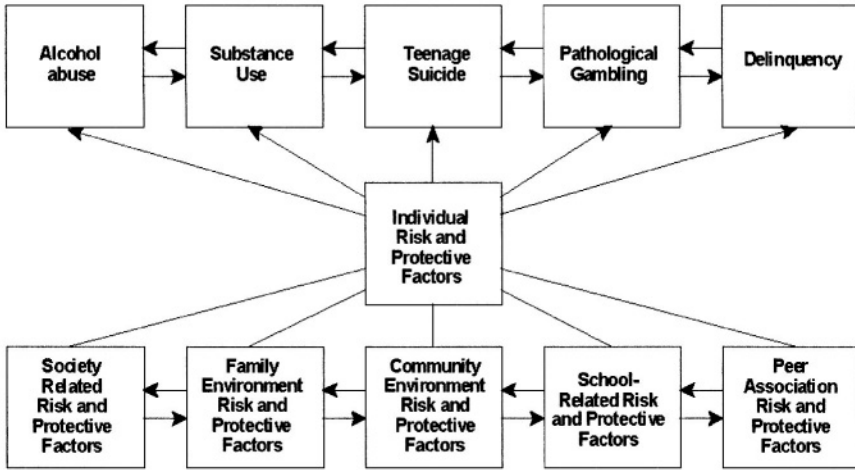


Figure 1. A conceptual model for understanding the domains of risk and protective factors that influence an individual's behavior. (adapted from *Understanding Substance Abuse Prevention: Toward 21st Century Primer on Effective Programs* (Bournstein, Zweig, & Gardner, 1999). Centre for Substance Abuse Prevention (CSAP) & Substance Abuse and Mental Health Services Administration (SAMHSA).

In an attempt to conceptualize our current state of knowledge concerning the risk factors associated with problem gambling, a similar paradigm was created by Dickson et al. (2002) based upon our current knowledge of youth with severe gambling problems. Within the individual domain, poor impulse control, high sensation-seeking, unconventionality, poor psychological functioning, low self-esteem, early and persistent problem behaviors and early initiation are commonly found. Common risk factors in the family domain include familial history of substance abuse, parental attitudes, and modeling of deviant behavior. Within the peer domain, social expectancies and reinforcement by peer groups are common risk factors across addictions. Although some research has been undertaken to identify risk factors of problem adolescent gambling (see Derevensky & Gupta, 2000; Dickson et al., 2003; Griffiths & Wood, 2000; Gupta & Derevensky, 2000 for reviews) there are few studies which have examined protective mechanisms, or more generally, resiliency for youth with respect to problem gambling. In a recent study by Dickson et al. (2003), after examining a wide number of variables, family cohesion and school connectedness were found to serve as protective factors for preventing gambling problems. Protective factors that have been examined across other youthful risky behaviors and addictions generally fall into the three categories: care and support, dispositional attributes such as positive and high expectations, and

opportunities for participation (Werner, 1989). These characteristics appear to describe each domain that fosters resiliency in youth.

Review of Current Prevention Programs

Few primary prevention programs for problem gambling currently exist. Of those that are currently being implemented (although implementation is quite sporadic), most developed for youth have no science-based underlying principles, have failed to account for risk and protective factors, and few have been systematically evaluated (see Derevensky et al., 2001 for a comprehensive list of programs). The majority of these programs can be defined as primary and/or universal preventive efforts aimed at reducing the incidence of problem gambling. Several programs explicitly identified factors associated with the development of problem gambling but these factors were not always defined as a risk or a protective factor, nor were there many programs that pointed to the scientific validity of such factors.

Commonalities and Differences Amongst Programs

Prevention programs to reduce the incidence of gambling problems for youth generally incorporate a universal model aimed at raising awareness concerning issues related to problem gambling. Most programs have not been systematically evaluated as to their efficacy in achieving their explicit or implicit goals and many are not based upon current knowledge of risk or protective factors, falling far short of models and standards associated with *Best Practices*. Most programs conceptualize gambling as an addiction, foster a harm-reduction model and encourage responsible gambling. Some programs, however, stress the importance of abstinence. This distinction probably lies within the specific population targeted. Programs targeted toward populations where the prevalence of gambling and other addiction and/or mental health problems is high (e.g., First Nations; Native Americans), suggest prevention programs might encourage abstinence over harm minimization, taking a tertiary approach in their prevention efforts.

Since the objectives of the majority of current programs are to raise awareness, most present information relevant to gambling, problem gambling, motivations to gamble, warning signs, consequences associated with excessive gambling, and how and where to get the help for an individual with a gambling problem. Several curriculums go a little further than merely presenting factual information; encouraging the development of interpersonal skills enabling youth to better cope with stressful life events, techniques to improve self-esteem, and suggestions for resisting peer pressure.

A number of programs place greater emphasis on the mathematical aspect of gambling including teaching students about the odds and probabilities associated with games of chance, while others emphasize issues related to erroneous cognitions and thoughts.

A Conceptual Framework for Harm-Reduction Prevention

An examination of the commonalities of risk and protective factors for problem gambling and other addictions provides ample evidence to suggest that gambling may similarly be incorporated into more general addiction and adolescent risk behavior prevention programs. Current research efforts (Battistich, Schaps, Watson, & Solomon, 1996; Costello et al., 1999; Galambos & Tilton-Weaver, 1998; Loeber et al., 1998) suggest a more general mental health prevention program that addresses a number of adolescent risky behaviors (e.g., substance abuse, gambling, risky driving, truancy, and risky sexual activity). More recent science-based programs such as the Centre for Substance Abuse Prevention's Eight Model Programs (Brounstein et al., 1999) provide evidence that prevention programs for risky behaviors are indeed effective. Dickson et al. (2002) has suggested that there is empirical and clinical evidence which points to the need to examine similarities and differences amongst addictive behaviors, the need to analyze multiple risk and protective factors, and the importance of understanding the coping mechanisms of individuals engaging in risky behaviors.

Despite the complexities of using the risk-protective factor model (see Coie et al., 1993), Dickson et al. (2002) proposed this model to establish the theoretical basis of harm-reduction as it is predicated upon science-based prevention principles. This model has empirical validity in understanding current trends in adolescent risk behavior theory (Jessor, 1998). As well, its role in empirically-supported theory of intentional behavioral change (DiClemente, 1999) which has been used to understand the *initiation* of health-protective behaviors and health-risk behaviors such as gambling, as well as its potential to *modify* problem behaviors such as alcoholism and problem gambling (DiClemente, Delahanty & Schlundt, in this volume; DiClemente, Story & Murray, 2000).

Dickson et al.'s (2002, 2003) adaptation of Jessor's (1998) model views problem gambling within a risky behavior paradigm. This conceptual framework is predicated upon a theoretical foundation for general mental health prevention programs that fosters resiliency. Risk and protective factors operate *interactively*, in and across a number of domains (biology, social environment, perceived environment, personality and behavior). The risk and protective factors represented in Figure 2 have been previously identified

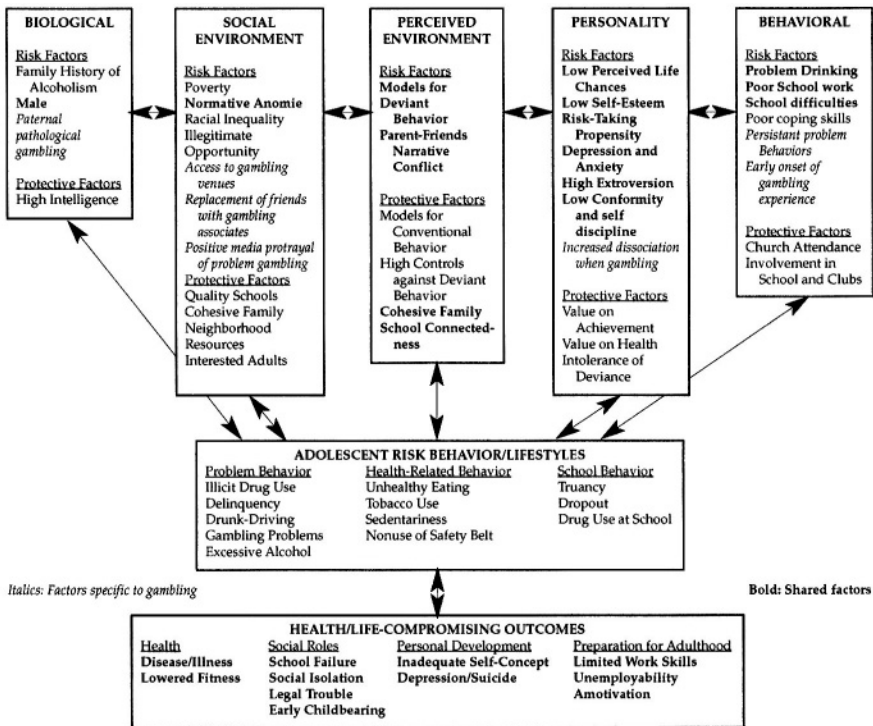


Figure 2. Adapted from Jessor’s (1998) and Dickson et al.’s (2002) revision of the adolescent risk behaviour model with youth gambling risk factors incorporated (Dickson et al., 2003).

from empirical research. This model provides flexibility, permitting an incorporation of current research on risk and resilience. Problem gambling has been included into this framework based upon a growing body of empirical research. Unique risk factors (indicated in Italics), based upon current research findings (see Derevensky & Gupta, 2004), including paternal pathological gambling, access to gambling venues, depression and anxiety, high extroversion, low conformity and self-discipline, poor coping skills and adaptive behavior, persistent problem behaviors and early onset of gambling experiences have been incorporated. Problem adolescent gambling also shares a number of common risk factors with other health compromising behaviors (indicated in bold font). These include being male, normative anomie, models for deviant behavior, parent-friends normative conflict, low self-esteem, high risk-taking propensity, poor school work and school difficulties. The remaining risk factors in this model are those that have either not been studied or have not been found to be risk factors for

problem gambling but have been found to be antecedents for other adolescent risk behaviors. The illustration of numerous possible risk behavior antecedents, risk behaviors, and health-compromising outcomes in this model clearly points to the need for multifaceted approaches to prevention.

Recommendations and New Directions

There is little doubt that the proposed model requires further testing and refinement. Yet all prevention programs require testing for effectiveness *prior* to their widespread implementation and require ongoing evaluation for program refinement. The lack of empirical testing of the effectiveness of the current prevention programs is of considerable concern. Viewing risk and protective factors in light of the domains in which they operate provides a means to specify program goals (targeting specific factors), to establish outcome evaluation criteria, and to assess effectiveness of prevention programs. A number of evaluations of drug and alcohol programs are incorporated in this model, and in doing so, have acquired additional understanding about how the effects of specific risk and protective factors work. Similar information gained from existing gambling prevention programs can be useful to refine and improve such programs.

Research in the field of gambling is relatively new. Yet, the scientific standards expected from this field need to be no less rigorous. It is necessary to ensure that scientifically validated prevention program evaluations meet the highest scientific standards as advocated by the Center for Substance Abuse Prevention (2001). The established criteria adopted to determine the credibility of evaluations include theory-driven findings, high fidelity implementation, quality of sampling design, the use of appropriate psychometric evaluation measures, appropriateness of data collection and analysis techniques, and addressing plausible alternative hypotheses concerning program effects, integrity, and utility (Brounstein et al., 1999; Center for Substance Abuse Prevention, 2001). Current scientific data concerning program effectiveness is either limited at best or non-existent for the current gambling prevention programs.

Findings from the field of adolescent alcohol and substance abuse suggest that no one single approach to prevention appears to be uniformly successful (Baer, MacLean, & Marlatt, 1998). As such, a combination of strategies seems to work best toward the goal of nurturing resilience. The Center for Substance Abuse Prevention (2001) has outlined a number of strategies that can be combined in the development of school, family and community prevention programs that target each area that affects youth functioning. These strategies include information dissemination, prevention education

(critical life and social skills), offering alternative activities, problem identification and referral, community-based processes (training community members and agencies in substance use and gambling education and prevention) and active lobbying for policy modifications or additions that aim to reduce risk factors and enhance protective factors. It is important to note that a number of guiding principles, including the appropriate timing of the intervention (to occur in a child's life when they will have maximal impact) and socio-cultural relevance (norms, cultural beliefs and practices) to matching a prevention program with a target population need to be considered (Nation et al., 2003).

It is crucial for programs to adjust the strategies and material of prevention programs to the developmental level of the individual receiving the intervention. As such, developmental research should form the basis of prevention strategies. Prevention programs also need to bear in mind that coping strategies and social, academic, employment and economic pressures may change (Eisenberg, Fabes, & Guthrie, 1997) and ensure that materials and outcome measures are congruent with current knowledge about coping and adaptive behaviors at different ages.

Prevention and Social Policy

Prevention programs, in a global way, represent a form of social policy. This is particularly important within the context of the debate between harm-reduction versus abstinence. It has been argued that the strength of prevention programs that address problem gambling issues are highly dependent upon clarity in the articulation of responsible social policies and ensure that they reflect research based findings on resilience and effective program evaluations. Current policies that reflect the predominant attitude that gambling has few negative consequences and is merely a form of entertainment leaves little credence to effective abstinence gambling prevention initiatives. Changing widespread attitudes about problem gambling will empower prevention efforts to encourage individuals to make healthy decisions about gambling and other potentially health-compromising behaviors.

Social policies concerning problem gambling are relatively scarce. Furthermore, the lack of parental concern (Ladouceur, Jacques, Ferland, & Giroux, 1998), and ineffective gambling law enforcement, in particular, the selling of lottery and scratch tickets to youth (Shaffer & Zinberg, 1994; Felsher, Derevensky & Gupta, 2003) is of considerable concern. Current research on substance abuse prevention suggests that programs may be more effective if prevention services incorporate students' perceptions and attitudes (Brown & D'Emidio, 1995; Gorman, 1998). While there is

preliminary research to suggest that perceptions of skill and luck can be modified for gambling activities (Baboushkin, Derevensky, & Gupta, 1999), there is little evidence and empirical support that attitudes toward gambling can be modified and have long-lasting changes. Much needed basic and applied research funding is required to help identify common and unique risk and protective factors for gambling problems and those similar to other addictive behaviors. In addition, longitudinal research to examine the natural history of pathological gambling from childhood to adolescence through later adulthood is required.

Concluding Remarks

Only recently have health professionals, educators and public policy makers acknowledged the need for prevention of problem gambling. In light of the scarcity of empirical knowledge about the prevention of this disorder, the similarities between adolescent problem gambling and other risk behaviors, particularly alcohol and substance abuse, have been examined and found to be informative in the conceptualization of the future direction of gambling prevention programs. It is important to note that while some of these risk factors are consistent with individuals with delinquent and antisocial behaviors, and that delinquents have a higher risk for problem gambling (Magoon, Gupta & Derevensky, in press; Westphal, Rush, Stevens, & Johnson, 1998), further empirical research is necessary before definitive conclusions can be drawn concerning the comparability between these groups. As well, a review of the current literature found that most pathological gambling prevention programs lack a strong theoretical orientation and they have been implemented without being empirically evaluated. This is of serious concern as such programs may in fact be promoting gambling behavior. Finally, most existing programs are school-based programs aimed at children and adolescents. This should not be misconstrued to suggest that only youth remain high risk for the development of serious pathological gambling programs or that such behaviors can not occur at any age.

We have attempted to illustrate the importance of using a conceptual model as the foundation for prevention efforts and have argued that research, development of prevention programs, and their acceptability into school-based curriculum and community programs requires much needed basic and applied research. There is a solid and growing empirical base indicating that well-designed, appropriately implemented school-based prevention can positively influence multiple social, health, and academic outcomes (Greenberg, Weisberg et al., 2003). Despite our limited knowledge

of the role of protective factors in gambling problems, there is ample research to suggest that direct and moderator effects of protective factors can be used to guide the development of future prevention and intervention efforts to help minimize risk behaviors. Dickson et al.'s (2002) adaptation of Jessor's (1998) risk behavior model provides a promising framework from which to begin the much needed development of effective, science-based prevention initiatives for minimizing and ensuring a harm-reduction approach for problem gambling among youth as well as other selected groups.

There is a strong belief that competence and health-promotion programs are best initiated before students are pressured to experiment with risky behaviors. Early intervention prevention programs which follow adolescents through high school will likely result in fewer youth with gambling problems. Socio-cultural factors also remain crucial in developing effective programs. Prevention programming will need to account for the changing forms and opportunities for gambling. Ultimately, school-based initiatives may have to examine the commonalities amongst multiple risky behaviors before educators become inundated with the implementation of prevention programs for risky behaviors and have little time for the educational curriculum.

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