

Prevention Efforts Toward Reducing Gambling Problems

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The National Research Council's (1999) seminal review of the scientific literature for the National Gambling Impact Study Commission has 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. While the current attempts at primary prevention of gambling problems have been limited at best (National Research Council, 1999), 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, individuals with low income, and those experiencing other impulse and additive disorders) (National Research Council, 1999). This overview summarizes the current literature on prevention 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. A more detailed description of the current gambling prevention programs are provided in the accompanying comprehensive report. It is important to note at the outset that the current scientific knowledge concerning gambling behavior in general, and problematic gambling in specific, and its social impact is still in its infancy. 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 future mental health, antisocial, and risk-taking behaviors. Grasping the severity of the consequences associated with youth problem gambling is often difficult in light of the widespread attitude that youth are not active contributors to society, 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; National Research Council, 1999; Shaffer & Hall, 1996, 2000). It is important to note that youth not only gamble for money with their peers and family members, they have been shown to gamble in most forms of legalized and state sanctioned gambling in spite of legal restrictions. While most adolescents gamble in a socially acceptable manner with few apparent gambling related problems, they have been shown to be particularly susceptible and at-risk for the development of serious gambling problems (Derevensky & Gupta, 1999; 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 gambling in excess and being at-risk for the development of a serious gambling problem (Derevensky & Gupta, 2000; 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 also particularly vulnerable.

Similar to adults, our current empirical knowledge of youth problem gambling includes a profile of the adolescent gambler that reflects the serious nature of gambling-related problems. Adolescent problem gamblers have been found to have lower self-esteem (Gupta & Derevensky, 1998b), higher rates of depression (Gupta & Derevensky, 1998a, 1998b, Marget, Gupta & Derevensky, 1999; Nower, Derevensky, & Gupta, 2000), poor general coping skills (Marget, Gupta & Derevensky, 1999; Nower, Gupta & Derevensky, 2000), higher anxiety (Gupta & Derevensky, 1998b, in press; Ste-Marie, 2001; Vitaro, Ferland, Jacques & Ladouceur, 1998) and are at heightened risk for suicide ideation and suicide attempts (Gupta & Derevensky, 1998) (For a detailed summary of the current empirical knowledge of adolescent problem gamblers see the reviews by Derevensky & Gupta, 1999, 2000; Gupta & Derevensky, 2000; and Haroon & Derevensky, 2001).

Problem and pathological gambling amongst youth have been shown to result in increased delinquency and crime, disruption of familial and peer relationships and decreased academic performance (Fisher, 1993; Gupta & Derevensky, 1997a; Ladouceur & Mileault, 1998; Wynne, Smith, & Jacobs, 1996). These youth are greater risk-takers and are at increased risk for the development of other addictions or polyaddictions (Gupta & Derevensky, 1998a; Lesieur & Klein, 1987; Winters & Anderson, 2000). 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; Gemini Research, 1999; Wynne, Smith, & Jacobs, 1996) amplifies the necessity for effective prevention initiatives targeting such vulnerable populations (Dickson, Derevensky, & Gupta, in press a; National Research Council, 1999).

While it has been noted that little progress has been made in understanding the efficacy of treatment of problem adolescent gambling, the characteristics of those seeking help (Gupta & Derevensky, 2000; 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 is particularly scarce (Dickson et al., in press a).

Within the past two decades there has been an increased interest in general human development. 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). 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 shape the 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), the conceptualization of problem gambling, as another form of risk-taking behavior and its adverse consequences substantiates the need for effective prevention initiatives.

Figure 1

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., substance abuse). In terms of primary prevention, the bulk of resources have been allocated toward initiatives with the goal of preventing or postponing 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; Pouline & Elliott, 1997; Thombs, 2000), especially in the field of alcohol use and gambling (Dickson, Derevensky & Gupta, in press b).

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 for 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., in press a,b; Gupta & Derevensky, 1998). Considering that serious gambling problems result in far-reaching and long-lasting negative consequences and that gambling is largely promoted and easily accessible, the issue 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 behaviours. However, there currently remains insufficient empirical knowledge about how to promote the use of harm-reduction and few, if any, program evaluations delimiting the potential positive and/or negative outcomes resulting from the implementation of various harm-reduction *prevention* programs for the range of adolescent risky behaviours have been realized (Ogborne, 1999; Poulin & Elliott, 1997; Thombs & Briddick, 2000).

Abstinence and harm reduction approaches

There are two global paradigms under which particular 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 do rest upon different short-term goals and processes. The central question being asked is which form of prevention is best for targeting the issue of gambling problems?

A review of the literature indicates that there have been several attempts to define the construct of harm-reduction (Lenton & Single, 1998; Riley, Sawka, Conley, Hewitt, Mitic, Poulin, Room, Single, & Topp, 1999; Single, 2000). As a 'catch-all' phrase, harm-reduction incorporates any 'strategy' (policy, program, intervention) that seeks to help individuals without demanding abstinence from a particular activity ~~that may or is currently~~ incurring harm (Magham, 2001; Riley et al., 1999); secondary prevention strategies, based upon the assumption that individuals cannot be prevented from participating in particular risky behaviours (Baer, MacLean, & Marlatt, 1998; Cohen, 1993); tertiary prevention strategies (DiClemete, 1999); and a 'health movement' (Denning & Little, 2001; Heather, Wodak, Nadelmann, & O'Hare, 1993).

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While negative consequences of gambling are evident (bankruptcy, depression, suicide, health problems, work productivity, crime, familial disruptions, peer difficulties, etc.) (Derevensky & Gupta, 1999), it still remains unclear as to whether the costs of legalized gambling outweigh their benefits. By default, most state governments seem to have adopted a harm-minimization approach (3 states, Tennessee, Utah and Hawaii currently have no legal form of gambling in the U.S.), such that policy efforts have been aimed at reducing or minimizing the negative impact of gambling while not limiting access to the general public.

Underage youth are not allowed access to legalized gambling venues. While these laws are necessary, research clearly indicates that early gambling experiences mostly occur with non-legalized forms of gambling, such as playing cards at home for money, placing informal bets on sports events, etc. or parents gambling for/and with their children (Gupta & Derevensky, 1998a; Jacobs, 2000). 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, would it be realistic to expect youth to stop gambling when it has been found that between 70-80% of children and adolescents report gambling in 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.

*age init.
as a risk
factor*

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, in press a; Gupta & Derevensky, 1998a, Jacobs, 2000; National Research Council, 1999; Wynne et al., 1996). This finding strongly suggests that delaying 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. Many sociologists, anthropologists, and psychologists agree that gambling has been historically part of our culture. Accepting this as a basic principle, concomitant with the fact that today's youth will be tomorrow's adults having free access to legalized gambling, the harm-minimization approach seems the most logical. Included under the principles of harm-minimization is the promotion of responsible behavior; teaching and informing individuals about the facts and risks associated with gambling, along with supplying them with the skills needed to remain in control. 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 behaviours has not been without criticism. However, given that there are a number of socially and widely acceptable risk behaviours (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' behaviour is promising.

Gambling is unique in that it can be easily accessed without the need to cross social barriers (i.e., playing cards with friends for money), in contrast to alcohol and cigarette use where youth *must* gain access through sales clerks or other adults. Confounding this is the finding that gambling is also often promoted within the home and as such is often perceived as a harmless activity (Gupta & Derevensky, 1997, 2000), whereas most youth are aware that alcohol and cigarette use involve risks and potential negative health consequences. Also amongst the important differences is that gambling, when engaged in infrequently and responsibly, does not carry the same health risks and consequences as do cigarette, alcohol, and drug use, which may make the promotion of abstinence less critical. So while the benefits of drawing upon the findings of prevention research are evident, it is nevertheless imperative that youth gambling prevention policy is eventually based upon research conducted specifically on this issue.

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 behaviour rather than the risky behaviour itself appears appropriate for those 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 who drink or gamble do not develop significant problems due to such involvement. Furthermore, research on the patterns of use (Gliksman & Smythe, 1982) and personal and social control mechanisms of various substance use (Boys, Marsden, Griffiths, Fountain, Stillwell, & Strang, 1999; Dembo, Babst, Burgos, & Schmeidler, 1981; Kandel, 1985) point to the possibility of achieving controlled involvement in risky behaviors, free from problematic involvement. Evidence derived from adult populations indicate that substance users make rational choices, weighing pros and cons 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 similar processes.

A continuum of harm

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 become compulsive gambling behavior.

Harm-reduction prevention programs

The strategies of harm-reduction prevention are similar to those associated with other approaches. 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 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 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 its location in a high-risk neighbourhood).

The components of universal harm-reduction prevention programs have the specific objectives of fostering positive attitudes towards risky behaviors, making informed choices about engaging in risky behaviour (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 will be able to know whether they need to avoid alcohol, tobacco, and illegal drugs completely, how to be careful if choosing to experiment with risky activities, and making the decision to get help for a problem (Beck, 1998).

Resilience research

The resiliency literature is predicated upon the findings that some individuals appear more immune to adversity, deprivation and stress than others. Individuals, who do well despite experiences of multiple stressors, are perceived to be 'resilient' (Garmezy, Maston, & Tellegen, 1984; Werner & Smith, 1982). Resilience may be best conceived as *a dynamic process encompassing positive adaptation within the context of significant adversity* (Luthar et al., 2000a). Those youth who have not developed a gambling problem or other addictive behavior despite unfavourable circumstances, have adapted at that particular time, to the various stressors (risk factors) they face. Resiliency is not a fixed attribute and can vary, depending on the adversities faced, developmental period, and the general environment surrounding.

There is evidence to believe that resiliency is related to biological, self-righting dispositions in human development (Waddington, 1942, 1957) and to the protective mechanisms that work in the presence of stressors (Rutter, 1987; Werner & Smith, 1982). Resilient individuals seem to more effectively cope with stressful situations and emotional distress in ways that enable them to develop appropriate adaptive behaviors and to respond in a healthy manner. It is important to note that an individual can be more resilient in relation to one outcome but not another.

Resilient youth

Empirical research, 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).

More recent science-based programs such as the Centre for Substance Abuse and Prevention's Eight Model Programs (Brounstein et al., 1999) are based upon the research findings of their effectiveness. Empirical and clinical evidence points to the need to examine similarities and differences amongst addictive behaviors (consistent with Jacobs' (1986) *General Theory of Addictions*) (Gupta & Derevensky, 1998b, 2000; Winters & Anderson, 2000), analyze various risk and protective factors, and understand the coping mechanisms of those dealing with an addiction.

Risk and protective factors across addictions

In an effort to examine the current prevention efforts in the fields of alcohol and drug abuse, the concepts of risk and protective factors and their interaction has played a crucial role (Brounstein et al., 1999, Dickson et al., in press a). These protective efforts seek to prevent or limit the effects of risk factors (those variables associated with a high probability of onset, greater severity, and longer duration of major mental health problems) and increase protective factors (conditions that improve an individual's resistance to risk factors and disorders). In doing so, it is believed that individuals will become more resilient. As individuals are not necessarily born resilient, they acquire resilient qualities through the opportunities presented and through the particular situations to which they are exposed.

Risk factors constitute those factors that are precursors to unsuccessful coping or poor outcomes. Current etiological models have emphasized complex interactions among genetic, biomedical and psychosocial risk and protective factors (Coie et al., 1993). As a result, successful risk-focused prevention programs have focused upon eliminating, reducing, or minimizing risk factors associated with particular outcomes, be it problem gambling, alcohol, or drug addiction. Evidence of resiliency in children (e.g., Garmezy, 1985a; Rutter, 1987; Werner, 1986) has expanded the prevention field from a risk-prevention framework to one that includes both risk-prevention and the fostering of protective factors. Masten et al. (1990) suggest 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 were 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 Table 1 in the comprehensive report). These risk and protective factors have been grouped by the domains in which they operate. In their conceptual model, Bournstein et al. (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.

Figure 2

Protective and risk factors have been shown to interact such that protective factors reduce the strength of the relation of the stressor for particular outcomes. There are numerous positive 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 et al., 1995).

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. (in press a) (see Table 2 in the comprehensive report) 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 a family 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; Griffiths & Wood, 2000; Gupta & Derevensky, 2000 for reviews) there are no studies which have examined protective mechanisms, or more generally on resiliency, for youth with respect to problem gambling. Protective factors that have been examined across other youthful 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 being implemented, many are developed for youth and have no science-based underlying principles, have failed to account for risk and protective factors, and few have been systematically evaluated. A brief description of the prevention programs developed in the United States and in Canada can be found in Table 3 of the accompanying report). The vast 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 stated 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. The information concerning risk and protective factors are predicated based upon the theoretical definition previously provided and identified.

Commonalities and differences amongst programs

While a number of prevention programs to reduce the incidence of gambling problems currently exist, most incorporate a universal model aimed at adolescents with the majority attempting to raise awareness concerning gambling and gambling related issues (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 and fall far short of models and standards associated with *Best Practices*. The vast majority of 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), prevention program 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 such as teaching students about the odds and probabilities

associated with games of chance, while others emphasize issues related to erroneous cognitions and thoughts.

The vast majority of the programs reviewed target teenagers and students in middle school. Some programs were also developed to target specific vulnerable populations which present specific needs, such as First Nations, seniors, incarcerated populations, etc., thus providing the opportunity for different environmental, cultural, and situational factors to be addressed. Information is presented using a number of medium with videos and paper/pencil curriculum being the most common. Several school-based curriculum provided detailed teacher manuals, questions for discussions, and references for further information.

A Conceptual Framework for Harm-Reduction Prevention

Despite the complexities of using the risk-protective factor model (see Coie et al., 1993), Dickson et al. (in press a) proposed this model to establish the theoretical basis of harm-reduction because of its role in science based prevention, its empirical validity in understanding current trends in adolescent risk behaviour theory (Jessor, 1998), and its role in empirically-supported theory of intentional behavioural 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.

An examination of the commonalities of risk factors for problem gambling and other addictions provides sufficient 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) may suggest a 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).

Dickson et al.'s (in press a) 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

Figure 3

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 3 have been previously identified from empirical research (see Tables 1 and 2 in the accompanying report).

This model provides flexibility, permitting an incorporation of current research on risk and resilience on an ongoing basis. 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, 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 behaviour, 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.

As previously noted, protective factors for youth and adult problem gambling have not been empirically examined. However, the significant factors of parent-family connectedness and perceived school connectedness, which were found to be protective against every health risk behavior measure except pregnancy (Resnick et al., 1997), are likely also to help prevent youth problem gambling. Variance in factors that influence engagement in risk behaviors and variance in health outcomes amplifies the need to target the development of resiliency. A wide range of factors work together to influence gambling behavior including being male (biology), accessibility to gambling venues (social environment), models for deviant behavior (perceived environment), depression and anxiety (personality), and poor coping skills (behavior). With the exception of early childbearing, adolescent problem gambling shares all health compromising outcomes similar to other youth risk behaviors and as such can be viewed from a public health model (Korn & Shaffer, 1999). 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 evaluation criteria, and to retrieve outcomes of the prevention program. Several evaluations of drug and alcohol programs incorporated this model, and in doing so, gained additional understanding about how the effects of specific risk and protective factors work. Similar information gained from existing gambling prevention programs can be used to refine and improve such programs.

Research in the field of gambling is relatively new. Yet, the scientific standards expected from this field should be no less rigorous. It is necessary to ensure that scientifically validated prevention program evaluations meet the highest scientific standards as advocated by the Centre for Substance Abuse and Prevention (1993). 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). 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, combination of strategies seems to work best toward the goal of nurturing resilience. The Centre for Substance Abuse Prevention (1993) has outlined a number of strategies that can be combined in the development of school, family and community prevention

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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 alterations or additions that aim to reduce risk factors and enhance protective factors.

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, 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, 2001) is of considerable concern. Similar to 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 are modifiable.

Based upon a review of our existing knowledge, a review of currently available programs, the following recommendations are strongly suggested:

- Much needed basic and applied research funding is required to help identify common and unique risk and protective factors for gambling problems and similar to other addictive behaviors.
- Longitudinal research to examine the natural history of pathological gambling from childhood to adolescence through later adulthood is required.
- Molecular, genetic and neuropsychological research is necessary to help account for changes in gambling progression.
- Research is required to help identify whether youth with gambling problems exhibit certain profiles and/or personality types.

- The effect of accessibility and availability of gaming venues on future gambling behaviors needs to be examined.
- Research investigating whether certain gambling activities may become a gateway to subsequent gambling problems is required.
- Multiple programs incorporating science-based problem gambling prevention need to be developed to help develop *Best Practices*.
- All prevention programs must be scientifically validated before widespread implementation.
- In order to maximize preventive efforts, additional research needs to be undertaken to establish common factors that underlie other adolescent risky behaviors.
- Target populations must be clearly identified and differential, age-appropriate programs need to be developed for different groups (e.g., youth, seniors, Native Americans, etc.).
- A substantial infusion of federal and state grants for the development of school-based and community-based gambling prevention programs is warranted.
- The use of an existing federal agency to serve as a national clearinghouse for materials that will ultimately distribute *Best Practices* in the field of gambling prevention.
- A careful evaluation of the use of the Internet to help disseminate information and prevention efforts should be explored.
- Public policies must be coherent and unambiguous in the support of a harm-reduction approach. Such public policies must also lead to inform (and reform where appropriate) legislative actions.
- Specific research needs to focus on gambling advertisements and their relationship to the onset and maintenance of gambling and problem gambling.

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 (Westphal et al., 1998), further empirical research is necessary before definitive conclusions can be drawn concerning the comparability between these groups. As well, the 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 increasing gambling behavior. Finally, most existing programs are school-based programs aimed at children and adolescents. This should not be misconstrued to indicate that only youth remain high risk for the development of serious pathological gambling programs or that such behaviors can not occur at any age. There were some notable exceptions, with several programs identifying seniors and First Nations people. Unfortunately, these initiatives had little theoretical underpinnings and little substantive evaluation. The possible unique risk and protective factors for these individuals also require further research.

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. Despite our limited knowledge of the role of protective factors in gambling problems (more empirical work needs to be done in this area), 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 (in press a) adaptation of Jessor's (1998) risk behavior model provides a useful 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. Further community-based research focused on other high-risk groups including seniors, First Nations people, members of specific minority groups, and those with other addictions is also required.

Figure 1 Public Health Framework

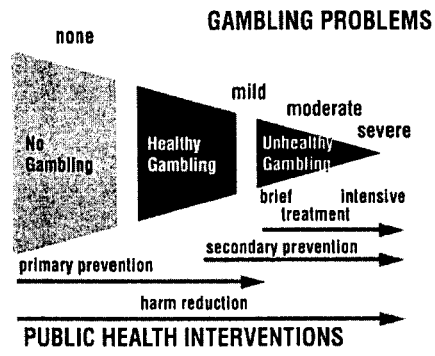


Figure 2

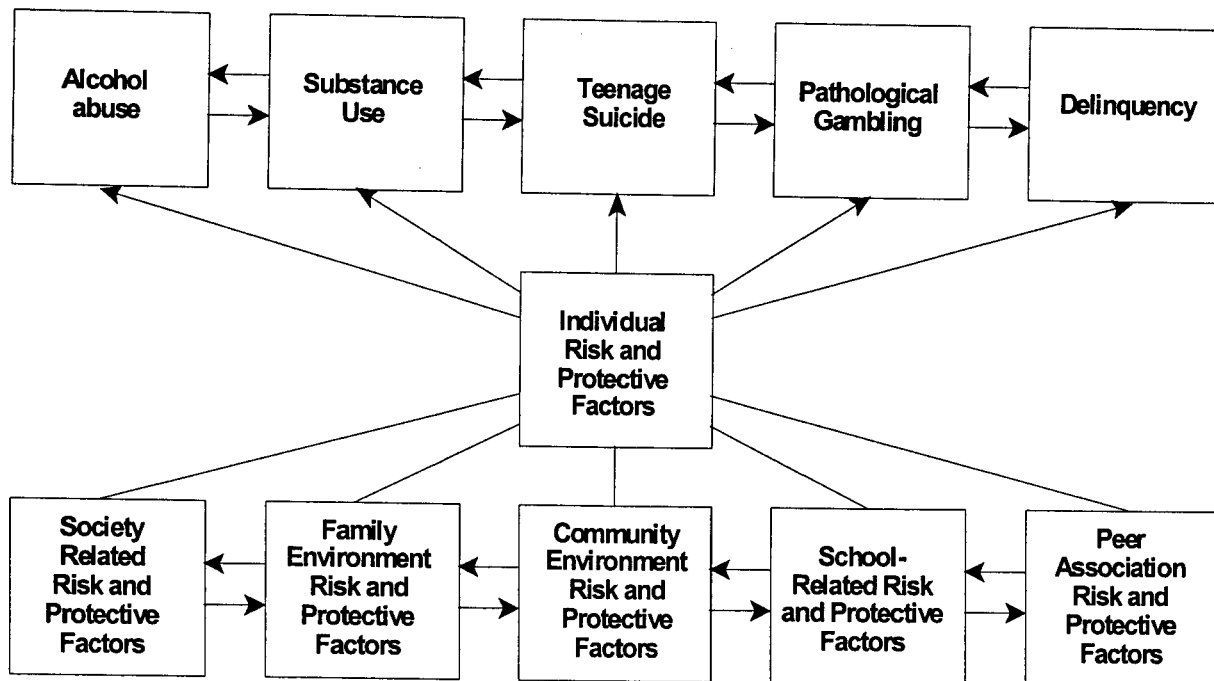
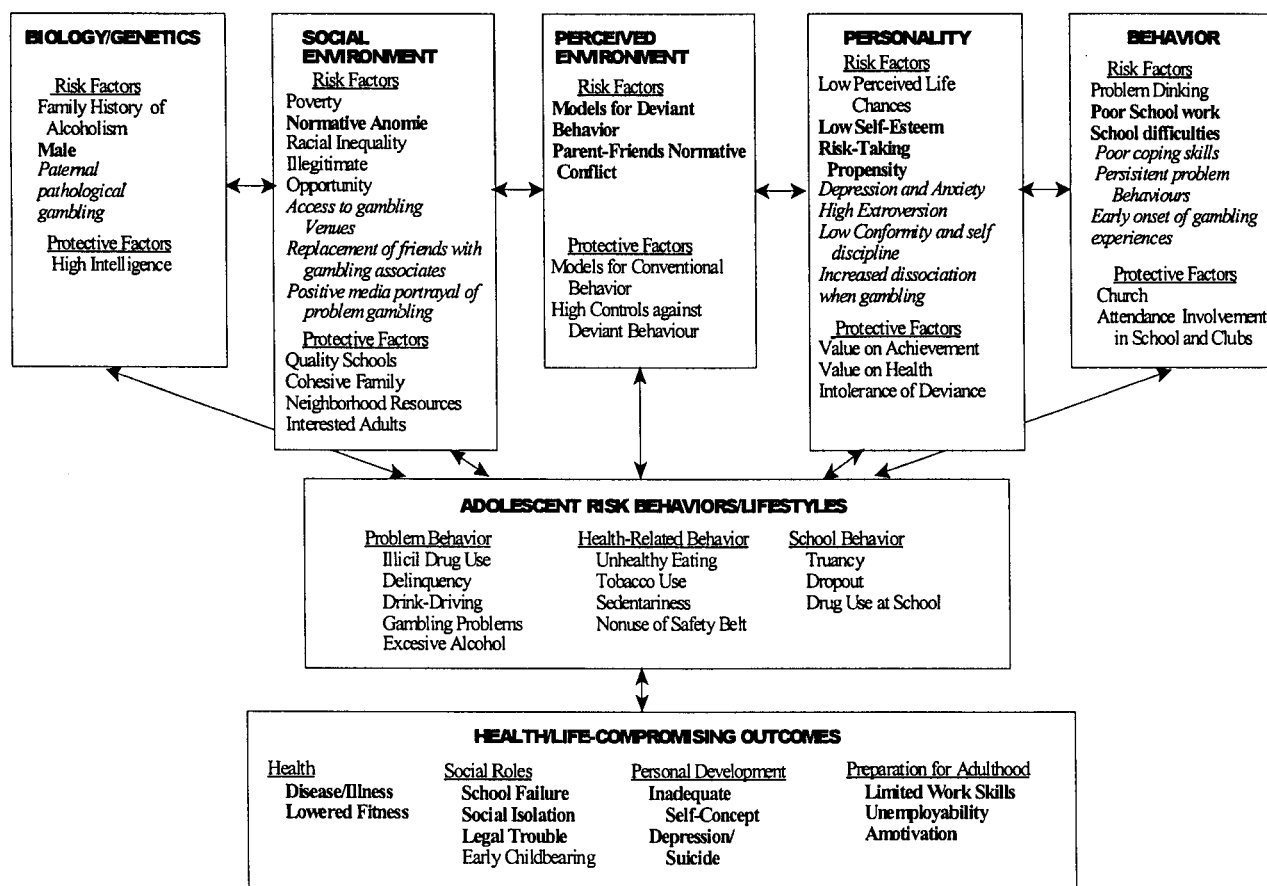


Figure 2. Adapted from Understanding Substance Abuse Prevention: Toward 21st Century Primer on Effective Programs (Bournstein, Zweig, & Gardner, 1999). Centre for Substance Abuse Prevention (CSAP) & Substance Abuse and Mental Health Services Administration (SAMHSA). A conceptual model for understanding the domains of risk and protective factors that influence an individual's behavior.



Bold : shared risk factors

Italics : factors specific to gambling

Figure 3. Adapted from Jessor's (1998) adolescent risk behaviour model with youth gambling risk factors incorporated.