Running head: PROTECTIVE EFFECTS AND YOUTH GAMBLING PROBLEMS

Risk, Compensatory, Protective, and Vulnerability Processes Influencing Youth Gambling Problems and Other High-Risk Behaviours

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ABSTRACT

This study explores the impact of individual attributes and environmental risk on youth gambling, substance, and deviant behaviour problems. With a cross-sectional design, regression analyses indicated that among a sample of mostly first-generation immigrant adolescents from low-income homes, social bonding was associated with a decrease in severity for all three problem behaviours, while peer and neighbourhood risk were associated with an increase in severity for all three behaviours. As well, personal competence was associated with a decrease in deviant behaviour only, while family risk was associated with an increase in both substance problem and deviant behaviour severity. Interestingly, social competence was associated with an increase in substance problems and deviant behaviour. In terms of protective processes, a putative moderating effect was found for composite individual attributes on the relationship between composite environmental risk and deviant behaviour. Findings are discussed with respect to the roles of compensatory, risk, and protective processes.

RÉSUMÉ

Cette thèse examine l'impact des attributs individuels et des facteurs de risque environnementaux sur les problèmes de jeux de hasard et d'argent, de consommation et de délinquance chez les jeunes. Dans le cadre de cette étude transversale, des analyses de régression, effectuées sur un échantillon composé en majorité d'adolescents immigrants de première génération et provenant de milieux défavorisés, ont démontré que les liens sociaux étaient associés à une diminution de la sévérité des problèmes; alors que les facteurs de risque reliés aux pairs et à la communauté étaient associés à une augmentation de la sévérité des problèmes. De plus, les aptitudes personnelles étaient associées à une diminution de la délinquance seulement, alors que les facteurs de risque familiaux étaient associés à une augmentation des problèmes de consommation et de délinquance. Il fut intéressant d'observer que les aptitudes sociales étaient associées à une augmentation des problèmes de consommation et de délinquance. En ce qui concerne les facteurs de protection, il a été démontré que les attributs individuels ont un effet de modération putatif sur la relation entre les facteurs de risque environnementaux et la délinquance. Les résultats sont interprétés en termes du rôle des facteurs compensatoires, de risque et de protection.

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CHAPTER I

Introduction

Young people are regularly exposed to high risk activities, such as gambling, alcohol, drugs, truancy, and theft. Although there are well established relationships between risk and maladaptive behaviour, many youths exposed to adversity demonstrate competence across various domains and remain free from psychiatric symptomatology (Masten & Coatsworth, 1998). As a result, researchers have begun to identify variables and interactions between variables that might act as compensatory or protective factors to counteract the risks associated with aberrant behaviour.

This research evaluates the potentially protective functions of three individual attributes. *social bonding*, or the degree to which people feel a positive affect for and motivation toward social success, *personal competence*, or the ability to function effectively and purposefully, and *social competence*, or the ability to be responsive, caring, and flexible in social situations (Springer & Phillips, 1992; Springer, Wright, & McCall, 1997). The central objective of this research is to assess whether these factors demonstrate compensatory and/or moderating protective effects on three types adolescent problem behaviour, given the risk of impulsivity, anxiety, depression, and various environmental threats (family, peers, neighbourhood), while controlling for age and gender. The three types of adolescent problem behaviour that are investigated include gambling problems, substance problems, and deviant behaviour. The relationships between risk, protection, and each form of problem behaviour are examined within a cross-sectional study design, using a large community sample, made up mostly of adolescents residing in families living below the low income cut-off in the Montreal area.

CHAPTER II

Review of the Literature

Youth Gambling Behaviour

Gambling or the wagering of money on games of chance is an activity that has entertained people throughout history and around the world (Caltabiano, 2004). Despite legal restrictions for underage gambling, children and adolescents enjoy and frequently participate in gambling (Derevensky & Gupta, 2000; Gupta & Derevensky, 1998). Prevalence studies estimate that two thirds of underage youth have gambled in regulated and licensed gambling venues (Jacobs, 2000, 2004). As well, adolescents are reported to have pathological gambling prevalence rates two to four times those of adults (Gupta & Derevensky, 1998; NRC, 1999). In fact, there is mounting evidence that a small but identifiable proportion of adolescents in many countries engage in problem gambling behavior (Becoña, 1997; Delfabbro & Thrupp, 2003; Fisher, 1993; Johansson & Götestam, 2003; Ólason, Sigurdardottir, & Smari, 2005).

Research on the etiology of pathological gambling indicates that problem gambling behaviour often begins early, between the ages of nine to eleven years of age (Gupta & Derevensky, 1998; Jacobs, 2000, 2004). This age of onset is earlier than that of most illicit substances (Gupta & Derevensky, 1998). Furthermore, a growing body of literature points to the co-occurrence of multiple high-risk behaviours, such as increased delinquency and criminal behaviors, substance use, and antisocial behaviors, among adolescents that demonstrate gambling problems (Derevensky & Gupta, 2004a; Ladouceur, Dubé, & Bujold, 1994). Although gambling problems are associated with serious financial, health, and psychosocial risks and complications, the fact that gambling

is perceived to be a highly socially acceptable activity in today's society is particularly disconcerting (Azmier, 2000; Gupta & Derevensky, 1997).

Gambling research has traditionally focused less on adolescent populations and more on adult gambling behaviour. Researchers have suggested that the reason for this may be that excessive gambling behaviour is less directly observable among youth, the negative consequences for youth may be perceived as less severe than those for adults, and the acceptability of gambling as an appropriate activity (Derevensky, 2007, 2009; Derevensky & Gupta, 2004a; Hardoon & Derevensky, 2002). The prevalence and acceptance of gambling in today's society is such that unregulated forms of gambling frequently occur in the home and begin as a family activity (e.g., instant scratchcards in Christmas stockings) (Felsher, Derevensky, & Gupta, 2003; Gupta & Derevensky, 1997).

The most widely used categories to represent youth gambling behavior are conceptualized on a continuum of severity and are based on diagnostic screens that include designated cut-off scores for problem gambling, at-risk gambling, and social gambling behaviours (Derevensky, Gupta, & Winters, 2003). Approximately 3% - 7% of adolescents surveyed in prevalence studies meet the criteria for pathological gambling (Derevensky & Gupta, 2000, 2004a; Jacobs, 2000, 2004; NRC, 1999; Shaffer & Hall, 1996), while another 7% - 10% of adolescents are at-risk for the development of severe gambling behaviour (Derevensky & Gupta, 2004a). Adolescents who meet the criteria for probable pathological gambling demonstrate persistent and excessive gambling behaviour, and exhibit severe gambling-related problems. Derevensky and Gupta (2004b) have argued that the adolescent classification of pathological gambler may be too premature to apply to young populations since pathological behavior implies a long history. Instead, the authors

recommend the use of the term probable pathological gambler. At-Risk gamblers refer to adolescents who do not yet meet sufficient criteria to be classified as probable pathological gamblers, but who are at risk nonetheless for the development of gambling problems should their gambling behaviour escalate (Shaffer & Hall, 1996). In contrast, social gamblers tend to gamble less frequently, are able to set money and time limits when they do gamble, and report no negative consequences associated with their gambling behaviour.

Problem Behaviour Theory

Recent developments in the study of adolescent problem behaviours have seen the emergence of models that conceptualize the interactive nature of risk and protective factors. Problem-behaviour theory (PBT) is a social-psychological framework (Jessor & Jessor, 1977) in which the main premise is that all behaviour results from person-environment interactions. Over several decades PBT has been revised and extended. The most recent revision organizes the main constructs into risk and protective factors (Jessor, 1998), thereby accounting for the impact that a moderating effect can have on the consequences of risk. The protection/risk conceptual framework also incorporates a wider range of variables by including comprehensive individual differences (e.g., attitudes, values, and beliefs) and social contexts relevant to daily adolescent life (family, peers, school, and neighbourhood). PBT has been coined the most influential overarching framework to explain maladaptation in adolescence (Steinberg & Morris, 2001). Dickson, Derevensky, and Gupta (2004) integrated adolescent gambling behaviour into Jessor's (1998) *Adolescent Risk Behaviour Model*. This model conceptualises risk and protection as interacting across various domains (biological, social environment, perceived environment, personality, and behaviour) and high-risk behaviours. Although

compensatory and protective factors are incorporated in these models, very little research has been conducted to examine whether these factors predict youth gambling problems and how they moderate relationships between risk factors and gambling problems (Dickson, Derevensky, and Gupta, 2008; Lussier, Derevensky, Gupta, Bergevin, & Ellenbogen, 2007).

Risk and Vulnerability Mechanisms

The term *risk* refers to predictors such as individual attributes, interpersonal situations, or broader contexts within the environment that increase the likelihood of acquiring and maintaining maladaptive behaviours (Kaplan, 1999). Two terms commonly used in reference to risk include *vulnerability factors* and *risk factors*. Vulnerability factors refer to predictors that increase the chances of negative outcomes in the context of adversity, whereas risk factors refer to predictors that increase the chances of negative outcomes regardless of exposure to adversity (Rose, Holmbeck, Millstein Coakley, & Franks, 2004). In statistical terms, a risk factor implies a negative main effect, whereas a vulnerability factor implies an exacerbating moderating (interactive) effect on the relationship between a predictor and a maladaptive outcome (Fergusson, Vitaro, Wanner, & Brendgen, 2007; Steinhausen & Winkler Metzke, 2001).

It is widely understood that as the co-occurrence and accumulation of risk factors increases over time, so too do negative outcomes such as psychopathology, addiction, and delinquent behaviour (Jessor, 1998; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995; Rutter, 1990). Risk is often conceptualized on a continuum, with one extreme associated with positive outcomes and the other extreme associated with negative outcomes (e.g., academic performance) (Masten, 2001). However, this is not

true of all risk factors. For example, teen pregnancy is associated with negative outcomes but the lack of pregnancy is not necessarily associated with positive outcomes.

Despite the inherent differences between excessive gambling and substance abuse, the two forms of dependency share similar consequences such as dissociative states, tolerance, and altered physiological arousal (APA, 1994). Although research on the co-occurrence of substance use and delinquency among adolescents and early adulthood is more extensive (Cooper, Wood, Orcutt, & Albino, 2003; Mason & Windle, 2002) several studies have demonstrated a co-occurrence between youth gambling problems and substance use and delinquency (Barnes, Welte, Hoffman, & Dintcheff, 2005; Hardoon, Gupta, & Derevensky, 2004; Magoon, Gupta, & Derevensky, 2005; Vitaro, Brendgen, Ladouceur, & Tremblay, 2001). For example, Winters and Anderson (2000) found that adolescents were four times more likely to gamble daily or weekly if they also consumed drugs regularly (Winters & Anderson, 2000). In a longitudinal analysis, Vitaro and colleagues (2001) found a prospective link between substance use and gambling problems among adolescents. However, more recently, findings from a cross-lagged panel analysis demonstrated only low cross-lagged links among problem behaviours. After controlling for concurrent links and shared variance, substance use was found to be prospectively linked to delinquency but not gambling (Wanner, Vitaro, Carbonneau, & Tremblay, 2009).

Intrapersonal

Probable pathological gambling appears to be more prevalent among males than females (NRC, 1999). Males are more likely to gamble more money (Derevensky, Gupta, & Della-Cioppa, 1996), to begin gambling at an earlier age (Derevensky & Gupta, 2001), and to gamble more frequently (Jacobs, 2000, 2004). Adolescents meeting the criteria for

pathological gambling are more likely to report difficulty in school and truancy (Hardoon et al., 2004; Lesieur et al., 1991), as well as peer and neighbourhood risk (Lussier et al., 2007). Attributes including physiological, personality, emotional, and coping variables have also been shown to be associated with excessive youth gambling behavior (Derevensky & Gupta, 2004a; Dickson, Derevensky, & Gupta, 2002; Hardoon & Derevensky, 2002). The predictive relationship between youth gambling problems and three personality variables including impulsivity, anxiety, and depression are discussed in greater detail below.

Impulsivity. Predictive links have been identified in longitudinal studies between poor impulse-control and youth problem gambling (Vitaro, Arseneault, & Tremblay, 1999; Vitaro, Ferland, Jacques, & Ladouceur, 1998), substance problems (Vitaro et al., 1998), and delinquency (White et al., 1994). As well, a longitudinal study identified prospective links for behavioural disinhibition in the prediction of gambling problems, substance use, and delinquent behaviour (Wanner et al., 2009). The link between poor impulse-control and gambling behaviour, substance use, and criminal behaviour has also been found among adults (Carlton & Manowitz, 1992).

Anxiety. Cross-sectional youth gambling research has identified a relationship between anxiety and youth problem gambling (Ste-Marie, Gupta, Derevensky, 2006). However, this relationship may be less straightforward. For example, Vitaro and colleagues (1996) reported that aggressiveness and low anxiety during childhood distinguished problem gamblers from non-problem gamblers in adolescence. In terms of substance problems, numerous clinical and epidemiological studies describe an increased likelihood for substance disorders among persons experiencing anxiety disorders (Kandel

et al., 1999; Kushner, Abrams, & Borchardt, 2000; Kushner, Sher, & Beitman, 1990; Merikanagas et al., 1998).

Depression. Mixed evidence exists regarding the role of depression in relation to problem behaviour. Adolescents with gambling problems often report higher levels of depression, suicide ideation, and suicide attempts (Kaufman, 2004; Nower, Gupta, Blaszczynski, & Derevensky, 2004). As well, there is some indication that depressed mood predicts substance use and substance-related problems among adolescents (Stice, Barrera, & Chassin, 1998). However, certain studies have not found these associations (Hansell & White, 1991; Kumpulainen & Roine, 2002). A recent longitudinal study identified depressed mood as a predictor for substance problems among girls but not boys (Mason, Hitchings, & Spoth, 2007). Delinquency research also demonstrates mixed findings. Although the co-occurrence between adolescent depression and deviant behaviour has been reported (Angold & Costello, 1993), longitudinal data indicates no significant cross-lagged association between depressed mood and delinquency (Overbeek, Vollebergh, Meeus, Engels, & Luijpers, 2001; Overbeek et al., 2006).

Interpersonal

Family. Probable pathological gamblers are more likely to have a parent who struggles with an addiction (Gupta & Derevensky, 1998; Wood & Griffiths, 1998), and often report having had their first gambling experience at home with a family member (Gupta & Derevensky, 1997). The frequency of gambling among adolescents appears to be related to both parents' gambling frequency and gambling problems. However, youth gambling problems appear to be linked mostly to paternal excessive gambling behaviour (Vachon, Vitaro, Wanner, & Tremblay, 2004). Furthermore, even after controlling for

numerous variables (including socioeconomic status, gender, and impulsivity-hyperactivity problems), main effects were identified between youth gambling problems and poor parental monitoring and disciplinary strategies (Vachon et al., 2004). Poor parental supervision has also been found to predict substance use (Baumrind, 1991), and delinquency (Wanner et al., 2009). Furthermore, parenting practices have been identified as a common risk factor for all three problem behaviours (Wanner et al., 2009).

Peers. Peer modeling and social learning also appear to be involved in the development of gambling problems (Gupta & Derevensky, 1997; Hardoon & Derevensky, 2001). For example, many adolescents report that they gamble because their friends do (Griffiths, 1990). Over time, adolescents with gambling problems have been reported to replace old friends with gambling associates (Gupta & Derevensky, 2000). Affiliation with deviant peers has been linked separately and concurrently with gambling, substance, and delinquency problems. More specifically, deviant peers have been found to be a strong predictor of gambling (Browne & Brown, 1994), substance use (Dishion, Capaldi, Spracklen, & Li, 1995), and delinquency (Wanner et al., 2009), and have been identified as a common risk factor for all three behavioural problems (Wanner et al., 2009).

Contextual

Neighbourhood. Although less research has directly examined predictive links between disadvantaged neighbourhoods and gambling behaviour, findings from a prospective longitudinal study of boys living in economically deprived neighbourhoods, found that those whose mothers were below the median on maternal occupational prestige were significantly more at risk of gambling problems. That is, the poorest adolescent males were at greatest risk (Vitaro et al., 1999). Associations have also been

found between neighbourhood risk (particularly community violence) and substance problems (Berenson, Wiemann, & McCombs, 2001; Kilpatrick et al., 2000; Kliewer, Lepore, Oskin, & Johnson, 1998; Schwab-Stone et al., 1995; Sullivan, Kung, & Farrell, 2004) and delinquency (Farrell, Sullivan, Esposito, Meyer, & Valois, 2005).

Societal. It has been theorized that the availability and accessibility of gambling activities and venues may exacerbate the relationship between intrapersonal risk factors and the development of gambling problems (Felsher et al., 2003, 2004; Fisher, 1999; Gupta & Derevensky, 1998; Jacobs, 2004). Structural characteristics of games that encourage continued, repetitive play (e.g., electronic gambling machines) and electronic forms of gambling that use vivid colors, sounds, music, and lights are believed to enhance the addictive potential of games (Abbott et al., 2004; Derevensky, 2007; Felsher et al., 2003; Griffiths & Wood, 2004). As well, there is growing concern regarding online gambling sites that permit underage youth to play without money. It has been theorized that these sites may in effect be training youth to gamble with money once they reach the legal age to do so (Derevensky, 2007).

Compensatory and Protective Processes

Traditionally, the major focus of prevention research has been to identify risk and vulnerability factors for maladaptive outcomes (Garmezy, 1971; Pasamanick & Lilienfeld, 1956). However, the identification of risk and vulnerability factors by themselves may be limited with respect to prevention efforts since many of these factors are difficult to minimise (e.g. poverty) or identify (e.g. sexual abuse). Furthermore, many high-risk youth never actually develop the anticipated negative behaviours despite elevated levels of exposure to relevant risk and vulnerability factors (Leshner, 1999;

Werner & Smith, 1992). As a result, researchers have begun to identify variables and interactions between variables that might act as compensatory or protective factors to counteract the risks associated with aberrant behaviour.

The term *protection* refers to mechanisms that improve an individual's resistance to negative outcomes. Two terms commonly used in reference to protection include *protective* and *compensatory* factors. Protective processes include variables that decrease the chances of negative outcomes in the context of adversity, whereas compensatory factors refer to variables that ameliorate the chances of negative outcomes regardless of exposure to adversity (Rose et al., 2004). In statistical terms, a compensatory mechanism implies a negative main effect, whereas a protective mechanism implies a putative moderating (interaction) effect on the relationship between a risk variable and a maladaptive outcome (Fergusson et al., 2007; Rutter, 1987; Steinhausen & Winkler Metzke, 2001). Protective mechanisms may include intrapersonal attributes (e.g., temperament, intelligence, social bonding, personal competence, social competence), interpersonal factors (e.g., warm and supportive family and friendships), and contextual characteristics (e.g., participation in school clubs and activities) that moderate a person's reaction to adversity such that development is more adaptive than if the protective processes had not existed (Masten, Best, & Garmezy, 1990; Rutter, 1987).

Although substantial attention has been devoted to the identification of salient protective processes related to other high-risk behaviours (e.g., substance problems and delinquency), very little research of this kind has been conducted in the field of youth gambling behaviour. It has been hypothesized that protective mechanisms associated with the prevention of other adolescent high-risk behaviours may be influential in relation to

youth problem gambling (Dickson et al., 2002, 2008). However, the systematic examination of vulnerability, compensatory, and protective mechanisms in the field of youth gambling is only beginning. Researchers have identified several vulnerability factors (Wanner et al., 2009) and two or three studies have examined compensatory mechanisms (Dickson et al, 2008; Lussier et al., 2007). However, none have examined protective processes related to gambling problems (Dickson et al., 2008). One study by Magoon and Ingersoll (2006) identified a moderating effect of parental influences on the relationship between peer influences and subsequent gambling problems. However, it is unclear whether this moderating effect mitigated (protective factor) or exacerbated (vulnerability factor) the relationship between the two. No study to date has examined the potentially protective role of individual attributes as moderators of the relationship between relevant risk and gambling problems. Compensatory mechanisms that have been found to demonstrate a negative association with youth gambling problems thus far relate to personal characteristics such as social bonding, personal competence, and social competence. These personal characteristics, their associations to gambling behaviour and other high-risk behaviours, are discussed in greater detail below.

Social Bonding. Social bond theory was introduced in 1969 by Travis Hirschi as a way of understanding the elements that lead people to become involved in delinquent acts. Social bonding represents the degree to which people feel a positive affect for, involvement with, and motivation toward success in social contexts (Springer & Phillips, 1992). Four types of social bonds were articulated in the theory as potential determinants. That is, attachment to significant others (e.g., family members), commitment toward conventional activities (e.g., education), involvement in conventional activities (e.g.,

schoolwork) and acceptance of conventional values (e.g., rules of society; Van Gundy-Yoder, 2007).

Studies consistently denote the importance of social bonds in relation to various high-risk behaviours (Resnick et al., 1997; Rutter, 1990), and more recently, to gambling problems (Dickson et al., 2008; Lussier et al., 2007). Several longitudinal studies with adolescent samples have identified family closeness and warm attachment to parents as compensatory mechanisms associated with deviant behaviour, substance use, emotional and behavioural problems, and drug abuse (Costa, Jessor, Turbin, 1999; Cowen, Wyman, Work, & Parker, 1990; Crosnoe, Erickson, & Dornbusch, 2002; Sullivan et al., 2004). As well, teacher bonding (Crosnoe et al., 2002; Jessor, Costa, Krueger, & Turbin, 2006), school bonding, and attitudinal intolerance toward deviance (Costa et al., 1999; Crosnoe et al., 2002; Jessor et al., 2006) have been identified as compensatory mechanisms associated with substance problems and delinquency. Similarly, parental attachment (Magoon & Ingersoll, 2006), family cohesion, and school connectedness (Dickson et al., 2008) appear to operate as compensatory mechanisms in relation to youth gambling problems. Based on a large community sample (N = 1,273), using a cross-sectional design, Lussier and colleagues (2007) identified low social bonding to be the strongest predictor of youth problem gambling (over and above personal competence, social competence, family risk, neighbourhood risk, and perceived deviant peers), while controlling for gender. As well, findings from a longitudinal study over a 2-year period revealed that the co-occurrence of depression and delinquency was predicted by earlier lower family and school bonding (Overbeek et al., 2006). These findings highlight the

importance of the role of social bonding to the development of externalized and internalized maladaptive behaviour.

In terms of protective processes school bonding has been found to putatively moderate the relationship between deviant peers and risky behaviours such as substance use and deviant behaviour (Costa et al., 1999; Crosnoe et al., 2002), as well as the relationship between stress/low self-esteem and heavy episodic drinking (Jessor et al., 2006). Family bonding has also been reported to function as a putative moderator of the relationships between deviant peers and deviant behaviour, alcohol, tobacco, and other drug use (Crosnoe et al., 2002) and between stress/low self-esteem and heavy episodic drinking (Jessor et al., 2006). Similarly, high levels of family support and positive orientation to parents have been found to buffer the relationships between witnessing violence and smoking and alcohol use (Sullivan et al., 2004) and the relationship between parental smoking and adolescent health behaviour (Jessor, Turbin, & Costa, 1998). Finally, intolerance of deviance (prosocial norms) has been found to putatively moderate the relationship between friends who use substances and problem drinking (Costa et al., 1999).

Personal Competence. The ability to function effectively with a sense of purpose toward the future may be referred to as personal competence. Four dimensions related to this concept have been delineated by Springer and Phillips (1992). The main contexts of personal competence for adolescents include the dimensions of self concept, self control, self efficacy, and positive outlook. Personal competence skills (decision making, self-reinforcement, and self-regulation) have been identified as compensatory mechanisms in relation to substance use in several longitudinal studies that were based on adolescent

samples (Griffin, Botvin, Scheier, Epstein, & Doyle, 2002; Griffin, Sheier, Botvin, & Diaz, 2001). As well, personal competence skills (decision making, self-control, self-regulation) have been found to predict later psychological well-being (feeling good, light-hearted, relaxed, and cheerful in the past month), which in turn predicted less substance use three years later (while controlling for baseline levels of substance use) (Griffin et al., 2001). These results were replicated in a separate longitudinal study made up of mostly minority, inner-city adolescents (Griffin et al., 2002). The authors concluded that well-being partially mediated the relationship between personal competence skills and later substance use.

The term *self-control* refers to the capacity in a person to exert control over their impulses and temper. Research on self-control has identified low self-control as a salient predictor of delinquency and substance use and abuse among adolescents (Benda, 2005; Jackson, Sher, & Wood, 2000). Similarly, in a longitudinal study of adolescent male offenders, low self-control (volatile temper) was found to be one of the two most important predictors of criminal behaviour outcomes over time (Conner, Stein, & Longshore, 2008). It should be noted that these studies identified a positive association between low self-control and problems behaviours, which reflects a risk mechanism. Studies have also been conducted to determine whether high self-control would also serve as a predictor (via a negative main effect). One study has indicated that higher levels of self-control were associated with behavioural intentions against substance abuse among adolescents in Iran (Allahverdipour et al., 2009). As well, high self-control has been found to predict positive adjustment, academic and interpersonal success, and less pathology (Tangney, Baumeister, & Boone, 2004). In terms of protective processes, self

control was found to impact the relationships between three predictors (family life events, adolescent life events, and peer substance use) and substance use, such that substance use was reduced among participants with stronger self-control.

The term *self-efficacy* refers broadly to one's level of autonomy. It includes the sense that life can have purpose and that a person can achieve their goals (Springer et al., 1997). As well, it includes the components of locus of control, consequential decision making, and refusal skills (Springer & Phillips, 1992). Perceived self-efficacy has been found to be a compensatory factor in relation to adult gambling problems (May, Whelan, Steenbergh, & Meyers, 2003). However, most research relating to self-efficacy in the gambling literature focuses on monitoring treatment outcomes through the assessment of self-efficacy (e.g., research on the Gambling Self-Efficacy Questionnaire), rather than on the identification of mechanisms relevant to prevention per se (May et al., 2003). In terms of protective processes, self-efficacy beliefs pertaining to peers and family have been found to moderate the relationships between home environment and social behaviour, home environment and achievement test scores, and home environment and an overall problems index (Bradley & Corwyn, 2001). As well, refusal skills have been found to predict alcohol use in several studies with adolescent samples (Epstein & Botvin, 2002: Epstein, Griffin, & Botvin, 2001; Trudeau, Lillehoj, Spoth, & Redmond, 2003). However, these articles found positive correlations between low refusal skills and alcohol use, thus indicating risk mechanisms. Similarly, the interaction effects that have been associated with refusal skills appear to operate as vulnerability mechanisms. For example, Epstein and Botvin (2002), found that low refusal skills exacerbated or intensified the relationship between deviant peers and alcohol use. However, the authors

alluded to the importance of refusal skills training within prevention initiatives. Indeed, an evaluation of such a program indicated that refusal skills mediated the effects of a personal competence enhancement program (coping with influences to engage in substance use) on reduced substance use among inner city youth (Botvin, Schinke, Epstein, Diaz, & Botvin, 1995). As well, one longitudinal study reported a compensatory mechanism for refusal skills such that refusal intentions were negatively associated with later substance use among girls. However, overall findings indicated that while refusal skills and decision making predicted substance initiation, this relationship was explained by negative outcome expectancies and refusal intentions (Trudeau et al., 2003)

Self concept refers to a person's understanding and insight into themselves and their behaviours, and their sense of self-esteem. Research regarding self-esteem has produced mixed results. Although several studies have identified positive self-esteem as a compensatory factor associated with substance use, and emotional and behavioural problems among adolescents (Carvajal, Clair, Nash, & Evans, 1998; Steinhausen & Winkler Metzke, 2001; Veselska, Geckova, Orosova, van Dijk, & Reijneveld, 2008), other researchers have posited that high-self esteem does not reduce the chances of engaging in high-risk behaviour (with the exception of bulimia), but rather plays a negligible role, or may even foster experimentation (Baumeister, Campbell, Krueger, & Vohs, 2003). Indeed, a recent longitudinal study denoted that although low levels of self-esteem were associated with greater risk of maladaptive outcomes, the association was mostly explained by other psychosocial variables (Boden, Fergusson, & Horwood, 2008).

Social Competence. The precise definition of social competence varies among researchers. However, general themes for this concept include the ability to be responsive,

caring, and flexible in social situations (Springer et al., 1997). Social competence has also been described as the skills and orientation in a person that relate to social adjustment and sense of acceptance in social situations (Springer & Phillips, 1992). When a person demonstrates these qualities, it is believed that they are more likely to elicit positive responses from others (Springer et al., 1997). Three qualities related to social competence include assertiveness, confidence, and cooperation and contribution. *Assertiveness* is the ability to stand up for one's self in front of a group in an appropriate manner (Springer et al., 1997). *Confidence* includes the belief that one is likable and acceptable in a variety of contexts. Finally, *Cooperation and Contribution* relate to a person's desire and satisfaction gained from doing their part in social groups, including family. In terms of assertiveness, an association has been reported between higher delinquency and elevated levels of assertiveness that cause social discomfort (ter Laak et la., 2003). In terms of cooperation / contribution, a longitudinal study of high-risk participants indicated that children identified as resilient reported that they were sometimes required to help their family or community in times of need (Werner & Smith, 1992). As well, participation in pro-social activities has been identified as a compensatory factor in relation to problem drinking among adolescents (Costa et al., 1999).

Although some theorists have suggested that positive views about one's social competence are adaptive (Bandura, 1997; Taylor & Brown, 1988), other theorists have pointed out that overly positive self-perceptions of social competence may not be adaptive (Baumeister, Bushman, & Campbell, 2000). This latter perspective suggests that over-confidence about one's social relations may lead to unrealistic expectations from others, and consequently to experiences of depressed feelings or aggressive behaviour. In other

words, an inflated sense of self-competence may lead to a worsening of social relations in certain individuals over time. Some support exists for the notion that social competence may serve as a compensatory mechanism. For example, an elevated sense of social competence has been found to operate as a compensatory mechanism among children experiencing depression, such that depression symptoms were found to decrease (Coie, Martin, Peeke, Seroczynski, & Fier, 1999; Hoffman, Cole, Martin, Tram, & Seroczynski, 2000). As well, an inflated sense of social status among peers has been associated with an increase in social standing over time (Parkhurst & Asher, 1992; Sandstrom & Coie, 1999). However, evidence is mounting that although overly positive self-perception of social competence may lead to an increase in social standing, and to a decrease in depressed feelings, extreme over- or under- estimation may lead to an increase in aggressive behaviour among children with an existing propensity toward aggression (Brendgen, Vitaro, Turgeon, Poulin, & Wanner, 2004). Similarly, in a longitudinal study of children in grade school, an inflated perception of social competence was found to be related to an increase in proactive aggression among rejected children (Orobio de Castro, Brendgen, van Boxtel, Vitaro, & Schaepers, 2007). As well, in a large community sample of adolescents in Slovakia, higher levels of social competence were found to be associated with an increase in smoking and cannabis use (Veselska et al., 2008).

Low Socioeconomic Status (SES)

Although there is no official poverty line in Canada, Statistics Canada has calculated relative measures of low income, which are based on income data and trends in familial spending (Statistics Canada, 2001). Based on the low income cut-offs established for 2001 census data, Quebec had more people living in poverty compared to

the rest of the country (17.5% vs 14.7% respectively), placing Quebec in 4th place among the provinces most affected by economic hardship (an improvement from 1995 in which Quebec placed 2nd) (St-Jacques & Sévigny, 2004). In 2000, the Montreal region was the Canadian metropolis with the highest percentage of low income families, making Montreal a prime location to study youth from low SES homes. By definition, the term socioeconomic status broadly refers to personal lifestyle variables including occupation, income, and education. Other terms such as 'underprivileged' and 'economically disadvantaged' are used interchangeably in this text with 'low SES' to avoid repetition.

Children that live in economically deprived environments tend to have more difficulty in school than other children in terms of achievement test scores, grade retention, course failures, placement in special education, high school graduation rates, high school dropout rates, and completed years of schooling (Brooks-Gunn & Duncan, 1997; Entwisle & Alexander, 1990; Haveman & Wolfe, 1995; Hill & Duncan, 1987; McLoyd, 1998; Patterson, Kupersmidt, & Vaden, 1990; White, 1982). Multiple longitudinal studies confirm the risk of school failure for children living in persistent financial hardship (De Civita, Pagani, Vitaro, & Tremblay, 2004; Pagani, Boulerice, & Tremblay, 1997; Pagani, Boulerice, Vitaro, & Tremblay, 1999). For example, De Civita and colleagues (2004) examined whether children from working-poor families developed equally in terms of their school achievement as children from never-poor working families. Their findings revealed that chronically impoverished, welfare dependent families increased the risk of academic failure in elementary school aged children by 228%. Children in persistently poor families that relied on their own income had far

lower academic failure but were still at 59% higher risk for academic failure than children in never-poor working families.

In a meta-analysis of longitudinal research that examined the relationship between poverty and child outcomes across several domains, Brooks-Gunn and Duncan (1997) summarised the effects on youth of economic disadvantage, while controlling for other related conditions. The effects included physical health issues (low birth weight, growth stunting, and lead poisoning), cognitive deficiencies (intelligence, verbal ability, and achievement test scores), poor school achievement (years of schooling, high school completion), and emotional and behavioural problems (including aggression, fighting, acting out, anxiety, social withdrawal, and depression). In a separate meta-analysis, McLoyd (1998) concluded that poverty, low SES, and residence in financially strained neighbourhoods independently predicted lower scores on IQ tests, lower school achievement, and increased socio-emotional problems.

Based on data from an inter-generational longitudinal study, Miech and Chilcoat (2005) concluded that adolescent marijuana and cocaine use should be added to the list of negative health outcomes caused by low SES. Similarly, a 28-year longitudinal study assessed the association between maternal education and alcohol use in their adult children. Findings indicated that higher levels of maternal education (measured in 1970) were associated with lower risk of moderate and high levels of alcohol use in their adult children (Singhammer & Mittelmark, 2006). Given that the overlap in risk, vulnerability, protective, and compensatory factors among various high-risk behaviours is extensive (Griffiths & Sutherland, 1998; Winters & Anderson, 2000), it would appear plausible that SES could play a meaningful role in the prediction of youth gambling problems as well.

Only a few studies have examined the relationship between low SES and gambling behaviour. Although there is very little prevalence data on the subject, the preliminary research that does exist appears to support this notion (Fisher, 1993; Schissel, 2001). Kaufman (2004) reported that probable pathological gamblers were more likely to classify their family socioeconomic status at both ends of the SES index (i.e. low and high SES). However, the author interpreted the findings with caution given that the distribution was skewed, with only 9.4% of the sample identified as low SES, based upon self ratings.

Current Research

Despite the exposure to related risk and vulnerability factors, many youth never go on to experience gambling problems. As a result, a number of questions come to the forefront. What other factors are at play? Why is it that their patterns of gambling participation are less affected by exposure to risk? To date, several studies have identified the shared and unique risk and vulnerability factors operant in youth problem gambling and substance abuse, yet few studies have examined the commonalities in compensatory factors (Dickson et al., 2008; Lussier et al., 2007), and none have examined the moderating effect of protective factors (e.g., social bonding) on the relationship between risk and youth gambling behaviour. As well, few studies have examined the prevalence of gambling problems among youth from economically disadvantaged homes.

Based on a sample of adolescents largely residing in homes below the low-income cut-off, the current research is designed to explore the compensatory and protective effects of individual attributes (social bonding, social competence, and personal competence) on the relationships between other known predictors (anxiety, impulsivity,

depression, and environmental risk) and high-risk behaviours (youth gambling problems, substance problems, and deviant behaviour) (see Figure 1).

More specifically, this research is designed 1) to identify whether the individual attributes of social bonding, personal competence, and social competence operate as compensatory factors in the prediction of youth gambling problems among youth from low-income homes; 2) to identify whether individual attributes play a meaningful role in the moderation of adolescent problem gambling onset among youth from low-income homes; 3) to identify whether environmental risk factors (family, peers, neighbourhood) operate as risk factors in the prediction of youth gambling problems among youth from low-income homes; 4) to identify whether environmental risk plays a meaningful role as in the moderation of adolescent problem gambling onset among youth from low-income homes; 5) to explore the inter-relationship between self-reported environmental risk, individual attributes, and problem gambling among youth from low income homes; 6) to examine these predictive and interactive relationships concurrently with other high-risk behaviours (i.e., substance use and deviant behaviour); and 7) to examine the prevalence of gambling problems, substance problems, and other deviant behaviour among youth from low-income homes.

Hypotheses

- Composite individual attributes (social bonding, personal competence, social competence) will mitigate the relationships between known predictors (anxiety, impulsivity, depression, environmental risk) and high-risk behaviour problems (gambling, AOD use, and deviant behaviour).

- Composite individual attributes (social bonding, social competence, personal competence) will independently demonstrate significant negative linear main effects with problem behaviours (gambling, substance use, and deviant behaviour), above and beyond other predictor variables (gender, impulsivity, anxiety, and depression).
- Composite environmental risk domains (family, peers, neighbourhood) will exacerbate the relationship between other known predictors (anxiety, impulsivity, depression) and high-risk behaviour problems (gambling, substance use, and deviant behaviour)
- Environmental risk domains (family, peers, and neighbourhood) will independently demonstrate a significant positive linear relationship with high-risk behaviour problems (gambling, substance use, and deviant behaviour), above and beyond other predictor variables such as gender, impulsivity, anxiety, and depression.
- Among three 3-way interactions, composite environmental risk will mitigate the putative moderating effect of composite individual attributes on the relationships between known predictors (anxiety, impulsivity, and depression) and high-risk behaviour problems (gambling, substance use, and deviant behaviour).
- Prevalence rates for gambling and substance problems are expected to be elevated among this sample of youth from mostly low-income homes compared with existing prevalence rates.

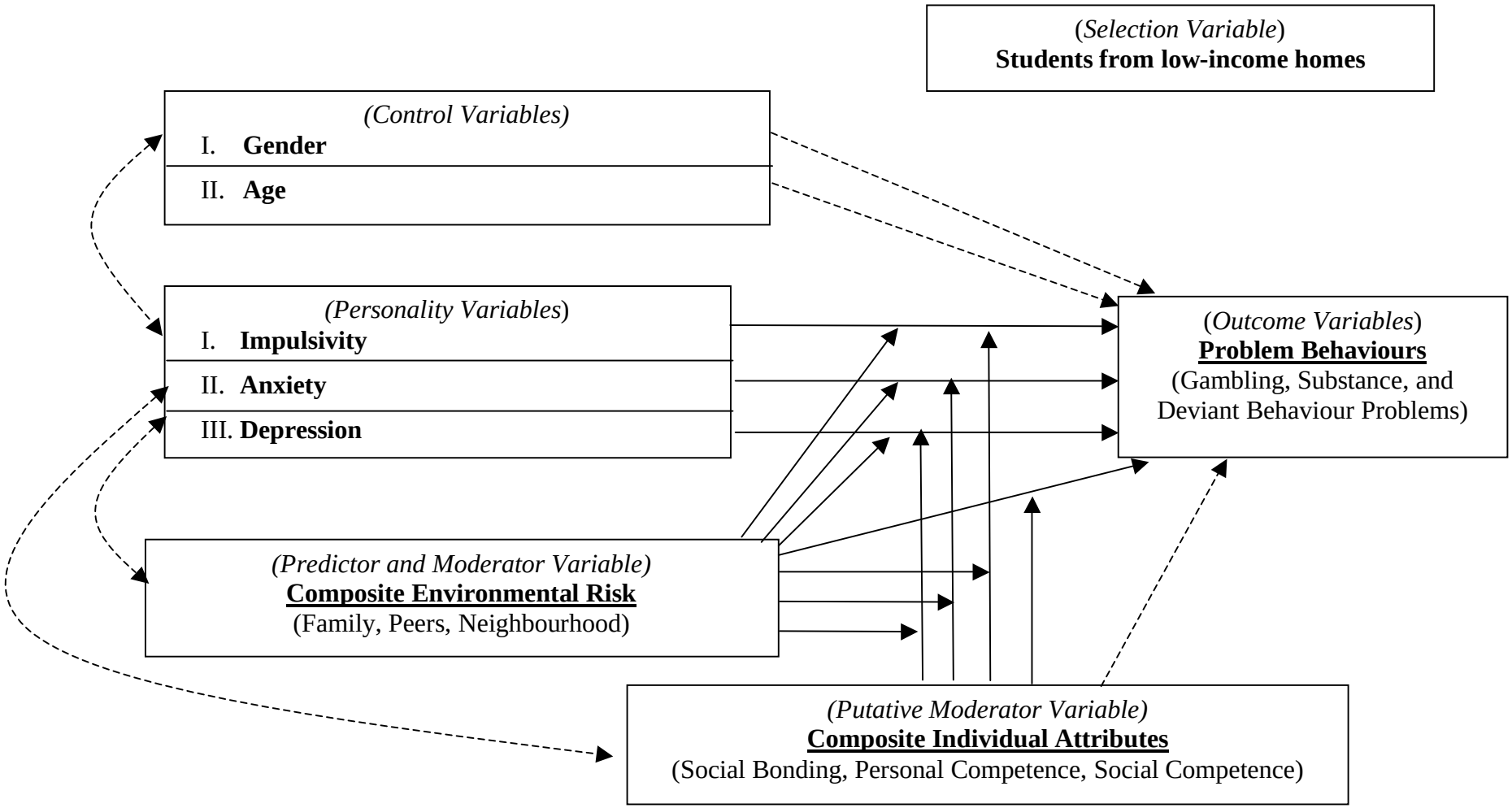


Figure 1. Conceptual Illustration of Hypothesized Prediction Model for Direct and Moderating Influences on Problem Behaviors

CHAPTER III

Method

Participants

The sample included 1,055 participants from schools with an over-representation of students from low-income homes (535 males, 518 females, 2 missing gender information) from Montreal in grades 7 to 11 (ages 11-18+) (See Table 1). A large sample was required in order to obtain an adequate proportion of youth with gambling problems. Schools were targeted using the *Classification des écoles primaires et classification des écoles secondaires* (CES) (Ranking of 1-27 out of 90) (CGTSIM, 2006) and by the *Indices de défavorisation par école - 2005-2006* (IMSE or SEEI decile rank of 8-10) (MELS, 2006). Questionnaires were administered in French.

Table 1

Distribution by Developmental Level

Developmental Level	Sample Distribution	
	N	%
Grade		
Secondary 1 (Grade 7)	187	17.7
Secondary 2 (Grade 8)	199	18.9
Secondary 3 (Grade 9)	167	15.8
Secondary 4 (Grade 10)	243	23.0
Secondary 5 (Grade 11)	254	24.1
Missing	5	0.5
Total	1055	100.0
Age		
11	2	0.2
12	67	6.4
13	159	15.1
14	171	16.2
15	198	18.8
16	233	22.1
17	168	15.9
18 and over	54	5.1
Missing	3	0.3
Total	1055	100.0

The CES is an annual classification system that hierarchically classifies all secondary schools on the island of Montreal according to the proportion of students from underprivileged homes. Schools falling in the 0-20% category (a ranking of 1-18) are considered to have a strong concentration of underprivileged students. Schools falling in the 20% to 30% category (a ranking of 19 to 27) are considered by the CGTSIM to have a somewhat strong concentration of underprivileged students. Finally schools falling in the 30% to 100% category (a ranking of 28 to 90) are considered to have a minimal or *less important* concentration of underprivileged students (CGTSIM, 2006). The CES classification system is based on a formula that uses Statistics Canada 2001 census data. Census data was obtained by the CGTSIM by cross-referencing student postal codes, furnished by Montreal school boards, with matching census data (CGTSIM, 2006). Although the formula has since changed, at the time of this administration, the formula was based almost exclusively on familial revenue (98%) and only minimally on other factors such as maternal educational level, single-mother families, and parental employment status (2%).

To further identify schools with an overrepresentation of low-income status students, the *Indices de défavorisation par école - 2005-2006* was also consulted. Although this classification system is admittedly less precise than the CES due to the geographical delimitation of the CES (MELS, 2003), it is a broader school population map that covers the entire province of Québec, and hierarchically classifies all secondary schools by decile rankings for two indices that denote low-income and low-socioeconomic statuses. The low-income cut-off index (LICO) measures the proportion of families living below the low-income cut-off for their territory. For example, the low-

income cut-off for a family of four, living in an urban area (defined as an area with over 500,000 inhabitants) in 2000 was $34, 572. The socioeconomic environment indicator index (SEEI) is a separate index, developed in response to negative feedback from remote low-income regions of Québec that countered the notion that underprivileged students be defined by low-income status alone. The SEEI disregards low-income cut-offs altogether, and is based instead on poor maternal education (two thirds of the weight of the index) and level of parental activity in seeking employment if unemployed (one third of the weight of the index). A LICO or SEEI decile ranking of 8-10, indicates schools with an over-representation of underprivileged youth. Participants were procured from schools that were classified by the CES, LICO, and SEEI as having an overrepresentation of underprivileged youths. That is, a ranking of 1 to 27 on the CES, and a decile ranking of 8 to 10 on the LICO or SEEI.

Finally, a random sample of youth (N = 1,273) from an existing data set (collected in 2004) that included overlapping measures with the current research project, was used as a comparison group for environmental risk and high-risk behaviours to further ascertain whether the present sample was exposed to relatively elevated levels of adversity. The previous (2004) sample was made up of adolescents aged 12-19 from 12 schools in Montreal area and served as the data set for my master's thesis.

Instruments

Gambling Activities Questionnaire (GAQ) – Modified

The Gambling Activities Questionnaire (GAQ) (Gupta & Derevensky, 1996) is designed to examine type and frequency of gambling activities. Each item on the GAQ is discrete and may be analysed individually. For the current study, the GAQ was used to

identify *Non-Gamblers*. To be considered a Non-Gambler, respondents could not endorse *any* of the 12 gambling-related activities (e.g. bingo, lottery tickets, racetrack betting, wagering on sports, Internet gambling, slot machines, playing cards for money, etc.) during the past 12 months. The French version of this measure has been used by the International Centre for Youth Gambling Problems and High-Risk Behaviors in prior research (e.g., Ste-Marie et al., 2006). The internal consistency reliability for this scale is adequate, with Cronbach's alpha = .72 (George & Mallery, 2003).

Diagnostic and Statistical Manual-Fourth Edition-Multiple Response-Juvenile (DSM-IV-MR-J)

The DSM-IV-MR-J (Fisher, 2000), is a revised version of the DSM-IV-J (Fisher, 1992) diagnostic survey used to assess severity of adolescent problem gambling. This instrument consists of 12 items in nine categories that relate to problem gambling behaviour including progression, preoccupation, tolerance, withdrawal and loss of control, escape, chasing behaviour, deception, illegal activities, and family or school disruption. The items are modeled after the criteria for diagnosis of adult pathological gambling used in the DSM-IV (APA, 1994) and the DSM-IV-J (Fisher, 1992), its adaptation for youth. The DSM-IV-MR-J corrects for the lack of probing in the DSM-IV-J by providing multiple response options. Participants are classified as belonging to one of three groups; *Social Gambler*, *At-Risk Gambler*, or *Probable Pathological Gambler*. A score of four or more out of the nine categories is indicative of probable pathological gambling. A score of two or three reflects an at-risk level of gambling, while a score of zero or one is indicative of social gambling. The French version of this measure has been used by the International Centre for Youth Gambling Problems and High-Risk Behaviors in several large research projects (e.g., Dickson et al., 2008; Ste-Marie et al., 2006). The

internal consistency reliability for this scale is adequate, with Cronbach's alpha = .75 (George & Mallery, 2003).

Personal Experience Screening Questionnaire (PESQ)

The PESQ is a standardized measure, consisting of 39 items that are designed to screen youth between the ages of 12 and 18 for alcohol and other drug use (Winters, 1999). The PESQ may be used to make appropriate referrals for high-risk youth or to screen for substance related problems for research purposes. The PESQ includes a Problem Severity subscale that consists of 18 items on a 4-point Likert scale, with scores ranging from 8 to 72. The PESQ also incorporates a validity scale (INF), made up of three items that are designed to measure response distortions due to faking bad, inattention, or random responding. Any level of endorsement on any of these three INF items, results in spoiled protocols that are not considered reliable. A cut-off score of 1.5 standard deviations above the mean of a general school sample is used to classify youth at-risk for AOD problems (Winters, 1999). A French translation of this measure has been used in prior youth gambling research and was obtained for the purposes of the current research (Vitaro, Maliantovitch, Bouchard, & Girard, 1998). The internal consistency reliability for the present sample is excellent, with Cronbach's alpha = .93 (George & Mallery, 2003; consistent with the Cronbach's alpha of .91 for the standardization sample; Winters, 1999).

Deviant Behaviour

The Deviant Behaviour scale is a subscale from the EMT Risk Measures Addendum (EMT-Risk). It is one of two subscales that pertain to the Personal Behaviour domain of the EMT-Risk. This scale is excluded from the EMT-Risk composite score (described below), so there is no overlap between the Deviant Behaviour scale and the EMT-Risk. The Deviant

Behaviour scale consists of nine items that address various risky behaviours (e.g., getting stopped by police, getting sent to the principal's office/detention, stealing something, destroying someone else's property, etc.). However, it also includes two common disruptive behaviours (talking back to a teacher and arguing with your parents). As such, the scale identifies misbehaviour in general rather than delinquent behaviour per se. Items on this scale are formatted on a 3-point Likert scale. A composite score was calculated by summing the 9 items together and dividing by the total, with possible scores ranging from 1 to 3. The internal consistency reliability for the present sample is adequate, with Cronbach's alpha = .77. The French version of this measure has been used in prior research (Lussier et al., 2007).

EMT Risk Measures Addendum – Modified (EMT-Risk)

Part II of the IPFI, the EMT Risk Measures Addendum (EMT-Risk), includes 55 questions concerning vulnerability factors in the respondent's environment and behaviour, and 7 demographic questions (Springer & Phillips, 1992). Although the EMT-Risk has no standardization data, it has demonstrated excellent internal consistency reliability (Cronbach's alpha = .91) in prior research using a large sample of adolescents (*N*=1,273; Lussier et al., 2007). The internal consistency reliability for the present sample is good, with Cronbach's alpha = .80 (George & Mallery, 2003).

The EMT-Risk manual scores 39 questions across 8 subscales separately but with no formal domain or composite scoring guide. For the purpose of this study, an EMT-Risk composite score was calculated in the same way as the IPFI, by adding each score and dividing by the total number of items. Composite scores were calculated such that high scores on the EMT-Risk reflect greater risk in the domains of *Family* (supervision and interaction; 8 items total), *Peer Group* (positive peer associations and peer AOD use

exposure; 7 items total), and *Environment* (neighbourhood environmental risk and AOD use exposure; 9 items total). However, the *Personal Behaviour* (risk behaviours and self-reported AOD use; 14 items total) domain was omitted from the EMT-Risk composite score calculation as items within this domain are not related to environmental risk. The Risk Behaviours subscale of the Personal Behaviour domain was instead used as a separate scale and renamed the Deviant Behaviour scale (to reduce confusion with the environmental risk scales), as described above. Consequently, the EMT-Risk composite score consists of 25 questions pertaining to familial, peer, and neighbourhood risk. Unlike the IPFI, the EMT-Risk items are not all on a 4-point Likert scale. Items are on a 2-point (yes or no), 3-point, or 4-point scale depending on the question. Consequently, when the 25 environmental risk items were summed and divided by the total, the range was not a whole number. The range for possible scores on the EMT-Risk measure is 1-3.28, with higher scores denoting the greatest possible risk. The French version of this measure has been used in prior research (Lussier et al., 2007).

Family. This domain is comprised of 8 questions. Elements of this domain include questions concerning the degree of structure (e.g. clear rules, chores, and expectations) and positive and supportive interactions in the family. Within this domain, the IPFI incorporates two dimensions: *family supervision* [four questions; items may be answered 'yes' (scored 2) or 'no' (scored 1)] and *family interaction* (four questions on a 4-point Likert scale). The Family domain score is computed by adding both raw family subscale scores together and dividing by the total number of family items (8), thus providing a domain score with a range of 1-3. The internal consistency reliability for this scale is questionable, with Cronbach's alpha = .66. George and Mallery (2003) stipulate that an

alpha coefficient less than .50 is considered unacceptable. The Family domain was thus retained for subsequent analyses in this study.

Peers. The focus of this domain (consisting of 7 questions) is on positive behaviours among friends and the prevalence of alcohol and other drug experimentation or use among friends. The EMT-Risk contains two dimensions within this domain: *positive peer associations* (four questions on a 3-point Likert scale) and *peer alcohol and other drug use* (three questions on a 3-point Likert scale). The Peers domain score is computed by adding all raw subscale scores together and dividing by the total number of items (7), thus providing a domain score with a range of 1-3. The internal consistency reliability for this scale is adequate, with Cronbach's alpha = .71 (George & Mallery, 2003).

Neighbourhood. Comprising 10 questions, the elements of this domain measure the degree of risk inherent to neighbourhood environment. More specifically, participants are asked to indicate how often they see fights, arrests, robberies, people helping one another, kids playing together, etc., in their neighbourhood. As well, participants were asked to indicate the degree of exposure they had to others using alcohol and other drugs. The EMT-Risk has two dimensions within this domain: *neighbourhood environment* (seven questions on a 4-point Likert scale) and *alcohol and other drug exposure* (three questions on a 3-point Likert scale). The neighbourhood domain score was computed by adding both raw neighbourhood subscale scores together and dividing by the total number of neighbourhood items (10), thus providing a domain score with a range of 1-3. The internal consistency reliability for this scale is questionable, with Cronbach's alpha = .62. George and Mallery (2003) stipulate that an alpha coefficient less than .50 is considered

unacceptable. The Neighbourhood domain was thus retained for subsequent analyses in this study.

Individual Protective Factors Index (IPFI)

The Individual Protective Factors Index (IPFI) (Part I) (Springer & Phillips, 1992) consists of 61 items on a 4-point Likert scale designed to assess adolescent resilience in at-risk youth. The Total IPFI Score was computed by adding all ten raw subscale scores together and dividing by the total number of items (61). Possible composite scores on the IPFI range from 1 to 4. The IPFI was developed as a measure of evaluation for juvenile prevention programs and was standardized on a sample of 2,416 high-risk youths in the United States. The internal consistency reliability for this scale is excellent, with Cronbach's alpha = .90 (George & Mallery, 2003; consistent with the Cronbach's alpha of .93 for the standardization sample; Springer & Phillips, 1992). The scale is referred to as *Individual Attributes* throughout the remainder of the report as the term *protective factor* is reserved for putative protective processes (via interactions) (Luthar & Goldstein, 2004). The IPFI may thus be conceptualized as a compilation of individual attributes identified by the three domains of *Social Bonding* (family bonding, prosocial norms, school bonding), *Personal Competence* (self-concept, self-control, positive outlook, self-efficacy) and *Social Competence* (assertiveness, confidence, cooperation, contribution). These domains and subscales have been identified as those most prominently referenced in the literature on resilience (Springer & Phillips, 1992). The French version of this measure has been used in prior research (Lussier et al., 2007).

Social Bonding. This domain is comprised of 18 questions. Elements within this domain include a positive response and/or commitment to the social institutions of

family, school, and community. Social bonding is viewed as the ability to be involved and sufficiently motivated in social institutions, and to derive a sense of accomplishment from one's efforts (Springer & Phillips, 1992). Within this domain, the IPFI incorporates three dimensions: *pro-social norms* (six questions), *school bonding* (six questions), *and family bonding* (six questions). The social bonding domain score is computed by adding all raw social bonding subscale scores together and dividing by the total number of social bonding items (18), thus providing a domain score with a range of 1-4. The internal consistency reliability for this scale is adequate, with Cronbach's alpha = .77 (George & Mallery, 2003).

Personal Competence. The focus of this domain (consisting of 25 questions) is on individual identity. More specifically, it relates to one's sense of personal development, self-image, and outlook on life. The ability to function effectively as a decision-making person in control of one's future is an underlying theme in much of the research on protective processes (Springer & Phillips, 1992). The IPFI contains four dimensions within this domain: *self-concept* (six questions), *self-control* (six questions), *self-efficacy* (six questions), *and positive outlook* (seven questions). The personal competence domain score was computed by adding all raw personal competence subscale scores together and dividing by the total number of personal competence items (25), thus providing a domain score with a range of 1-4. The internal consistency reliability for this scale is adequate, with Cronbach's alpha = .79 (George & Mallery, 2003).

Social Competence. Comprising 18 questions, the elements of this domain include one's ability to feel responsive, caring, and flexible in social situations. These qualities elicit responses and reinforcement in social situations that generally lead to positive

personal results. The IPFI has three dimensions within this domain: *assertiveness* (six questions), *confidence* (six questions), *and cooperation/contribution* (six questions). The social competence domain score was computed by adding all raw social competence subscale scores together and dividing by the total number of social competence items (18), thus providing a domain score with a range of 1-4. The internal consistency reliability for this scale is good, with Cronbach's alpha = .80 (George & Mallery, 2003).

Eysenck Impulsiveness Scale – Modified (EIS)

Impulsivity was assessed by using the five impulsiveness items from the EIS with the highest factor loadings on the original scales (Eysenck & Eysenck, 1978; Eysenck, Easting, & Pearsons, 1984). These five items have been translated into French and used in prior youth gambling research, in which they demonstrated adequate internal consistency reliability among adolescent boys (Cronbach's alpha range of 0.69 to 0.71; Vitaro et al., 1999). The internal consistency reliability for the present sample is adequate, with Cronbach's alpha = .76 (George & Mallery, 2003). The five impulsiveness items which were used include: 1) Do you generally do and say things without stopping to think? 2) Do you often get into trouble because you do things without thinking? 3) Are you an impulsive person? 4) Do you usually think carefully before doing anything? 5) Do you mostly speak before thinking things out? All items required yes/no responses and were summed to create a composite score that ranged from 0-5.

Beck Anxiety Inventory (BAI)

The Beck Anxiety Inventory (BAI) was used to assess anxiety. The BAI is a scale consisting of 21 items, designed to measure symptoms and severity of anxiety in psychiatric populations (Beck, Epstein, Brown, & Steer, 1988). It was constructed to avoid confounding anxiety with depression. The 21 items in this instrument are on a 4-

point Likert scale (with scores ranging from 0-3). When summed together, the 21 items result in a composite anxiety score, ranging from 0 to 63. Although the BAI was initially designed for adult populations, it has been shown to have acceptable psychometric properties in high school populations (Osman, Hoffman, Barrios, Kopper, Breitenstein, & Hahn, 2002). The internal consistency reliability for the present sample is excellent, with Cronbach's alpha = .91 (George & Mallery, 2003). A French translation of this instrument was obtained (Freeston, Ladouceur, Thibodeau, Gagnon, & Rhéaume, 1994).

Reynolds Adolescent Depression Scale – 2nd Edition (RADS-2)

The RADS-2 is designed to evaluate severity of depression symptoms in individuals. The scale consists of 30 items on a 4-point Likert scale, with composite scores ranging from 30-120 (Reynolds, 2002). The internal consistency reliability for the present sample is excellent, with Cronbach's alpha = .93 [George & Mallery, 2003; consistent with the range (.90 to .96) of Cronbach's alphas obtained in the standardization sample (Reynolds, 2002)]. This measure was translated to French for the purposes of this study.

Procedure

Formal requests to conduct research were sent to four school boards in the greater Montreal area, including the English Montreal School Board, Commission scolaire de l'île de Montréal (CSDM), Commission scolaire Marguerite-Bourgeoys (CSMB), and Commission scolaire de la Pointe-de-L'île. Two French school boards granted access to their schools with the understanding that individual principals reserved the right to accept or refuse participation in the research. The CSDM and the CSMB agreed to participate and supplied contact information for their high schools.

Only schools within the CSDM and CSMB that were ranked between 1-27 on the CES and that had a provincial LICO or SEEI decile rank of 8 to 10 were contacted (CGTSIM, 2006; MELS, 2006). Of the schools that met these criteria, only 18 were part of the CSDM or CSMB. Principals of these 18 schools were mailed formal packages regarding the aims/procedures of the research, and were provided with copies of the board approval letter, consent forms, and copies of ethics approval from the McGill University Ethics Committee (Appendix B). Schools were then contacted to obtain consent; those agreeing to participate were contacted to coordinate scheduling efforts for data collection.

Three schools agreed to participate. One school in particular made up the greatest proportion of youth in the sample (n = 813). This school was ranked 20 out of 90 schools on the CES, indicating that it was in the 20% to 30% range for the greatest proportion of students from low-income homes on the island of Montreal (CGTSIM, 2006), and received a LICO decile ranking of 10, indicating that this school had been identified as being in the top 10% for proportion of youth living below the low-income cut-off among high schools in Quebec. However, this school only received an SEEI decile ranking of 5, indicating that although the low–income status of the students was exceptionally low, socioeconomic environment was average in comparison to other high-schools in the province (MELS, 2006). This school is also very ethnically diverse. Please see Tables 2 and 3 for a break down of place of birth, ethnicities, and languages represented within the school at the time of data collection. The second of the three schools that participated, was ranked 17 out of the 90 schools on the island of Montreal (n = 208), indicating that it was in the 0 to 20% range of schools with the greatest proportion of students from underprivileged homes

(CGTSIM, 2006), and received decile rankings of 10 for both the LICO and SEEI, indicating an exceptionally high proportion of youth from families living below the low-income cut-off and living in a compromised socioeconomic environment (MELS, 2006). Similarly, the third school that participated was ranked 13 out of the 90 schools (0-20% range; CGTSIM, 2006) and also received decile rankings of 10 for both the LICO and SEEI classification systems (n = 34), indicating an exceptionally high proportion of low-income and low SES youth compared with other high schools in the province (MELS, 2006).

Data collection was group administered in classroom environments for small group administration, and in the school cafeteria for larger group administration. Consent was obtained from parents and adolescents prior to their participation. Student participation was voluntary and anonymous. Individuals were informed that they could terminate their participation at any time without consequence. Questionnaires were administered in accordance with the language of instruction of the school, which was always French. Students completed the questionnaire in approximately one fifty-minute period. No deceptive practices were included. Teachers were requested to either leave the classroom or remain at the front of the room in order to respect participants' confidentiality. All participating students were given the same instructions requesting that they read each item carefully, not spend too much time on any one question, and answer questions as honestly as possible. If more than one answer applied, they were asked to choose the *best* answer. Students were asked to use pencils and clearly mark incorrect responses with an "X", and to direct all questions toward the primary researcher, present at each testing session. Gambling was defined for all students prior to questionnaire administration as "The wagering of money or items of monetary value on games of chance".

Table 2

Place of Birth of Students at the School with the Greatest Proportion of Participants

Number of Students	Place of Birth	Percentage
591	**Québec**	**36.0**
225	China	13.7
76	Philippines	4.6
62	Romania	3.8
40	Iran	2.4
38	Algeria	2.3
36	Mexico	2.2
36	Bulgaria	2.2
28	Morocco	1.7
28	Sri Lanka	1.7
27	**Canada (provinces other than Québec)**	**1.6**
27	Russia	1.6
26	Ukraine	1.6
25	South Korea	1.5
25	Bengal	1.5
24	Kazakhstan	1.5
15	Zaire	0.9
15	Haiti	0.9
14	Moldavia	0.9
14	Saint-Vincent and Grenadines	0.9
12	France	0.7
11	Burundi	0.7
11	Columbia	0.7
10	Iraq	0.6
10	Pakistan	0.6
10	Jamaica	0.6
9	Turkey	0.5
9	Tunisia	0.5
8	Cameroon	0.5
8	Peru	0.5
8	Guinea	0.5
7	Israel	0.4
7	Saudi Arabia	0.4
7	**United States of America**	**0.4**
6	Venezuela	0.4
6	United Arab Emirates	0.4
5	Hong Kong	0.3
5	Taiwan	0.3
5	India	0.3
4	Egypt	0.2
4	Kyrgyzstan	0.2
4	Belarus	0.2
4	Afghanistan	0.2
4	Jordan	0.2
4	Lebanon	0.2
4	Yugoslavia	0.2
4	Sudan	0.2
3	Brazil	0.2
3	Kuwait	0.2
3	Gabon	0.2
3	Ivory Coast	0.2
3	North Korea	0.2
3	Rwanda	0.2
3	Chad	0.2
3	Senegal	0.2
3	Vietnam	0.2
3	Argentina	0.2
3	Madagascar	0.2
2	Trinidad	0.1
2	Slovak Republic	0.1
2	Cuba	0.1
2	Angola	0.1
2	El Salvador	0.1
2	West Germany	0.1
2	Thailand, Siam	0.1

2	Uzbekistan	0.1
2	Mauritius	0.1
2	Ecuador	0.1
2	Mali	0.1
2	Libya	0.1
2	Grenada	0.1
2	Ethiopia	0.1
1	Tanzania	0.1
1	Latvia	0.1
1	Indonesia, New Guinea	0.1
1	Zambia	0.1
1	Iceland	0.1
1	Belgium	0.1
1	Albania	0.1
1	Zimbabwe	0.1
1	Niger	0.1
1	Dominica	0.1
1	Hungary	0.1
1	Chile	0.1
1	Switzerland	0.1
1	Nigeria	0.1
1	Congo	0.1
1	Guyana	0.1
1	Georgia	0.1
1	Italy	0.1
1	Netherlands	0.1
1	Dominican Republic	0.1
1	Burkina Faso	0.1
1640	Total # of Students Attending this School	**100**

Bold font: Students born in North America (38%); Regular font: Students born outside of North America (62%)

Table 3

Distribution of Languages Spoken at the School with the Greatest Proportion of Participants

Number of Students	Maternal Tongue	Percentage	Number of Students	Language Spoken at Home	Percentage
254	Cantonese	15.5	371	French	22.6
240	French	14.6	248	English	15.1
187	English	11.4	241	Cantonese	14.7
143	Tagalog or Pilipino	8.7	103	Arabic	6.3
138	Arabic	8.4	101	Spanish	6.2
118	Spanish	7.2	94	Tagalog or Pilipino	5.7
89	Russian	5.4	80	Russian	4.9
73	Romanian	4.5	65	Romanian	4.0
43	Persian	2.6	42	Persian	2.6
38	Bulgarian	2.3	37	Bulgarian	2.3
37	Tamil	2.3	32	Bengali	2.0
33	Bengali	2.0	32	Tamil	2.0
32	Korean	2.0	30	Korean	1.8
22	Creole	1.3	13	Lingala	0.8
15	Vietnamese	0.9	12	Creole	0.7
14	Lingala	0.9	11	Vietnamese	0.7
12	Kirundi	0.7	11	Ukranian	0.7
11	Ukranian	0.7	10	Turkish	0.6
10	Turkish	0.6	10	Mandarin	0.6
10	Mandarin	0.6	7	Tigre	0.4
10	Berber	0.6	7	Kirundi	0.4
9	Other	0.5	7	Urdu	0.4
8	Urdu	0.5	7	Berber	0.4
7	Tigre	0.4	6	Lao	0.4
7	Portuguese	0.4	6	Portuguese	0.4
6	Lao	0.4	5	Punjabi	0.3
6	Punjabi	0.4	4	Other	0.2
5	Hungarian	0.3	4	Hungarian	0.2
4	Polish	0.2	3	Polish	0.2
4	Cambodian or Khmer	0.2	3	Swahili	0.2
3	Swahili	0.2	3	Cambodian or Khmer	0.2
3	Serbian	0.2	3	Ilokano	0.2
3	Wolof	0.2	3	Hebrew	0.2
3	Ilokano	0.2	2	Slovak	0.1
3	Hebrew	0.2	2	Albanian	0.1
3	Dari	0.2	2	Afghani	0.1
2	Pulaar	0.1	2	Pulaar	0.1
2	Kurdish	0.1	2	Dari	0.1
2	Hindi	0.1	2	Serbian	0.1
2	Serbo-Croatian	0.1	1	Bambara	0.1
2	Slovak	0.1	1	Armenian	0.1
2	Bambara	0.1	1	Thai	0.1
2	Tshiluba	0.1	1	Serbo-Croatian	0.1
2	Afghani	0.1	1	Kurdish	0.1
2	Albanian	0.1	1	Greek	0.1
1	Thai	0.1	1	Malgasy	0.1
1	Tibetan	0.1	1	Hindi	0.1
1	Armenian	0.1	1	Icelandic	0.1
1	Twi	0.1	1	Italian	0.1
1	Bube	0.1	1	Karen	0.1
1	Djerma or Songhai	0.1	1	Gikuyu	0.1
1	Greek	0.1	1	Afrikaans	0.1
1	Innu-Aimun or Montagnais	0.1	1	Zulu	0.1
1	Icelandic	0.1	1	Latvian	0.1
1	Kabyle	0.1	1	Wolof	0.1
1	Karen	0.1	1	Peul	0.1
1	Gikuyu	0.1	**1640**	Total Number of Students Attending this School	
1	Kinyarwanda	0.1			
1	Afrikaans	0.1			
1	Zulu	0.1			
1	Latvian	0.1			
1	Malay	0.1			
1	Malgasy	0.1			
1	Peul	0.1			
1640	Total Number of Students Attending this School				

CHAPTER IV

Results

Given the inherent limitations of the cross-sectional design of this research, the findings will only represent correlational associations that may not be interpreted in terms of temporal or causal links. However, for the sake of simplicity the terms *predict* or *predictor* are used when referring to statistical main effects.

Data Screening

Completed questionnaires were scanned using an image scanner into an Optical Mark Recognition software program (Remark Office OMR 5.5) which recognises optical marks and barcodes. This procedure is known to have a very low data entry error rate. Questionnaires that were problematic (e.g., silly names, zigzag or patterned responses, illegible responses, or questionable information) were discarded (n = 58). Once data entry was completed, the data was merged into an SPSS file for statistical analyses.

Missing Data

Missing data analyses were conducted to reduce potential bias pertaining to item omission. In terms of demographic information, two participants did not report their sex (0.19%), and were consequently not included in sex-based comparative analyses. Similarly, three participants failed to report their age (0.28%), and were not included in age-based comparative analyses.

For all instruments, a cut-off of 10% was used to determine whether the proportion of omitted responses for each participant was within acceptable limits. A 10% cut-off is commonly used in psychosocial research as a reference point, beyond which the validity of an instrument becomes questionable. In the event that a participant failed to

respond to more than 10% of items for a particular scale, his/her scores were excluded from further analyses pertaining to that instrument, but retained in the data set for analyses involving other instruments. The missing data procedure employed for the DSM-IV-MR J was more stringent. Only two participants were missing more than 10% of responses (0.19%) for the DSM-IV-MR-J. Given that this measure is one of the two instruments used to create the main criterion variable, these participants were excluded from the data set altogether, thus reducing the overall sample size from *N*=1055 to *N*=1053. The other instrument that is used to create the gambling criterion variable is the GAQ. No students omitted more than 10% of items on the GAQ. Missing data analysis for this instrument was simplified by the fact that it was used as a filter variable to discriminate those who gambled from those who did not. Participants that endorsed no gambling activities in the past year were classified within the Non-Gambling category. Of the 49 participants that had missed at least one item (4.65%), all had endorsed at least one other gambling item, thus providing sufficient response information for classification purposes.

Administration manuals were consulted to determine how to address missing values that were within acceptable limits (participants missing less than 10%) for all other measures. The RADS-2 manual provides a formula for prorating incomplete protocols (Reynolds, 2002). As such the following formula was used for participants missing less than 10% of item responses for the RADS-2:

$$\text{Prorated Depression Total} = \frac{\text{(Depression Total scale raw score)} * 30}{\text{Number of RADS-2 items completed}}$$

Scale raw score

All other instrument manuals did not provide a suggested protocol for addressing missing values or were not needed (the EIS-Modified consisted of 5 items so anyone

missing any item was excluded from further calculations). According to Tabachnick and Fidell (2007), if 5% or less of the data points in a large data set are missing, most procedures used to correct for missing data will provide similar results. The DSM-IV-MR-J was missing only 15 data points in the full sample, which is proportionate to 0.12% (12 * 1053 = 12,636; 15 / 12,636 = 0.12%) and no individual item on the DSM-IV-MR-J was missing more than 0.47% of cases (5 items / 1,053 = 0.47%). Similarly, for the remaining instruments, the percentage of missing data in the full sample (N = 1,053) for each measure was far less than 5%. See Table 4 for frequency of missing cases pertaining to each instrument. The reason that the BAI, RADS-2, and EIS held a greater proportion of missing values is likely due to the fact that these instruments were placed near the end of the questionnaire.

Table 4

Percentage of Missing Cases

Instruments	Percentage of missing cases per instrument (N = 1,053)	Greatest percentage of missing cases for individual items (N = 1,053)
DSM-IV-MR-J	0.12%	0.47%
PESQ	0.98%	1.23%
Deviant Behaviour	0.75%	1.33%
IPFI	0.44%	1.61%
EMT-Risk	0.65%	1.04%
BAI	2.04%	2.47%
RADS	1.90%	2.94%
EIS-Modified	1.63%	2.09%

Given the relatively low proportion of missing values in the data set, a strategy commonly used in psychosocial research was employed to address missing data for participants missing less than 10% of item responses. Item means or item medians were imputed based on the severity of skewness for each item's distribution. The mean is a better estimator of missing values when the distribution is normal and symmetrical.

However, when a distribution is significantly skewed, the mean is located further toward the direction of the skew than the median. That is, it is above the median for a distribution with a negative skew, and below the median for a distribution with a positive skew. Therefore the median is preferred to the mean for replacing missing values in distributions where the degree of skewness is significant (Katz, 2006; McKnight, McKnight, Figueredo, & Sidani, 2007; Munro, 2004). Histograms were examined to determine whether an item's distribution was significantly skewed. Items with distributions deemed significantly skewed were imputed with item medians, whereas items with distributions that were not significantly skewed were imputed with item means. See Table 5 for proportion of participants missing less than and more than 10% of item responses as well as actions taken to account for the missing data.

Table 5

Missing Data Procedures for Omitted Responses

Instruments	Participants missing ≥10% of responses		Action Taken	Participants missing <10% of responses		Action Taken
	n	%		*n*	%	
DSM-IV-MR-J	2	0.19	Deleted from data set	15	1.42	Imputed item medians due to significant skew in all items
GAQ	0	0	n/a	49	4.65	No action required
PESQ	12	1.13	Excluded from PESQ	19	1.80	Imputed item medians due to severity of skew in all items
Deviant Behaviour	31	2.94	Excluded from Deviant Behaviour	0	0	n/a
IPFI	2	0.19	Excluded from IPFI	141	13.39	Imputed item means or medians based on item severity of skew
EMT-Risk	8	0.76	Excluded from EMT-RISK	36	3.42	Imputed item means or medians based on item severity of skew
BAI	25	2.37	Excluded from BAI	65	6.17	Imputed item means or medians based on item severity of skew
RADS	18	1.71	Excluded from RADS-2	73	6.93	Prorated composite scores as per manual guidelines
EIS-Modified	28	2.66	Excluded from EIS	0	0	n/a

Skewness and Kurtosis

Skewness and kurtosis are two manners by which a distribution may deviate from normality. Skew occurs when a distribution is not symmetrically distributed around its mean, leading to a positive or negative skew. Kurtosis occurs when a distribution is too peaked or flat relative to a normal bell distribution, leading to a leptokurtic or platykurtic distribution. Although there are no absolute standards for saying when there is too much skewness or kurtosis in any given distribution, certain research demonstrates that significant problems arise when univariate skewness values are 2.0 and above, and kurtosis values are 7.0 and above (Curran, West, & Finch, 1996), while other guidelines profess less conservative cut off values of 3.0 for skewness and 10.0 for kurtosis (Kline, 2009). In the current study, all composite instrument score variables were within normal limits for kurtosis regardless of the 7.0 or 10.0 cut off guidelines. However, the DSM-IV-MR-J and the PESQ were both significantly positively skewed, with skewness values greater than 2.0 (skew = 2.04 and 2.37 respectively; see Figure 2). Several forms of transformations were attempted to correct for the skews. However, logarithmic, square root, and inverse functions were unable to significantly improve the shapes of the distributions. Consequently, these variables were left as non-normal and analysed categorically wherever possible (Tabachnick & Fidell, 2007).

Outliers

Extreme scores were identified by transforming each instrument composite variable into standardized z-scores and then inspecting the highest and lowest values. Although there is no universal cut-off score for identifying extreme scores, a common heuristic is that any score greater than three standard deviations from the mean is considered an outlier (Kline, 2009). There are several options for dealing with outliers.

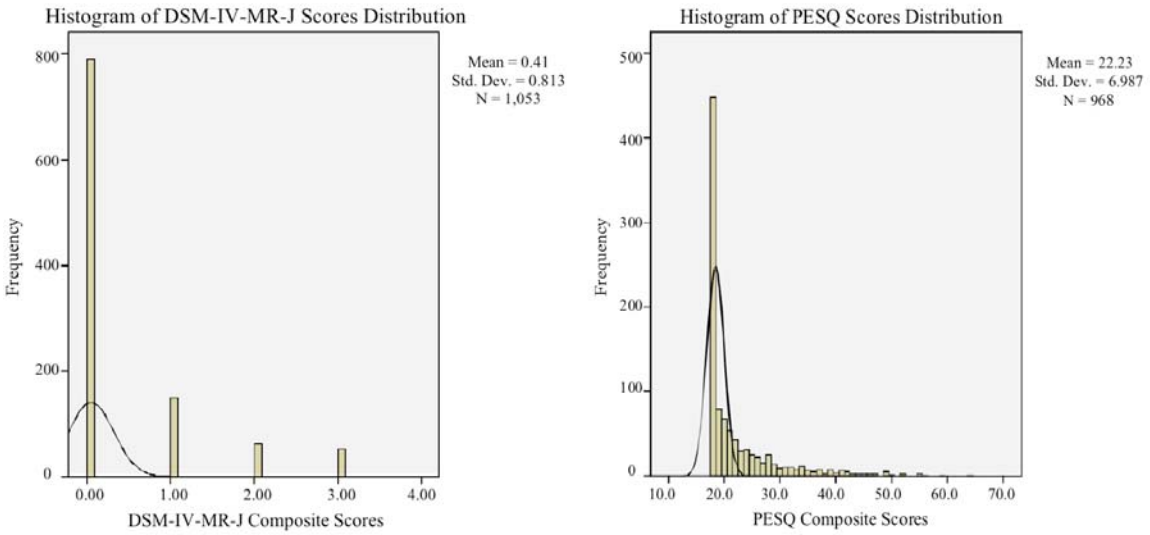


Figure 2. Positively Skewed DSM-IV-MR-J and PESQ Distributions.

The option chosen for the current research was to convert extreme scores to a value that equals the next most extreme score that is within three standard deviations from the mean (Kline, 2009; Tabachnick & Fidell, 2007). Multivariate outliers are addressed in the *Multivariate Analyses* section of this chapter.

Inspection of Bivariate Relations

Multicollinearity occurs when correlations between variables are too high, and singularity occurs when variables are redundant (one variable is a combination of one or more variables), thereby compromising estimation methods (Kline 2009). Bivariate multicollinearity was assessed using a correlation matrix. A bivariate correlation greater than r =.85 (Kline, 2009) or r =.90 (Tabachnick & Fidell, 2007) is considered statistically problematic. No pairwise correlations exceeded r = .64 (see Table 6), indicating no evidence of multicollinearity in the data set. Multivariate correlations may also lead to multicollinearity or singularity. Multivariate correlations were assessed by running three linear regressions; one with the DSM-IV-MR-J as the dependent variable, and all other

Table 6

Pearson's Correlations Matrix: Environmental Risk, Individual Attributes, Personality Variables, and Problem Behaviours

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Sex	-	-.01	-.15	.02	-.10	.09	.15	.01	.09	-.07	-.05	-.05	-.05	.03	.17	.23
2. Age		-	-.01	.26	.11	-.08	-.11	-.05	-.04	.32	.27	.30	.20	-.04	.07	.05
3. Gambling			-	.26	.33	-.21	-.26	-.17	-.09	.27	.14	.23	.26	.26	.14	.08
4. AOD use				-	.51	-.19	-.30	-.17	-.02	.57	.27	.57	.49	.15	.23	.13
5. Deviant Behaviour					-	-.35	-.46	-.34	-.08	.59	.33	.51	.54	.33	.24	.20
6. IPFI						-	-	-	-	-.47	-.42	-.34	-.35	-.38	-.26	-.62
7. Social Bonding							-	.63	.56	-.57	-.51	-.43	-.42	-.35	-.20	-.44
8. Personal Competence								-	.64	-.38	-.29	-.28	-.31	-.39	-.34	-.63
9. Social Competence									-	-.24	-.29	-.13	-.15	-.23	-.14	-.53
10. Environment Risk										-	-	-	-	.28	.28	.29
11. Family											-	.37	.37	.20	.17	.27
12. Peers												-	.52	.22	.22	.18
13. Neighbour.													-	.24	.27	.24
14. Impulsivity														-	.25	.35
15. Anxiety															-	.50
16. Depression																-

Note: All continuous environmental risk, individual attribute, personality, and behavioural problem variables entered in a bivariate Pearson analysis.

variables as independent variables (age, gender, PESQ, Deviant Behaviours, IPFI, EMT-Risk, RADS-2, BAI, and EIS), the second regression was run with the PESQ as the dependent variable and all other variables as criterion variables, and the third regression was run with the Deviant Behaviour scale as the dependent variable and all other variables as the independent variables. Collinearity diagnostics revealed no Tolerance statistic value less than .20 and no VIF value greater than 10, indicating no evidence of multivariate singularity or multicollinearity (Field, 2005).

Homeoscedasticity assumes that the differences between observed and predicted scores are normally distributed and possess uniform variance across all levels of an independent variable. Heteroscedasticity is the lack of homeoscedasticity and may be due to various occurrences, such as outliers, severe nonnormality in one of the variables, or random error. When data are categorized, homeoscedasticity is referred to as homogeneity of variance.

Given that certain assumptions for MANOVA were not met (two of the three dependent variables deviated significantly from a normal distribution, variances were found in some cases to be unequal, and bivariate correlations indicated that the dependent variables were not negatively correlated (PESQ and Deviant Behaviours scales were positively correlated $r = .507$), it was determined to run a series of one-way ANOVAs rather than conducting a MANOVA which would have resulted in a loss of degrees of freedom and potentially skewed the results (Tabachnick & Fidell, 2007).

To test for heteroscedasticity, All ANOVAs included the Levene's statistic for homogeneity of variance. In cases where it was significant ($p \leq .001$), the alpha level for significant F test was made more stringent ($p = .01$ instead of $p = .05$) (Tabachnick &

Fidell, 2007). Also, in cases where post hoc tests were required, Tamhane's T2 statistic was consulted rather than the Tukey HSD when the Levene statistic was significant. Tamhane's T2 statistic is a conservative test that does not assume equal variances. It is considered more appropriate than Tukey's HSD when cell sizes are unequal and/or when homogeneity of variance has been violated. Multivariate homogeneity of variance and homeoscedasticity / heteroscedasticity is addressed in the *Multivariate Analyses* section of this chapter.

Gambling Behaviour

The DSM-IV-MR-J and the Gambling Activities Questionnaire (GAQ) were used to classify participants into four groups [Non-Gambling, Social Gambling, At-Risk Gambling, and Probable Pathological Gambling (PPG)] based upon past-year gambling behaviour. The GAQ was used as a sorting or filter variable to classify participants as belonging either to a gambling or non-gambling category. Persons in the non-gambling category did not endorse any of the 12 gambling activities listed in the GAQ over the past year, whereas persons in the gambling category endorsed at least one gambling activity. Results revealed that 60.2% of the sample reported having gambled at least once in the past year. Of those that had gambled at least once, a significantly greater proportion were boys (n = 346, 54.7%) than girls [n = 286, 45.3%; χ^2 (1, N = 1051) = 10.32, p = .001]. Overall, the most endorsed gambling activities were card playing, sports betting, scratch tickets, poker, bingo, and *other* (made up mostly of the response *dice*). Boys reported engaging in most gambling activities more than girls, with the exception of scratch tickets, bingo, and slot machines (Table 7).

Table 7

Prior-Year Involvement in Gambling Activities

Gambling Activity	Total Sample (N = 1053)		Boys (N = 533)		Girls (N = 518)		
	n	%	n	%	n	%	χ^2
Cards	404	38.4	230	43.2	174	33.6	10.1***
Sports Betting	224	21.3	159	29.8	65	12.5	46.8***
Scratch Tickets	216	20.6	109	20.5	107	20.7	.01 (ns)
Poker	184	17.5	128	24	56	10.8	31.7***
Bingos	152	14.5	72	13.5	80	15.4	.80 (ns)
Other[1]	145	13.8	103	19.3	42	8.1	27.8***
Slot Machines	84	8	40	7.5	44	8.5	.35 (ns)
Online Gambling	81	7.7	51	9.6	30	5.8	5.3*
VLT Machines	70	6.7	44	8.3	26	5	4.4*
Casino	34	3.2	24	4.5	10	1.9	5.5*
Stock Market	29	2.8	23	4.3	6	1.2	9.8**
Racetrack	18	1.7	11	2.1	7	1.4	.79 (ns)

[1]Dice was the most commonly listed "other" form of gambling (72/145).
*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$, ns = not significant.

The gambling category was then further analysed to create three gambling groups (Social, At-Risk, and PPG) by following the scoring guidelines for the DSM-IV-MR-J. Consequently, participants were assigned to one of four groups; *Non Gambling* (no gambling endorsed over the course of the past year on the GAQ), *Social Gambling* (scores of 0-1 on the DSM-IV-MR-J, indicating gambling participation but no difficulty controlling gambling behaviour), *At-Risk Gambling* (scores of 2-3 on the DSM-IV-MR-J, indicating risk for the development of pathological gambling problems), and *Probable Pathological Gambling (PPG;* scores of 4 or higher on the DSM-IV-MR-J), indicating excessive problematic gambling behaviour and serious gambling-related problems. The largest category was social gambling, which included 49.6% of the participants (n = 522), followed by the non-gambling category, which included 39.8% of participants (n = 419). Approximately 10.7% (n = 112) of the sample indicated some form of gambling related problems with 7.9% being classified in the at-risk gambling group (n = 83) and another

2.8% meeting the criteria for PPG (n = 29). As expected, sex differences were pronounced with males reporting more gambling related problems than females, [χ^2 (1, N = 1051) = 29.47, $p < .001$]. More specifically, males were more than three times more likely to be classified as PPG and more than two times more likely to be classified as at-risk for developing gambling problems than females (see Table 8 for distribution of gambling groups across gender).

An examination of age and grade differences suggested that the 8 age groups (11 to 18 and over) be collapsed into four, more meaningful groups (11-12, 13-14, 15-16, and ≥17). Differences in gambling behaviour between age groups were not significant [χ^2 (9, N = 1050) = 15.45, p = .079] (Table 8).

Table 8

Gambling Severity by Gender and Developmental Level

Sample		Gambling Groups[1]				
	N	Non-Gambling[a] (*n* = 419)	Social Gambling[b] (*n* = 522)	At Risk Gambling[c] (*n* = 83)	Probable Pathological Gambling[d] (*n* = 29)	χ^2
Sex						29.5***
Male	533	35.1	49.5	11.1	4.3	
Female	518	44.8	49.4	4.6	1.2	
Omitted	2					
Age						15.5 (ns)
11-12	68	52.9	38.2	5.9	2.9	
13-14	330	41.5	47	8.2	3.3	
15-16	430	34.7	55.8	7.2	2.3	
≥17	222	43.2	45	9.5	2.3	
Omitted	3					
Total	1053	39.8	49.6	7.9	2.8	

[1]Percentage.
[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
*** $p \leq .001$, ns = not significant.

Other High-Risk Behaviours

Alcohol and Other Drug Use (AOD Use)

The Personal Experience Screening Questionnaire (PESQ) was used to assess participants' use of alcohol and other drugs. The reason for the inclusion of this scale was to explore the generalizability of findings for problem gambling. High scores on this measure indicate symptoms of drug dependence and abuse, whereas low scores indicate infrequent use or use limited to social settings. The PESQ also incorporates a validity scale (INF), designed to measure response distortions due to faking bad, inattention, or random responding. The 73 participants that endorsed an item on this scale were eliminated from analyses. The PESQ problem severity score was calculated by summing the 18 substance related items. In accordance with manual guidelines, participants were also classified into high- and low-substance use categories based on sex, age, and PESQ problem severity score. A score falling in the low AOD use range, referred to as a *green flag*, indicates no problems with substance use, whereas a score falling in the high AOD use range (i.e., 1.5 standard deviations above the mean of the standardization sample), is referred to as a *red flag*, and indicates the need for a complete drug abuse evaluation.

Results revealed that 8.9% (n = 86) of the PESQ sample (n = 965) met the criteria for high AOD use, indicating psychological and behavioural involvement with substance use that would be consistent with drug dependence and abuse. Although males and females were equally likely to demonstrate problematic AOD use (7.9% and 9.9% respectively), it is interesting that females reported slightly higher prevalence rates (see Table 9). Significant age-related differences were observed, such that the proportion of red flags increased with age [χ^2 (3, N = 965) = 17.07, p = .001]. The youngest age group (11-12 year-old) reported

the least amount of problematic AOD use (1.5%), followed by the 13-14 year-old group (4.9%), the 15-16 year-old age group (11.5%), and finally by the eldest age group (≥17; 12.6%). With respect to gambling problems, the severity of gambling behaviour appeared to increase as red flags for AOD use increased [$\chi 2$ (3, N = 965) = 42.94, p < .001] (see Figure 3). More specifically, only 4.0% and 10.5% respectively of youth in the Non- and Social gambling groups were red-flagged for AOD abuse, whereas 18.5% and 38.1% respectively of the youth in the At-Risk and PPG gambling categories were red-flagged (Table 9).

Table 9

AOD Use by Age, Gender, and Gambling Groups

PESQ Sample (N = 965)[1]	PESQ – Problem Severity Scale[2]		
	Red Flag[3] *(High AOD Use)*	*M*	*SD*
Gender			
Male	7.9	22.13	7.05
Female	9.9	22.34	6.94
Total	8.9	22.24	6.99
Age			
11-12	1.5	18.83	2.43
13-14	4.9	20.03	4.38
15-16	11.5	23.60	7.98
≥17	12.6	24.08	7.89
Total	8.9	22.23	6.99
Gambling Groups			
Non-Gambling [a]	4.0	20.32	5.02
Social Gambling [b]	10.5	22.92	6.98
At-Risk Gambling [c]	18.5	26.02	9.90
PPG [d]	38.1	31.57	12.44
Total	8.9	22.23	6.99

[1] 73 participants endorsed the INF scale, 12 were removed for missing >10% of scale responses, and 3 were missing gender or age data and thus could not be included in calculations for high/low AOD Use groupings as per manual guidelines.
[2] Scores range from 18-72 with higher scores denoting greater endorsement of substance related symptoms.
[3] Percentage of participants at high-risk for substance problems based on sex, age, and PESQ problem severity score, as per manual guidelines
[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).

Deviant Behaviour

The Deviant Behaviour subscale of the EMT-Risk instrument was used to assess participation in high-risk behaviour including truancy, stealing, damage of property,

fighting, and getting into trouble with the police. The reason for the inclusion of this scale, like the PESQ scale, was to explore the generalizability of findings with respect to problem gambling. To facilitate interpretation, scores were inverted such that high scores reflected high levels of behavioural risk. This measure is part of the EMT-Risk instrument, which was developed as an accompaniment to the IPFI (Springer & Phillips, 1992). The items on the Deviant Behaviour subscale are on a 3-point Likert scale. A composite score was created by summing the 9 items together and dividing by the total, with scores ranging from 1 to 3.

As seen in Table 10, a one-way ANOVA revealed that mean levels of deviant behaviour significantly differed between boys and girls, $F(1, 1017) = 10.08$, $p = .002$, with boys reporting higher levels. As well, a second one-way ANOVA demonstrated age group mean differences $F(3, 1014) = 7.67$, $p < .001$, such that 11-12 year-old and 13-14 year-old participants reported less deviant behaviour than the 15-16 year-old and ≥17 year-old age groups. The mean level of deviant behaviours also significantly differed between gambling groups, $F(3, 1017) = 45.54$, $p < .001$. Post hoc comparisons revealed significant differences between mean scores for all gambling-group pair-wise comparisons with the exception of the At-Risk and PPG groups. More specifically, there was a positive linear relationship between self-reported deviant behaviour and gambling related problems, such that as gambling severity increased, reported deviant behaviour also increased (see Figure 3). The PPG group had the highest group mean score compared with the At-Risk, Social, and Non-Gambling groups (Table 10). It should be noted that the homogeneity of variance assumption was violated in the gambling group analysis as the Levene statistic was significant ($p < .001$). Consequently, the Tamhane's T2 statistic was used for post hoc comparisons instead of the Tukey HSD statistic because the null hypothesis of equal

variances was rejected.

Table 10

Composite Deviant Behaviour Scores by Gender, Age, and Gambling Groups

Risky Behaviour Sample	Deviant Behaviour [1]		Anova
	M	*SD*	*F*
Sex			10.08**
Males (*n*=517)	1.49	0.37	
Females (*n*=502)	1.42	0.33	
Total (*n*=1019)	1.45	0.35	
Age			7.67***
11-12 (*n*=63)	1.30	0.31	
13-14 (*n*=314)	1.42	0.34	
15-16 (*n*=422)	1.50	0.36	
≥17 (*n*=219)	1.47	0.34	
Total (*n*=1018)	1.45	0.35	
Gambling Groups			45.54***
Non-Gambling [a] (*n*=405)	1.36	0.29	
Social Gambling [b] (*n*= 508)	1.47	0.34	
At-Risk Gambling [c] (*n*= 80)	1.68	0.40	
PPG [d] (*n*=28)	1.93	0.48	
Total (*n*=1021)	1.45	0.35	

[1] Deviant Behaviours subscale (scores range from 1-3). [a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4). ** $p < .01$, *** $p \leq .001$.

The most popular forms of deviant behaviour amongst participants were *arguing with parents, getting sent to the principal's office/detention, talking back to a teacher,* and *stealing something*. Most deviant behaviours were more prevalent amongst boys, with the exception of *arguing with parents* and *skipping school for a day* (Table 11). Significant age differences were observed, with prevalence increasing with age (Table 12).

Interestingly, amongst gambling groups, virtually every form of deviant behaviour revealed a positive linear relationship with gambling severity, such that as gambling severity increased, endorsement of any given risky activity increased as well. As seen in Table 13, only *arguing with parents* showed a very small drop between At-Risk (95.1%) and PPG (93.1%) gambling groups. Amongst PPGs, the most frequently

endorsed risky behaviours, other than *arguing with parents*, included *getting sent to the principal's office/detention* (75.9%), *getting into a fist fight* (72.4%), *stealing something* (72.4%), *purposely damaging someone else's property (*62.1%), and *talking back to a teacher* (62.1%). These rates are meaningfully higher than the endorsements described in the sex and age analyses that included the full sample.

Table 11

Deviant Behaviour by Gender

Deviant Behaviour Sample	Sex				
	Boys (*n*=526)		Girls (*n*=514)		
Deviant Behaviour	*n*	%	*n*	%	χ^2
Got into a fist fight	218	41.4	120	23.3	38.8***
Purposely damaged other people's property	122	23.2	57	11.1	26.7***
Got stopped by the police	62	11.8	20	3.9	22.3***
Got sent to principal's office or had detention	308	58.6	234	45.5	17.7***
Broken into a house or store	50	9.5	25	4.9	8.4**
Stole something	172	32.7	127	24.7	8.1**
Argued with your parents	416	79.4	442	86.0	7.9**
Skipped school for a day	138	26.2	165	32.1	4.3*
Talked back to a teacher	263	50.0	233	45.3	2.3 (ns)

*$p \leq .05$, **$p \leq .01$, ***$p \leq .001$, ns = not significant.

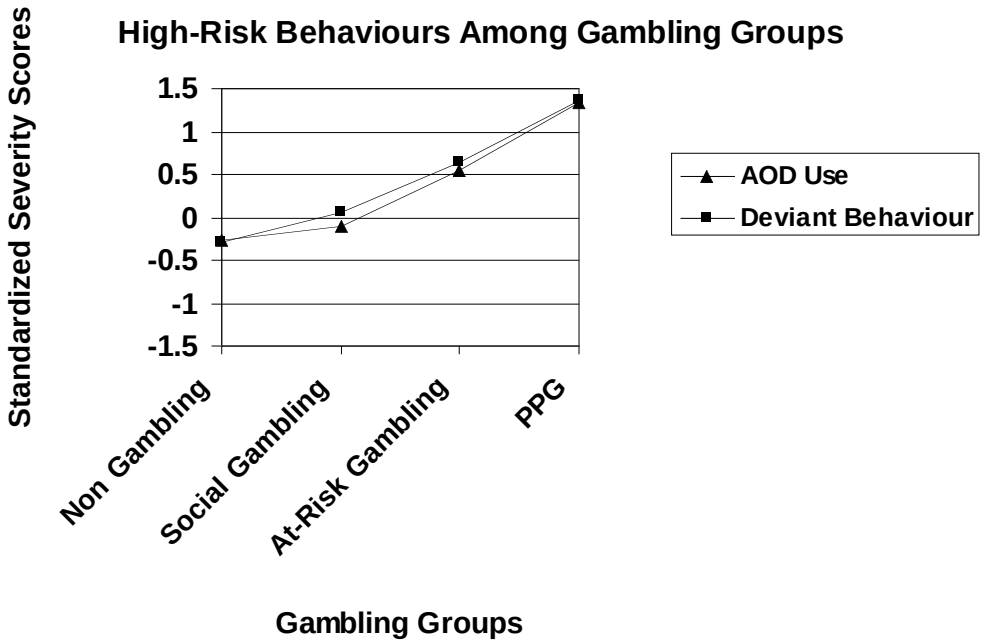


Figure 3. Severity levels of AOD Use and Deviant Behaviour among Gambling Groups.

Table 12

Deviant Behaviour by Age Groupings

Deviant Behaviour Sample	Age Groups								
	11-12 (*n*=66)		13-14 (*n*=325)		15-16 (*n*=427)		≥17 (*n*=221)		
Deviant Behaviour	*n*	%	*n*	%	*n*	%	*n*	%	χ^2
Skipped school for a day	6	9.1	68	20.9	141	33	87	39.4	37.8***
Talked back to a teacher	19	28.8	128	39.4	241	56.4	108	48.9	31.7***
Argued with your parents	39	59.1	268	82.5	362	85.2	188	85.1	28.3***
Purposely damaged other people's property	4	6.1	64	19.7	83	19.4	27	12.2	12.6**
Got into a fist fight	21	31.8	110	33.8	147	34.4	59	26.7	4.4 (ns)
Stole something	17	25.8	93	28.6	134	31.4	54	24.4	3.7 (ns)
Got sent to principal's office or had detention	33	50	162	49.8	233	54.6	113	51.1	1.9 (ns)
Got stopped by the police	4	6.1	22	6.8	37	8.7	19	8.6	1.4 (ns)
Broken into a house or store	5	7.6	23	7.1	34	8.0	12	5.4	1.4 (ns)
Broken into a house or store	5	7.6	23	7.1	34	8.0	12	5.4	1.4 (ns)

** $p \leq .01$, *** $p \leq .001$, ns = not significant.

Table 13

Deviant Behaviour by Gambling Groups

Deviant Behaviour Sample	Gambling Groups								
	Non Gambling[a] (*n*=414)		Social Gambling[b] (*n*=517)		At-Risk Gambling[c] (*n*=82)		PPG[d] (*n*=29)		
Deviant Behaviour	*n*	%	*n*	%	*n*	%	*n*	%	χ^2
Broken into a house or store	11	2.7	33	6.4	20	24.4	11	37.9	90.6***
Purposely damaged other people's property	34	8.2	98	19	30	36.6	18	62.1	86.9***
Stole something	85	20.5	155	30	39	47.6	21	72.4	55.1***
Got stopped by the police	15	3.6	42	8.1	16	19.5	10	34.5	53.4***
Got into a fist fight	102	24.6	173	33.5	43	52.4	21	72.4	47.8***
Skipped school for a day	95	22.9	154	29.8	38	46.3	16	55.2	29.1***
Talked back to a teacher	156	37.7	276	53.4	47	57.3	18	62.1	28.8***
Got sent to principal's office or had detention	185	44.7	287	55.5	49	59.8	22	75.9	20.0***
Argued with your parents	331	80	423	82.1	78	95.1	27	93.1	13.3**

[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
** $p \leq .01$, *** $p \leq .001$.

Environmental Risk

The EMT-Risk instrument was used to assess perceived environmental risk, including family, peer, and neighbourhood risk factors. To facilitate interpretation, scores were inverted such that high scores reflected high levels of environmental risk. Although the EMT-Risk has been used in prior research using a community sample (N = 1,273; Lussier et al., 2007), it is not standardized and therefore has no cut-off scores denoting normative levels of risk. The EMT-Risk was developed as an accompaniment to the IPFI (Springer & Phillips, 1992). Items are on a 3-point Likert scale. A composite score of global environmental risk exposure was created by summing the 25 family, peer, and neighbourhood items together and dividing by the total. Consequently, possible scores range from 1 to 3.28, with higher scores denoting higher risk. As seen in Table 14, the mean overall score for the total sample was 1.90 (SD = 0.30). An ANOVA revealed significant gender differences, with males reporting significantly more overall risk than females [$F(1, 1041) = 4.64$, $p = .03$]. When the three domains were analysed separately, gender differences retained the same trend, but not significantly so (Table 15).

Table 14

Composite EMT-Risk Scores by Gender and Gambling Groups

EMT-Risk Sample	EMT-Risk [1]		
	N	*M*	*SD*
Gender			
Male	527	1.92	0.31
Female	516	1.88	0.30
Total	1043	1.90	0.30
Gambling Groups			
Non-Gambling	417	1.81	0.28
Social Gambling	517	1.93	0.29
At-Risk Gambling	82	2.07	0.34
PPG	29	2.20	0.35
Total	1045	1.90	0.30

[1] Range 1-3.28; higher scores reflect greater levels of environmental risk.

Table 15

Environmental Risk Factors by Gender

EMT-Risk Sample	Sex				
	Boys (*n*=527)		Girls (*n*=516)		
Environmental Risk Factors	*M*	*SD*	*M*	*SD*	*F*
Family [1]	2.05	0.39	2.01	0.38	3.04 (ns)
Peers [2]	1.76	0.39	1.72	0.40	2.50 (ns)
Neighbourhood [3]	1.92	0.40	1.88	0.37	2.86 (ns)
Total [4]	1.92	0.31	1.88	0.30	4.64*

[1] Family composite (scores range from 1-3). [2] Peers composite (scores range from 1-3). [3] Neighbourhood composite (scores range from 1-3.7). [4] EMT-Risk composite (scores range from 1-3.28; high scores reflect greater level of external risk factors); *p <.05, ns = not significant.

An ANOVA revealed that the mean level of environmental risk factors significantly differed between gambling groups, $F(3, 1041) = 34.2$, $p < .001$. There was a significant positive linear relationship between environmental risk factors and gambling behaviour, such that as gambling severity increased, risk factors also increased. More specifically, Tukey HSD post hoc comparisons revealed significant differences between mean risk scores for all gambling group pair-wise comparisons with the exception of the At-Risk and PPG gambling groups. As can be seen in Table 16, the positive linear relationship between mean levels of environmental risk and gambling groups remained when the three risk domains were analysed separately. Within the Family domain, Tukey HSD post hoc tests revealed significant pair-wise comparisons only for the Non-Gambling and all other gambling groups, whereas within the Peers and Neighbourhood domains, post hoc tests revealed significant pair-wise comparisons for all gambling categories except for the At-Risk and PPG groups. The homogeneity of variance was significant for the Neighbourhood domain. Consequently, the Tamhane's T2 statistic was used for post hoc comparisons involving this domain.

Table 16

Environmental Risk Factors by Gambling Groupings

EMT-Risk Sample	Gambling Groups								
	Non-Gambling [a] (*n*=417)		Social Gambling [b] (*n*=517)		At-Risk Gambling [c] (*n*=82)		PPG [d] (*n*=29)		Anova
Environmental Risk Factors	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Family [e]	1.97	0.40	2.05	0.37	2.15	0.38	2.22	0.39	9.3***
Peers [f]	1.64	0.37	1.78	0.39	1.95	0.40	2.02	0.44	26.3***
Neighbourhood [g]	1.80	0.33	1.92	0.38	2.07	0.45	2.30	0.49	28.5***
Total[1]	1.81	0.28	1.93	0.29	2.07	0.34	2.20	0.35	34.2***

[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
[e] Family composite (scores range from 1-3), [f] Peers composite (scores range from 1-3), [g] Neighbourhood composite (scores range from 1-3.7)
[1] EMT-Risk composite (scores range from 1-3.28; high scores reflect greater level of external risk factors). *** $p \leq .001$.

Current and comparison samples

The mean perceived environmental risk composite (family, peers, and neighbourhood risk factors) for the current sample of youth identified as low SES (*M* = 1.90, SD = .30) appears to be identical to that of the community sample previously attained (Lussier et al., 2007), which also employed this measure (*N* = 1,273, *M* = 1.90, SD = .34), despite the intention in the current project to procure a naturally occurring high-risk sample (youth from low income homes) by using the classification systems of two separate government organizations (CGTSIM, 2006; MELS, 2006). Since the mean level of environmental risk was lower than what would be expected, high-risk behaviour scales were also compared with previously collected data. The former sample included the DSM-IV-MR-J and the Deviant Behaviour scales but did not include the PESQ. However, another AOD use subscale was included in both questionnaires, and was therefore used to evaluate AOD use in both samples. Comparisons between the two samples revealed that both high-risk behaviours (deviant behaviour and AOD use) were higher for the comparison sample (*M* = 2.76 and *M* = 1.56 respectively) than for the

current, theoretically high-risk, sample (M = 1.45 and M = 1.36 respectively). Similarly, gambling problems were more prevalent in the comparison sample (Non-Gambling = 18.9%, Social Gambling = 70.6%, At-Risk Gambling = 7.2%, and PPG = 3.2%) than in the current sample (Non-Gambling = 39.8%, Social Gambling = 49.6%, At-Risk Gambling = 7.9%, and PPG = 2.8%).

Considering the similar self-reported levels of environmental risk factors and lower participation in high-risk behaviours (gambling and AOD use), it appears that the comparison sample was either equal to, or at higher-risk than the current sample (though perhaps not significantly so). Given these findings, there is little justification for considering the present sample as being exposed to significant adversity, at least compared to prevalence rates from former research. As such, high- and low-environmental risk groups were statistically created to examine whether group differences existed among high and low levels of risk exposure in relation to the problem behaviours.

High/Low Environmental Risk Groups

A median split was applied to the EMT-Risk variable to differentiate youth that self-reported higher levels of adversity from those that self-reported lower levels. As presented in Table 17, significant gender differences were present, with males reporting higher levels of environmental risk than females [$\chi 2$ (1, N = 1043) = 6.39, p = .01].

In terms of gambling behaviour, youth in the Non-gambling category were more likely to be identified as low-risk (63.8%) than high-risk (24.1%). Conversely 65.9% of youth in the At-Risk gambling category were identified as high-risk versus 34.1% who were identified as low-risk. Perhaps most striking was the distribution among PPGs, whereby 75.9% were identified as high-risk versus only 24.1% that were identified as low

environmental risk [$\chi 2$ (3, N = 1045) = 46.36, $p < .001$] (see Table 18). Finally, in terms of other high-risk behaviours, an ANOVA revealed that the mean level of risky behaviour [$F(1, 1017) = 278.59$, $p < .001$] significantly differed between high and low environmental risk groups, with youth in the high-risk category reporting elevated levels of each (see Table 19). However, it should be noted that the homogeneity of variance assumption was violated in this analysis as the Levene Statistic was significant ($p < .001$). As such, results should be interpreted with caution. A chi-square analysis produced similar results for AOD use and environmental risk groupings [χ^2 (N = 962) = 102.11, $p < .001$]. In general, there appeared to be positive linear relationship between the severity of gambling, AOD use, and risky behaviours and environmental risk factors, such that as high-risk behaviours increased, reported environmental risk factors also increased (see Figure 4).

Table 17

High/Low Environmental Risk Factor Groupings by Gender

EMT-Risk Sample		High/Low Risk Median Split[1]		
	N	Lower environmental risk factors [a] (*n* = 548)	Higher environmental risk factors [b] (*n* = 497)	χ^2
Sex				6.39**
Male	527	46.8	54.6	
Female	516	53.2	45.4	
Missing	10			

[1]Percentage. [a] Lower risk group (lower half of EMT-Risk median split). [b] Higher risk group (upper half of EMT-Risk median split).
** $p = .01$, *** $p < .001$.

Table 18

High/Low Risk Environmental Risk Factor Groupings by Gambling Groups

EMT-Risk Sample		Gambling Groups[1]				
	N	Non-Gambling[a] (*n* = 417)	Social Gambling[b] (*n* = 517)	At Risk Gambling[c] (*n* = 82)	PPG [d] (*n* = 29)	χ^2
High/Low Risk						46.36***
Lower environmental risk[e]	548	63.8	47.8	34.1	24.1	
Higher environmental risk[f]	497	36.2	52.2	65.9	75.9	
Total	1045	39.9	49.5	7.8	2.8	

[1]Percentage. [a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
[e] Lower risk group (lower half of EMT-Risk median split). [f] Higher risk group (upper half of EMT-Risk median split); *** $p \leq .001$.

Table 19

High/Low Environmental Risk Factor Groupings by High-Risk Behaviour Severity

EMT-Risk Sample	High/Low Risk Median Split				
	Lower reported environmental risk [a] (n = 545)		Higher reported environmental risk [b] (n = 495)		
	M	*SD*	*M*	*SD*	
Deviant Behaviour [c]	1.29	0.24	1.62	0.37	$F = 278.59^{***}$

[a] Lower risk group (lower half of EMT-Risk median split). [b] Higher risk group (upper half of EMT-Risk median split).
[c] Deviant Behaviour subscale (scores range from 1-3). *** $p < .001$.

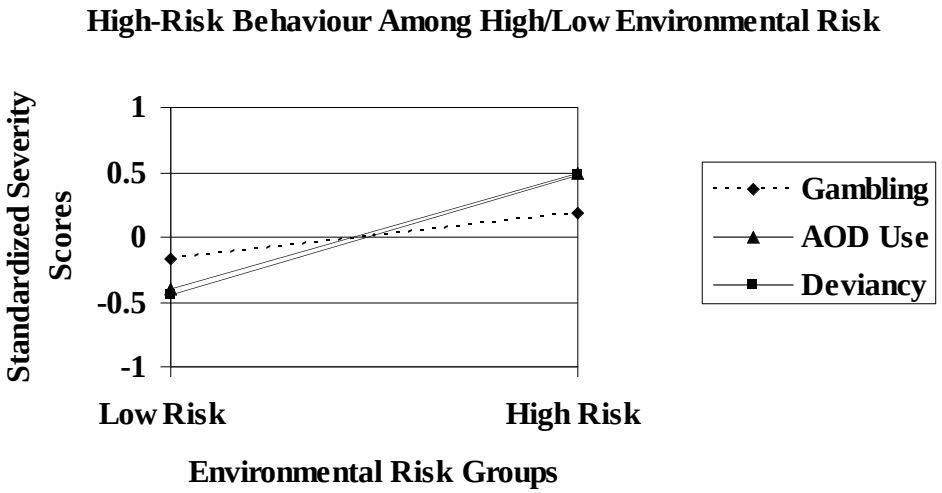


Figure 4. Standardized Gambling, AOD Use, and Deviant Behaviour Scores among High and Low Environmental Risk Groups.

Individual Attributes

High scores on the IPFI reflect greater internalized assets including personal competence, social bonding, and social competence. Possible scores on the IPFI range from 1-4. The mean score for the total sample (M = 3.17, SD = 0.29) was within the range of previously reported scores for the standardized sample (M= 3.07 – M = 3.34) (Springer & Phillips, 1992) (see Table 20). It was also slightly higher than the mean previously observed in the comparison sample (Lussier et al., 2007; M = 3.15, SD = 0.35).

A univariate analysis of variance revealed significant gender differences for mean composite IPFI scores [$F(1, 1047) = 8.96$, $p = .003$]. As seen in Table 20, females

reported slightly higher individual attributes (M = 3.19, SD = 0.28) than males (M = 3.14, SD = 0.30). When analysed individually, two out of the three attributes also demonstrated significant mean gender differences. Females again reported higher levels of Social Bonding and Social Competence compared with males [$F(1, 1047) = 23.61$, $p < .001$ and $F(1, 1047) = 8.39$, $p = .004$ respectively]. There were no evident gender differences in mean levels of Personal Competence (Table 21).

Table 20

Composite Individual Attribute Scores by Gender and Gambling Groups

IPFI Sample	Individual Protective Factors Index [1]		
	N	*M*	*SD*
Gender			
Male	531	3.14	0.30
Female	518	3.19	0.28
Total	1049	3.17	0.29
Gambling Groups			
Non-Gambling [a]	418	3.21	0.29
Social Gambling [b]	521	3.16	0.28
At-Risk Gambling [c]	83	3.04	0.29
PPG [d]	29	2.99	0.29
Total	1051	3.17	0.29

[1] Range 1–4; higher scores reflect greater levels of individual attributes.
[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).

An ANOVA revealed that the mean level of individual attributes significantly differed between gambling groups [$F(3, 1047) = 14.38$, $p < .001$]. The Tukey HSD statistic for post hoc comparisons revealed significant mean differences between composite scores for all gambling-group pair-wise comparisons with the exceptions of the At-Risk and PPG groups. More specifically, there was a significant negative linear relationship between self-reported individual attributes and gambling related problems. As gambling severity increased, individual attributes decreased. As seen in Table 22, youth that met the criteria for Probable Pathological Gambling reported the lowest levels

of individual attributes. The mean composite score for PPG (*M* = 2.99, *SD* = 0.29) and At-Risk (*M* = 3.03, *SD* = 0.29) gambling groups were lower than the lowest standardized score across 14 samples of youth identified as high-risk (*M* = 3.07), as reported by Springer and Phillips (1992).

Table 21

Individual Attributes by Gender

IPFI Sample	Sex				
	Boys (*n*=531)		Girls (*n*=518)		
Individual Attributes[1]	*M*	*SD*	*M*	*SD*	*F*
Social Bonding	3.09	0.35	3.19	0.32	23.61***
Personal Competence	3.16	0.31	3.17	0.30	0.21 (ns)
Social Competence	3.16	0.35	3.22	0.35	8.39**
Total	3.14	0.30	3.19	0.28	8.96**

[1] IPFI (scores range from 1-4; high scores reflect higher levels of self-reported individual attributes).
** $p \leq .01$, *** $p \leq .001$, ns = not significant.

Table 22

Individual Attributes by Gambling Behaviour Groupings

IPFI Sample	Gambling Groups								
	Non-Gambling [a] (*n*=418)		Social Gambling [b] (*n*=521)		At-Risk Gambling [c] (*n*=83)		PPG [d] (*n*=29)		
Individual Attributes[1]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Social Bonding	3.22	0.33	3.13	0.33	2.93	0.37	2.88	0.36	25.28***
Personal Competence	3.21	0.31	3.16	0.30	3.07	0.32	3.02	0.25	8.46***
Social Competence	3.21	0.37	3.19	0.34	3.10	0.32	3.13	0.30	2.61*
Total	3.21	0.29	3.16	0.28	3.03	0.29	2.99	0.29	14.38***

[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
[1] IPFI (scores range from 1-4; high scores reflect higher levels of self-reported individual attributes). * $p \leq .05$, *** $p \leq .001$.

Univariate analyses of variance demonstrated that the negative linear relationship between individual attributes and gambling severity persisted for the factor domains. The mean level of Social Bonding [$F(3, 1047) = 25.28$, $p < .001$], Personal Competence [$F(3, 1047) = 8.46$, $p < .001$], and Social Competence [$F(3, 1047) = 2.61$, $p = .05$] differed

significantly between gambling groups. Tukey HSD post hoc tests revealed significant pair wise comparisons for mean Social Bonding scores across all gambling groups, with the exception of the At-Risk and PPG groups. Personal Competence scores were discrepant among all gambling groups with the exception of the Social and At-Risk, and Social and PPG gambling groups. Finally, within the Social Competence domain, only the Non-Gambling group differed from all others (Table 22).

High/Low Individual Attribute Groups

A median split was applied to the IPFI measure, as had been done with the EMT-Risk, to differentiate youth that self-reported higher levels of individual attributes from those that self-reported lower levels. As can be seen in Table 23, significant differences were found between the proportion of youth identified as high- or low- in individual attributes and gambling severity [$\chi 2$ (3, N = 1051) = 39.40, $p < .001$]. Among At-Risk and PPG groups only 24.1% were classified as high in individual attributes, whereas 75.9% were classified as low in individual attributes.

Table 23

High/Low Individual Attributes by Gambling Groups

IPFI Sample	Gambling Groups[1]					
	N	Non [a] (*n* = 418)	Social [b] (*n* = 521)	At Risk [c] (*n* = 83)	PPG [d] (*n* = 29)	X^2
Low individual attributes [e]	549	43.3	54.3	75.9	75.9	
High individual attributes [f]	502	56.7	45.7	24.1	24.1	
Total	1051	39.8	49.6	7.9	2.8	39.40***

[1]Percentage. *** $p \leq .001$. [a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4). [e] Low individual attributes (lower half of IPFI median split). [f] High individual attributes (upper half of median split).

Similarly, in terms of other high-risk behaviours, an ANOVA revealed that the mean level of deviant behaviour significantly differed between high- and low- individual attribute groups [F(1, 1019) = 85.63, $p < .001$], with youth in the lower half reporting elevated levels of deviant behaviour and youth in the upper half reporting lower levels of

deviant behaviour (Table 24). A chi-square analysis also revealed a significant difference among AOD use and individual attribute groupings [$\chi^2(N = 965) = 11.02$, $p < .001$]. Although the relationships between problem behaviours and individual attribute groupings are in the anticipated direction, and although group differences appear to be significant, Figure 5 demonstrates that the reductions in problem severity are relatively small, certainly less pronounced than the trend observed for environmental risk and problem severity, and may not be meaningfully relevant given that scores are largely gathered around the z-score mean of 0 regardless of high- or low- individual attribute grouping. It should also be noted that the homogeneity of variance assumption was violated in the ANOVA as the Levene Statistics was significant ($p < .001$), and as such, results must be interpreted cautiously.

Table 24

High/Low Individual Attribute Groupings by High-Risk Behaviour Severity

IPFI Sample	High/Low Individual Attributes Median Split[1]				Anova
	Low [a] (n = 544)		High [b] (n = 498)		
High-Risk Behaviour	*M*	*SD*	*M*	*SD*	
Deviant Behaviour [c]	1.55	0.38	1.35	0.28	$F = 85.63^{***}$

[1]Percentage. [a] Low individual attribute group (lower half of IPFI median split). [b] High individual attribute group (upper half of IPFI median split). [c] Deviant Behaviour subscale (scores range from 1-3). *** $p \leq .001$.

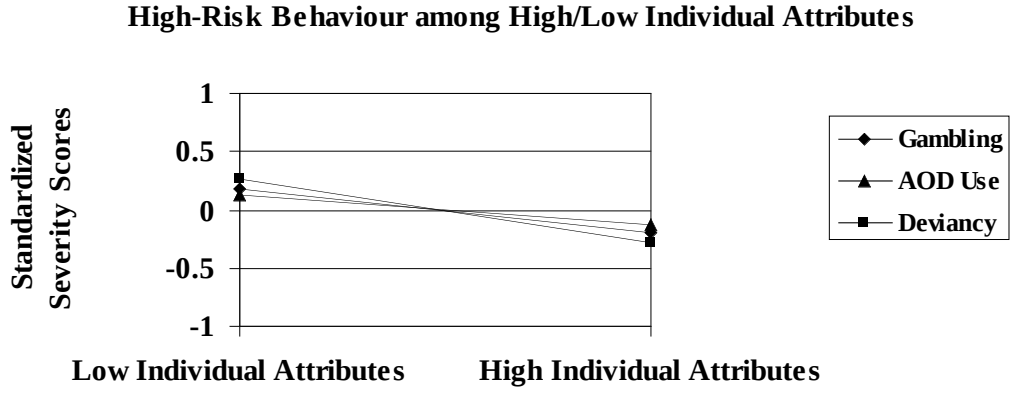


Figure 5. Standardized Gambling, AOD Use, and Deviant Behaviour Scores among High and Low Individual Attribute Groups.

Impulsivity

The Eysenck Impulsivity Scale (EIS) was modified to assess impulsivity in the current sample. As employed by former youth gambling researchers, only the five items known to have the highest factor loadings were included (Eysenck et al., 1984; Vitaro et al., 1999). All items required yes/no responses. Consequently, possible scores ranged from 0-5. Although the severity of impulsivity demonstrated no significant sex differences, significant mean discrepancies were observed among gambling groups [$F(3, 1021) = 20.96$, $p < .001$]. A positive linear relationship revealed that as impulsivity increased, gambling severity increased as well. Tukey HSD post hoc comparisons identified significant differences between all pair wise comparisons with the exception of the Non-Gambling and Social gambling groups, and the At-Risk and PPG gambling groups (see Table 25). Youth in the upper half of the environmental risk median split reported higher levels of impulsivity ($M = 2.36$) versus those in the lower half ($M = 1.52$). An ANOVA revealed that this difference was statistically significant [$F(3, 1020) = 64.85$, $p < .001$]. Youth in the lower half of the individual attribute median split also reported higher levels of impulsivity ($M = 2.43$) than those in the upper half ($M = 1.36$), indicating that youth with relatively low levels of individual attributes reported more symptoms of impulsivity [$F(1, 1023) = 110.51$, $p < .001$]. The Levene statistic was significant ($p < .001$) for both ANOVAs, indicating violations in the homogeneity of variance. Consequently, these results must be interpreted cautiously (Table 26).

Table 25

Composite Impulsivity Scores by Gender, Age, and Gambling Groups

EIS-Modified Sample	Eysenck Impulsivity Scale – Modified [1]			
	N	*M*	*SD*	*F*
Sex				0.64 (ns)
Male	518	1.87	1.70	
Female	505	1.96	1.74	
Total	1023	1.92	1.72	
Gambling Groups				20.96***
Non-Gambling [a]	404	1.65	1.61	
Social Gambling [b]	512	1.90	1.70	
At-Risk Gambling [c]	80	2.76	1.79	
PPG [d]	29	3.66	1.63	
Total	1025	1.92	1.71	

[1] EIS-Modified composite (scores range from 1-5; high scores reflect higher self-reported symptoms of impulsivity; [a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4). *** $p \leq .001$; ns = not significant.

Table 26

Impulsivity by High/Low Environmental Risk and High/Low Individual Attribute Groupings

EIS-Modified Sample	Eysenck Impulsivity Scale – Mod. [1]		Anova
	M	*SD*	*F*
High/Low Environmental Risk Median Split			64.85***
Lower environmental risk [a] (*n* = 536)	1.52	1.58	
Higher environmental risk [b] (*n* = 486)	2.36	1.75	
High/Low Individual Attribute Median Split			110.51***
Low individual attributes [c] (*n* = 536)	2.43	1.77	
High individual attributes [d] (*n* = 489)	1.36	1.45	

[1] EIS-Modified composite (scores range from 1-5; high scores reflect higher self-reported symptoms of impulsivity; [a] Low risk group (lower half of EMT-Risk median split). [b] High risk group (upper half of EMT-Risk median split); [c] Low individual attribute group (lower half of IPFI median split). [d] High individual attribute group (upper half of IPFI median split). *** $p < .001$.

Anxiety

The Beck Anxiety Inventory (BAI) was used to assess anxiety. The 21 items, ranging from 0-3, were summed together to create a composite anxiety score, ranging from 0 to 63. Significant sex differences were observed, such that females (M = 10.57) endorsed more anxiety-related symptoms than males (M = 7.46, SD = 7.91) [$F(1, 1024) = 31.91$, $p < .001$] (see Table 27). However, the homogeneity of variance test was violated,

indicating that results should be interpreted with caution. In terms of gambling related problems, group differences were again significant, with self-reported anxiety levels demonstrating a positive linear relationship, such that as anxiety increased, gambling severity also increased [$F(3, 1024) = 6.63$, $p < .001$] (see Table 27). Tukey HSD post hoc comparisons revealed significant pair wise comparisons between the Non-Gambling group and the At-Risk and PPG gambling groups, as well as between the Social and PPG gambling groups.

Table 27

Anxiety Scores by Gender and Gambling Groups

BAI Sample	Beck Anxiety Inventory [1]			
	N	*M*	*SD*	*F*
Gender				31.91***
Male	516	7.46	7.91	
Female	510	10.57	9.63	
Total	1026	9.01	8.94	
Gambling Groups				6.63***
Non-Gambling [a]	406	7.95	8.61	
Social Gambling [b]	515	9.24	8.89	
At-Risk Gambling [c]	78	11.24	9.69	
PPG [d]	29	13.90	9.99	
Total	1028	9.01	8.95	

[1] BAI scores range from 0-63; higher scores reflect higher self-reported symptoms of anxiety. [a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4). *** $p \leq .001$.

Youth in upper half of the environmental risk median split reported higher levels of anxiety ($M = 10.99$) versus those in the lower half ($M = 7.23$). An ANOVA confirmed that this difference was statistically significant [$F(1, 1023) = 47.08$, $p < .001$]. Youth in the lower half of the individual attributes median split also reported higher levels of anxiety ($M = 10.73$) than those in the upper half ($M = 7.15$), indicating that youth with relatively low levels of individual attributes self-reported more symptoms of anxiety [$F(1, 1026) = 42.67$, $p < .001$] (Table 28).

Table 28

Composite Anxiety Scores by High/Low Risk Groupings and High/Low Individual Attribute Groupings

BAI Sample	Beck Anxiety Inventory [1]		
	M	*SD*	*F*
High/Low Environmental Risk Median Split			47.08***
Lower environmental risk [a] (*n* = 536)	7.23	8.08	
Higher environmental risk [b] (*n* = 489)	10.99	9.44	
High/Low Individual Attribute Median Split			42.67***
Low individual attributes [c] (*n* = 536)	10.73	9.48	
High individual attributes [d] (*n* = 492)	7.15	7.92	

[1] BAI scores range from 0-63; higher scores reflect higher self-reported symptoms of anxiety. [a] Low environmental risk group (lower half of EMT-Risk median split). [b] High environmental risk group (upper half of EMT-Risk split). [c] Low individual attribute group (lower half of IPFI median split). [d] High individual attribute group (upper half of IPFI split). *** $p < .001$.

Depression

The Reynold's Adolescent Depression Scale – 2nd Edition (RADS-2) was used to assess depressive symptomatology among the current sample. The RADS-2 consists of 30 items on a 4-point Likert scale. Composite depressions scores were calculated by summing the 30 item responses together to obtain a total score ranging from 30-120. The mean depression score for the full sample was *M* = 56.49 (*SD* = 14.90). Girls (*M* = 59.89; *SD* = 15.28) reported greater levels of depression symptoms compared with boys (*M* = 53.2; *SD* = 13.74) [$F(1, 1031) = 54.8$, $p < .001$] (Table 29).

Youth in the upper half of the environmental risk median split reported more symptoms of depression (*M* = 60.28; *SD* = 15.10) than participants in the lower half (*M* = 53.07; *SD* = 13.87), indicating that those exposed to greater levels of environmental risk were more likely to endorse depressive symptoms [$F(1, 1030) = 64.03$, $p < .001$]. Conversely, youth in the lower half of the individual attributes median split were more likely to endorse symptoms of depression (*M* = 63.65; *SD* = 14.66) compared to those in the upper half (*M* = 48.71= 10.67), indicating that participants who reported higher levels

of individual attributes reported fewer depressive symptoms and those who reported lower levels [$F(1, 1033 = 346.48, p = .001$]. However, the Levene statistic for this latter ANOVA was significant ($p < .001$). Results for this analysis must be interpreted cautiously as the assumption of homogeneity of variance was violated (see Table 30).

Table 29

Depression Scores by Gambling Behaviour Groupings and Gender

RADS-2 Sample	Reynolds Adolescent Depression Scale-2[1]			
	N	*M*	*SD*	*F*
Sex				54.8***
Male	522	53.20	13.74	
Female	511	59.89	15.28	
Total	1033	56.51	14.90	
Gambling Groups				1.47(ns)
Non-Gambling [a]	409	55.91	15.41	
Social Gambling [b]	516	56.49	14.73	
At-Risk Gambling [c]	81	57.68	13.37	
PPG [d]	29	61.48	14.06	
Total	1035	56.49	14.90	

[1] RADS-2 composite (scores range from 30-120; high scores reflect higher self-reported symptoms of depression.
[a] GAQ score (no prior-year gambling). [b] DSM-IV-MR-J score (0-1). [c] DSM-IV-MR-J score (2-3). [d] DSM-IV-MR-J score (≥ 4).
*** $p \leq .001$, ns = not significant.

Table 30

Composite Depression Scores by High/Low Environmental Risk Groupings and High/Low Individual Attribute Groupings

RADS-2 Sample	Reynolds Adolescent Depression Scale-2 [1]		
	M	*SD*	*F*
High/Low Risk Median Split			64.03***
Lower environmental risk [a] (*n* = 540)	53.07	13.87	
Higher environmental risk [b] (*n* = 492)	60.28	15.10	
High/Low Individual Attribute Median Split			346.48***
Lower individual attributes [c] (*n* = 539)	63.65	14.66	
Higher individual attributes [d] (*n* = 496)	48.71	10.67	

[1] RADS-2 composite (scores range from 30-120; high scores reflect higher self-reported symptoms of depression.
[a] Low environmental risk group (lower half of EMT-Risk median split). [b] High environmental risk group (higher half of EMT-Risk split). [c] Low individual attribute group (lower half of IPFI median split). [d] High individual attribute group (upper half of IPFI split).
*** $p < .001$.

Summary of Univariate Analyses

Table 31 provides an overall summary of the relationships between all environmental risk factors, individual attributes, personality variables, and high-risk behaviours (including problem gambling, AOD use, and deviant behaviour) based on significant main effects found in the ANOVA analyses and significant group differences found in the chi-square analyses. Effect sizes are provided for all ANOVA analyses that were statistically significant. Effect size reflects the proportion of variance in the dependent variable that is associated with levels of an independent variable. For one-way ANOVAs, partial eta-squared (η_p^2) and eta-squared (η^2) formulae provide the same results (Levine & Hullett, 2002). As such, it was not necessary to calculate eta-squared values. Tabachnick and Fidell (2007) suggest using Cohen's (1988) guidelines to qualify small ($\eta^2 = .01$), medium ($\eta^2 = .09$), and large ($\eta^2 = .25$) effect sizes. As can be seen in Table 31, although several significant ANOVA analyses demonstrated only small effect sizes, none could be considered as having no practical utility.

Table 31

Summary Table of Environmental Risk, Individual Attributes, Personality Variables, and Problem Behaviour Correlates, with Partial Eta Square Effect Sizes (where appropriate)

	Sex	Age groups	Gambling Groups	AOD Use Groups	Deviant Behaviour	EMT-Risk median split	IPFI median split	Resilience Categories
Sex			*	ns	.01	*	*	*
Age groups			ns	*	.02	*	ns	*
Gambling Groups	*	ns		*	.12	*	*	*
AOD Use Groups	ns	*	*		.17	*	*	*
Deviant Behaviour	.01	.02	.12	.17		.22	.08	.24
Environmental Risk	.04	.10	.09	.19	*.35*			
- Family	ns	.07	.03	.04	*.11*			
- Peers	ns	.10	.07	.20	*.26*			
- Neighbour.	ns	.04	.08	.14	*.29*			
Individual Attributes	.01	.01	.04	.03	*.12*			
- Social Bonding	.02	.02	.07	.06	*.21*			
- Personal Competence	ns	.01	.02	.03	*.12*			
- Social Competence	.01	ns	.01	ns	*.01*			
Anxiety[a]	.03	.03	.02	.04	.06	.04	.04	.07
Impulsivity[b]	ns	ns	.06	.01	.07	.06	.10	.12
Depression[c]	.05	ns	ns	.01	.02	.06	.25	.26

Note: effect sizes; .01 = small effect, .09 = medium effect, .25 = large effect. Figures in regular font refer to η^2 values; Figures in italic font refer to r^2 values. * = significant $\chi 2$; ns = not significant. [a] Anxiety scores were categorized as per manual guidelines and run in an ANOVA with the Deviant Behaviour scale to obtain an η^2 value. [b] Impulsivity scores were categorized using a 70th percentile cutoff (Vitaro et al., 1999) and run in an ANOVA with the Deviant Behaviour scale to obtain an η^2 value. [c] Depression scores were categorized as per manual guidelines and run in an ANOVA with the Deviant Behaviour scale to obtain an η^2 value.

Multivariate Analyses

Gambling Behaviour

Sequential binary logistic regressions were carried out to determine the combination of risk and individual attribute domains that best predict problem gambling and to explore the possibility of interaction effects between the risk, individual attributes, and personality variables. The outcome variable was coded as 0 = Non-Gambler or Social-Gambler and 1 = At-Risk or PPG. Gender, age, impulsivity, anxiety, and depression were considered as potential control variables. However, age and depression were not significantly related to problem gambling and as such were removed from further models. For all regressions, the Hosmer and Lemeshow test was non-significant, indicating an adequate model fit. Colinearity diagnostics revealed no multicollinearity among the examined variables as ascertained by Tolerance and Variance Inflation Factor statistics. Also, tests for outliers revealed only one case with a z-residual score greater than three, which is considered acceptable in analyses involving a large sample (Newton & Rudestam, 1999).

To determine what combination of environmental risk and individual attributes best predict problem gambling, a series of stepwise logistic regressions were performed. The first regressions consisted of gender, impulsivity, and anxiety entered in Step 1, and the three environmental risk domains (Family, Peer Group, and Neighbourhood) entered in Step 2. According to the Wald criterion, Peers ($z = 6.35$, $p = .01$) and Neighbourhood ($z=6.76$, $p=.01$) were retained in the model but Family was not. The second set of regressions consisted of gender, impulsivity, and anxiety in Step 1, and the three individual attribute domains (Social Bonding, Social Competence, and Personal Competence) in Step 2. Only the Social Bonding domain ($z = 20.96$, $p < .001$) was retained in the model, whereas the Personal Competence and Social Competence domains

were not. In a third set of regressions, all six environmental risk and individual attribute domains were entered into a prediction model. As presented in Table 32, the Peer Group, Neighbourhood, and Social Bonding domains were again retained, above and beyond the effects of other known contributors, including gender, impulsivity, and anxiety. The Family, Social Competence, and Personal Competence domains were again excluded from the model as they still did not improve the prediction of problem gambling.

Table 32

Sequential Logistic Regression of Domains Predicting Problem Gamblers

	B	SE	z
Model with Environmental Risk Domains only			
Gender (female=0, male = 1)	1.175	0.246	22.82***
Impulsivity (EIS-Modified)	0.341	0.066	26.51***
Peers Group (EMT-Risk)	0.807	0.320	6.345**
Neighbourhood (EMT-Risk)	0.837	0.322	7.757**
Model with Individual Attribute Domains only			
Gender	1.138	0.247	21.20***
Impulsivity	0.345	0.070	24.35***
Anxiety	0.034	0.012	7.959**
Social Bonding (IPFI)	-1.882	0.411	20.960***
Model with All 6 Domains			
Gender	1.120	0.250	20.020***
Impulsivity	0.339	0.070	23.259***
Peers Group (EMT-Risk)	0.694	0.328	4.471*
Neighbourhood (EMT-Risk)	0.711	0.334	4.529*
Social Bonding (IPFI)	-1.263	0.469	7.236**

Note: For the IPFI and EMT scales, a higher score indicates greater resiliency traits and risk exposure. * $p < .05$; ** $p \leq .01$; *** $p < .001$.

To explore the possibility of interaction effects between environmental risk and individual attributes, a conceptual model was tested in which individual attributes and environmental risk were assumed to moderate the relationship between other known predictors (impulsivity and anxiety) and gambling problems. As well, two 3-way interactions between individual attributes, personality variables, and environmental risk were anticipated, such that environmental risk would putatively moderate the moderating effect of individual attributes on the relationships between personality variables and

problem gambling. A series of regressions were conducted with gender, impulsivity, and anxiety entered at Step 1; individual attributes and the two 2-way interactions for individual attributes by personality variables entered at Step 2; environmental risk scores and two 2-way interactions for environmental risk and personality variables entered at Step 3; an interaction for environmental risk and individual attributes entered at Step 4; and two 3-way interactions for personality variables, individual attributes, and environmental risk entered at Step 5. Gender, impulsivity, and environmental risk were the only variables retained in the final model (Table 33). One interaction (individual attributes by impulsivity) was significant, but only at Step 2. To investigate factors that might distinguish social gamblers from problem gamblers, the same regressions were performed with non gamblers excluded. The results were very similar (Table 34).

Alcohol and Other Drug Use

Although the current project is primarily concerned with youth gambling problems and behaviours, sequential binary logistic regressions were carried out to explore whether AOD use would demonstrate a similar pattern of results as the prediction models for gambling behaviour. The outcome variable was coded as 0 = no AOD use problems and 1 = high-risk of AOD use problems. Gender, age, impulsivity, anxiety, and depression were considered as potential control variables. However, gender and depression were not significantly related to problem AOD use and as such were removed from further models. For all regressions, the Hosmer and Lemeshow test was non-significant, indicating an adequate model fit. Colinearity diagnostics revealed no multicollinearity among the examined variables as ascertained by Tolerance and Variance Inflation Factor statistics. Also, tests for outliers revealed no case with a z-residual score greater than three.

Table 33

Sequential Logistic Regression Models for Problem/Non Problem Gambling Groups

Model with Non Problem (Non & Social) and Problem (At-Risk & PPG)	β	SE	z
Step 1			
Gender (female = 0, male = 1)	1.253	0.241	26.984***
Impulsivity (EIS-Modified)	0.405	0.064	39.478***
Anxiety (BAI)	0.032	0.011	7.787**
Step 2			
Gender	1.167	0.243	23.088***
Impulsivity	0.416	0.075	30.773***
Anxiety	0.031	0.013	5.912*
Individual Attributes (IPFI)	-1.305	0.466	7.846**
Individual Attributes * Impulsivity	0.240	0.116	4.270*
Individual Attributes * Anxiety	0.091	0.095	0.921
Step 3			
Gender	1.123	0.247	20.714***
Impulsivity	0.396	0.082	23.337***
Anxiety	0.026	0.015	3.033
Individual Attributes	-0.473	0.520	0.829
Individual Attributes * Impulsivity	0.182	0.126	2.075
Individual Attributes * Anxiety	0.046	0.103	0.198
Environmental Risk (EMT-Risk)	1.944	0.473	16.919***
Environmental Risk * Impulsivity	-0.063	0.124	0.262
Environmental Risk * Anxiety	-0.047	0.112	0.178
Step 4			
Gender	1.124	0.247	20.723***
Impulsivity	0.413	0.082	25.288***
Anxiety	0.027	0.014	3.595
Individual Attributes	-0.210	0.565	0.137
Individual Attributes * Impulsivity	0.192	0.128	2.261
Individual Attributes * Anxiety	0.055	0.104	0.278
Environmental Risk	1.830	0.485	14.263***
Environmental Risk * Impulsivity	-0.096	0.128	0.566
Environmental Risk * Anxiety	-0.060	0.112	0.281
Individual Attributes * Environmental Risk	-0.134	0.110	1.490
Step 5			
Gender	1.139	0.249	20.939***
Impulsivity	0.418	0.083	25.087***
Anxiety	0.028	0.015	3.478
Individual Attributes	-0.274	0.572	0.229
Individual Attributes * Impulsivity	0.187	0.141	1.764
Individual Attributes Factors * Anxiety	-0.052	0.122	0.180
Environmental Risk	1.964	0.494	15.793***
Environmental Risk * Impulsivity	-0.095	0.133	0.511
Environmental Risk * Anxiety	0.019	0.125	0.022
Individual Attributes * Environmental Risk	-0.144	0.129	1.237
Anxiety * Individual Attributes * Environmental Risk	0.021	0.105	0.040
Impulsivity * Individual Attributes * Environmental Risk	0.169	0.105	2.600

Note: For the IPFI and EMT scales, a higher score indicates greater individual attributes and risk exposure.
** $p < .05$, ** $p \leq .01$, *** $p < .001$.*

Table 34

Sequential Logistic Regression Prediction Models for Social/ Problem Gambling Groups

Model with Social and Problem (At-Risk & PPG) Groups	β	SE	z
Step 1			
Gender (female = 0, male = 1)	1.094	0.250	19.179***
Impulsivity (EIS-Modified)	0.362	0.066	29.656***
Anxiety (BAI)	0.028	0.012	5.111*
Step 2			
Gender	1.020	0.253	16.290***
Impulsivity	0.386	0.078	24.539***
Anxiety	0.023	0.014	2.826
Individual Attributes (IPFI)	-1.089	0.490	4.937*
Individual Attributes * Impulsivity	0.236	0.123	3.681*
Individual Attributes * Anxiety	0.023	0.109	0.044
Step 3			
Gender	1.009	0.256	15.559***
Impulsivity	0.377	0.085	19.574***
Anxiety	0.018	0.016	1.353
Individual Attributes	-0.462	0.540	0.730
Individual Attributes * Impulsivity	0.193	0.133	2.108
Individual Attributes * Anxiety	-0.004	0.118	0.001
Environmental Risk (EMT-Risk)	1.464	0.483	9.174**
Environmental Risk * Impulsivity	-0.052	0.125	0.172
Environmental Risk * Anxiety	-0.006	0.115	0.003
Step 4			
Gender	1.000	0.256	15.253***
Impulsivity	0.396	0.085	21.476***
Anxiety	0.020	0.015	1.696
Individual Attributes	-0.162	0.588	0.076
Individual Attributes * Impulsivity	0.208	0.135	2.368
Individual Attributes * Anxiety	0.007	0.119	0.003
Environmental Risk	1.322	0.497	7.061**
Environmental Risk * Impulsivity	-0.087	0.129	0.452
Environmental Risk * Anxiety	-0.013	0.114	0.012
Individual Attributes * Environmental Risk	-0.157	0.116	1.830
Step 5			
Gender	1.010	0.257	15.408***
Impulsivity	0.400	0.086	21.431***
Anxiety	0.021	0.016	1.690
Individual Attributes	-0.229	0.597	0.147
Individual Attributes * Impulsivity	0.208	0.151	1.895
Individual Attributes * Anxiety	-0.074	0.137	0.293
Environmental Risk	1.386	0.501	7.650**
Environmental Risk * Impulsivity	-0.080	0.136	0.344
Environmental Risk * Anxiety	0.048	0.127	0.141
Individual Attributes * Environmental Risk	-0.169	0.136	1.550
Anxiety * Individual Attributes * Environmental Risk	0.023	0.109	0.046
Impulsivity * Individual Attributes * Environmental Risk	0.138	0.112	1.513

Note: For the IPFI and EMT scales, a higher score indicates greater individual attributes and risk exposure.
** $p < .05$, ** $p \leq .01$, *** $p < .001$.*

To determine what combination of environmental risk and individual attributes best predict AOD use, a series of stepwise logistic regressions were performed. The first regressions consisted of age, impulsivity, and anxiety entered in Step 1, and the three environmental risk domains (Family, Peer Group, and Neighbourhood) entered in Step 2. All three risk factors were retained in the model. The second set of regressions consisted of age, impulsivity, and anxiety in Step 1, and the three individual attribute domains (Social Bonding, Social Competence, and Personal Competence) in Step 2. Only the Social Bonding and Social Competence domains were retained in the model, whereas the Personal Competence domain was not (Table 35). Interestingly, Social Competence was positively associated with AOD use problems. That is, reporting high Social Competence in combination with the other variables in the model improved the prediction of AOD use.

The conceptual prediction model for gambling severity was also applied to AOD use. Age, impulsivity, and anxiety were entered in Step 1; composite individual attribute scores and two 2-way interactions for individual attributes by personality variables were entered in Step 2; composite environmental risk scores and two 2-way interactions for environmental risk by personality variables were entered in Step 3; an interaction for environmental risk by individual attributes was entered in Step 4; and two 3-way interactions for personality variables, individual attributes, and environmental risk were entered in Step 5. Only environmental risk was retained in the final model (Table 36).

Deviant Behaviour

A series of regressions were also carried out to examine whether a similar pattern of results would exist for deviant behaviour as was found in the prediction models for gambling problems. The deviant behaviour variable is continuous so multiple regressions

were run instead of logistic regressions. Gender, age, impulsivity, anxiety, and depression were considered as potential control variables. However, depression was not significantly related to deviant behaviour and was removed from further models. Colinearity diagnostics revealed no significant multicollinearity amongst variables as ascertained by Tolerance and Variance Inflation Factor statistics. Multivariate homogeneity of variance was assessed by a series of plots using residuals. A normal probability plot of standardized residuals against standardized predicted values revealed no particular patterns of heteroscedasticity or nonlinearity. A histogram of the residuals revealed a nicely shaped curve and a P-Plot also showed no signs of non normality.

Table 35

Sequential Logistic Regression of Domains Predicting High and Low Substance Use Groups

	B	SE	z
Model with Environmental Risk Domains only			
Anxiety	0.037	0.015	6.092*
Family (EMT-Risk)	0.895	0.438	4.163*
Peers Group (EMT-Risk)	4.199	0.508	68.423***
Neighbourhood (EMT-Risk)	2.187	0.440	24.643***
Model with Individual Attribute Domains only			
Age	0.451	0.138	10.660***
Anxiety	0.048	0.013	14.596***
Social Bonding (IPFI)	-2.606	0.463	31.712***
Social Competence (IPFI)	1.465	0.468	9.814**

Note: For the IPFI and EMT scales, a higher score indicates greater resiliency traits and risk exposure. * $p < .05$, ** $p \leq .01$, *** $p \leq .001$.

To determine what combination of environmental risk and individual attributes best predict deviant behaviour, a series of stepwise multiple regressions were performed. The first regressions consisted of gender, age, impulsivity, and anxiety entered in Step 1, and the three environmental risk domains (Family, Peer Group, and Neighbourhood) entered in Step 2. All three risk factors were retained in the model. The second set of

Table 36

Sequential Logistic Regression Prediction Models for High and Low Substance Use Groups

Non-Problem (Green Flag) and Problem (Red Flag) Substance Use Groups	β	SE	z
Step 1			
Age	0.270	0.079	11.738***
Impulsivity (EIS-Modified)	0.173	0.068	6.594**
Anxiety (BAI)	0.053	0.011	22.099***
Step 2			
Age	0.262	0.080	10.771***
Impulsivity (EIS-Modified)	0.101	0.081	1.571
Anxiety (BAI)	0.052	0.012	17.217***
Individual Attributes (IPFI)	-1.909	0.501	14.505***
Individual Attributes * Impulsivity	0.085	0.121	0.497
Individual Attributes * Anxiety	0.118	0.095	1.525
Step 3			
Age	-0.007	0.095	0.005
Impulsivity (EIS-Modified)	0.006	0.140	0.002
Anxiety (BAI)	0.035	0.024	2.097
Individual Attributes (IPFI)	0.005	0.608	0.000
Individual Attributes * Impulsivity	0.022	0.145	0.023
Individual Attributes * Anxiety	0.094	0.124	0.581
Environmental Risk (EMT-Risk)	6.789	0.744	83.273***
Environmental Risk * Impulsivity	-0.031	0.202	0.023
Environmental Risk * Anxiety	0.055	0.200	0.074
Step 4			
Age	-0.008	0.095	0.006
Impulsivity (EIS-Modified)	0.024	0.147	0.026
Anxiety (BAI)	0.036	0.024	2.172
Individual Attributes (IPFI)	0.255	0.925	0.076
Individual Attributes * Impulsivity	0.028	0.146	0.037
Individual Attributes * Anxiety	0.097	0.124	0.611
Environmental Risk (EMT-Risk)	6.738	0.754	79.965***
Environmental Risk * Impulsivity	-0.061	0.219	0.077
Environmental Risk * Anxiety	0.050	0.200	0.062
Individual Attributes * Environmental Risk	-0.083	0.232	0.129
Step 5			
Age	-0.007	0.095	0.006
Impulsivity (EIS-Modified)	0.023	0.148	0.024
Anxiety (BAI)	0.036	0.024	2.178
Individual Attributes (IPFI)	0.311	0.954	0.107
Individual Attributes * Impulsivity	0.011	0.237	0.002
Individual Attributes * Anxiety	0.066	0.204	0.106
Environmental Risk (EMT-Risk)	6.766	0.787	73.951***
Environmental Risk * Impulsivity	-0.057	0.229	0.063
Environmental Risk * Anxiety	0.057	0.204	0.077
Individual Attributes * Environmental Risk	-0.105	0.250	0.175
Anxiety * Individual Attributes * Environmental Risk	0.018	0.203	0.008
Impulsivity * Individual Attributes * Environmental Risk	0.033	0.172	0.036

Note: For the IPFI and EMT scales, a higher score indicates greater individual attributes and risk exposure. * $p < .05$, ** $p \leq .01$;, *** $p \leq .001$.

regressions consisted of gender, age, impulsivity, and anxiety in Step 1, and the three individual attributes (Social Bonding, Social Competence, and Personal Competence) in Step 2. All three domains were again retained (Table 37). However, Social Competence was again positively associated with the dependent variable. That is, reporting high Social Competence in combination with the other variables in the model improved the prediction of deviant behaviour.

Table 37

Sequential Multiple Regressions of Domains Predicting Deviant Behaviour

	B	SE	β
Model with Environmental Risk Domains only			
Gender (female=0, male = 1)	0.057	0.018	0.081***
Age	-0.021	0.009	-0.059*
Impulsivity (EIS-Modified)	0.032	0.005	0.158***
Anxiety (BAI)	0.002	0.001	0.053*
Family (EMT-Risk)	0.072	0.026	0.079**
Peers Group (EMT-Risk)	0.244	0.027	0.277***
Neighbourhood (EMT-Risk)	0.299	0.028	0.328***
Model with Individual Attribute Domains only			
Gender (female=0, male = 1)	0.060	0.019	0.085**
Age	0.022	0.009	0.061*
Impulsivity (EIS-Modified)	0.031	0.006	0.153***
Anxiety (BAI)	0.004	0.001	0.107***
Social Bonding (IPFI)	-0.457	0.037	-0.453***
Personal Competence (IPFI)	-0.203	0.047	-0.177**
Social Competence (IPFI)	0.359	0.036	0.358**

Note: For the IPFI and EMT scales, a higher score indicates greater individual attributes and risk exposure. * $p < .05$, ** $p \leq .01$, *** $p < .001$.

The conceptual prediction model for gambling severity was also applied to deviant behaviour using multiple regressions. Gender, age, impulsivity, and anxiety were entered in Step 1; composite individual attribute scores and two 2-way interactions for individual attributes by personality variables were entered in Step 2; composite environmental risk scores and two 2-way interactions for environmental risk by personality variables were entered in Step 3; an interaction for environmental risk by individual attributes was entered

in Step 4; and two 3-way interactions for personality variables, individual attributes, and environmental risk were entered in Step 5. Casewise diagnostics were consulted to test for extreme cases. Only five cases had standardized residuals beyond ± 3 SD. None of the five cases had a Cook's distance greater than 1. However, one case had a leverage value more than three times the average ($k + 1/n = 14/984 = 0.014$) (Field, 2005), and a Mahalanobis distance greater than the chi-square critical value (based on df = number of variables – 1; $p = .05$). A second case also had a Mahalanobis distance beyond the critical value. As such, the model was run again without these two cases. The pattern of findings changed as a consequence of the exclusion of these two influential cases. Two interaction terms between environmental risk and the personality variables (anxiety and impulsivity) were retained in the final prediction model where they had previously been rejected, in the model that included all cases. The findings presented here are for the model that excluded the two influential cases (Table 38).

Although the model in Step 6 was significant [$F(13, 968) = 51.78$, $p < .001$], the F change statistic was not [$F(2, 968) = 1.02$, $p = .36$]. As such, the model at Step 5 was retained as the final prediction model [$F(11, 970) = 61.00$, $p < .001$]. All variables other than individual attributes and the interaction term between individual attributes and anxiety were retained in the final model (Table 38). More specifically, gender, age, impulsivity, anxiety, environmental risk, the two 2-way interaction terms for risk, the interaction term for individual attributes by impulsivity, and the interaction term for individual attributes by risk were retained.

Table 38

Sequential Multiple Regression Prediction Models for Deviant Behaviour

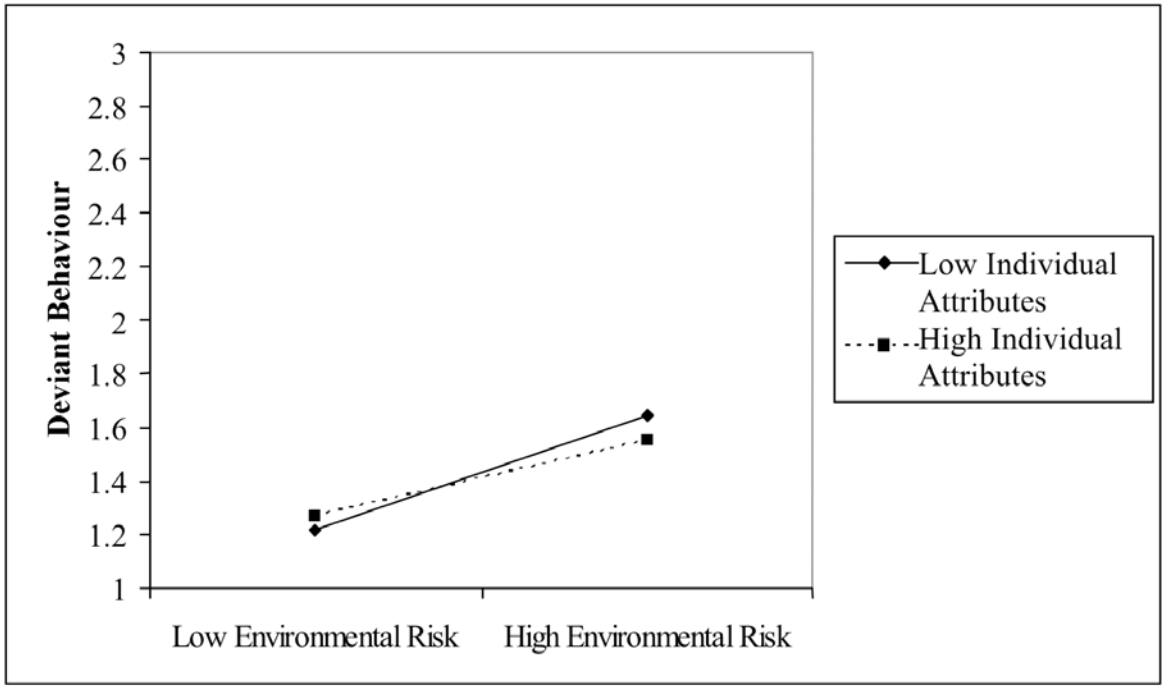
Deviant Behaviour Scale	B	SE B	β
Step 1			
Gender (female = 0, male = 1)	0.071	0.022	.101***
Age	0.022	0.007	.102***
Step 2			
Gender	0.097	0.021	.138***
Age	0.022	0.006	.103***
Impulsivity (EIS-Modified)	0.060	0.006	.293***
Anxiety (BAI)	0.007	0.001	.174***
Step 3			
Gender	0.078	0.021	.111***
Age	0.018	0.006	.086***
Impulsivity (EIS-Modified)	0.045	0.007	.223**
Anxiety (BAI)	0.006	0.001	.146***
Individual Attributes (IPFI)	-0.262	0.039	-.217***
Individual Attributes * Impulsivity	0.007	0.010	.020
Individual Attributes * Anxiety	0.022	0.010	.070
Step 4			
Gender	0.054	0.018	.078**
Age	-0.013	0.006	-.059*
Impulsivity (EIS-Modified)	0.029	0.006	.143***
Anxiety (BAI)	0.003	0.001	.076**
Individual Attributes (IPFI)	-0.039	0.036	-.032
Individual Attributes * Impulsivity	0.013	0.010	.037
Individual Attributes * Anxiety	0.006	0.009	.020
Environmental Risk (EMT-Risk)	0.603	0.035	.525***
Environmental Risk * Impulsivity	0.031	0.010	.092**
Environmental Risk * Anxiety	-0.017	0.010	-.050
Step 5			
Gender	0.050	0.018	.072**
Age	-0.011	0.006	-.052*
Impulsivity (EIS-Modified)	0.031	0.006	.152***
Anxiety (BAI)	0.003	0.001	.084**
Individual Attributes (IPFI)	-0.032	0.036	-.026
Individual Attributes * Impulsivity	0.020	0.010	.059*
Individual Attributes * Anxiety	0.013	0.009	.040
Environmental Risk (EMT-Risk)	0.594	0.035	.517***
Environmental Risk * Impulsivity	0.020	0.010	.060*
Environmental Risk * Anxiety	-0.022	0.010	-.064*
Individual Attributes * Environmental Risk	-0.037	0.009	-.116***
Step 6			
Gender	0.049	0.018	0.070**
Age	-0.011	0.006	-0.051*
Impulsivity (EIS-Modified)	0.033	0.006	0.164***
Anxiety (BAI)	0.003	0.001	0.075**
Individual Attributes	-0.033	0.037	-0.027
Individual Attributes * Impulsivity	0.018	0.010	0.054
Individual Attributes * Anxiety	0.016	0.010	0.049
Environmental Risk (EMT-Risk)	0.599	0.036	0.522***
Environmental Risk * Impulsivity	0.022	0.010	0.066*
Environmental Risk * Anxiety	-0.024	0.010	-0.071*
Environmental Risk * Individual Attributes	-0.039	0.009	-0.123***
Impulsivity * Individual Attributes *Environmental Risk	0.010	0.008	0.041
Anxiety * Individual Attributes * Environmental Risk	-0.09	0.009	-0.033

Note: For the IPFI and EMT scales, a higher score indicates greater individual attributes and risk exposure.
Step 1 R^2=.02; Step 2 ΔR^2=.13 (*p<.001);* Step 3 ΔR^2=.03 (*p<.001);* Step 4 ΔR^2=.18 (*p<.001*)*;* Step 5 ΔR^2=.01 (*p=.003*)*;* Step 6 ΔR^2=.001 (*p=.546*). *p* < .05, ** *p* ≤ .01, *** *p* ≤ .001.

There were four significant interaction terms in the final prediction model (Step 5).

The interaction for composite individual attribute scores by environmental risk was

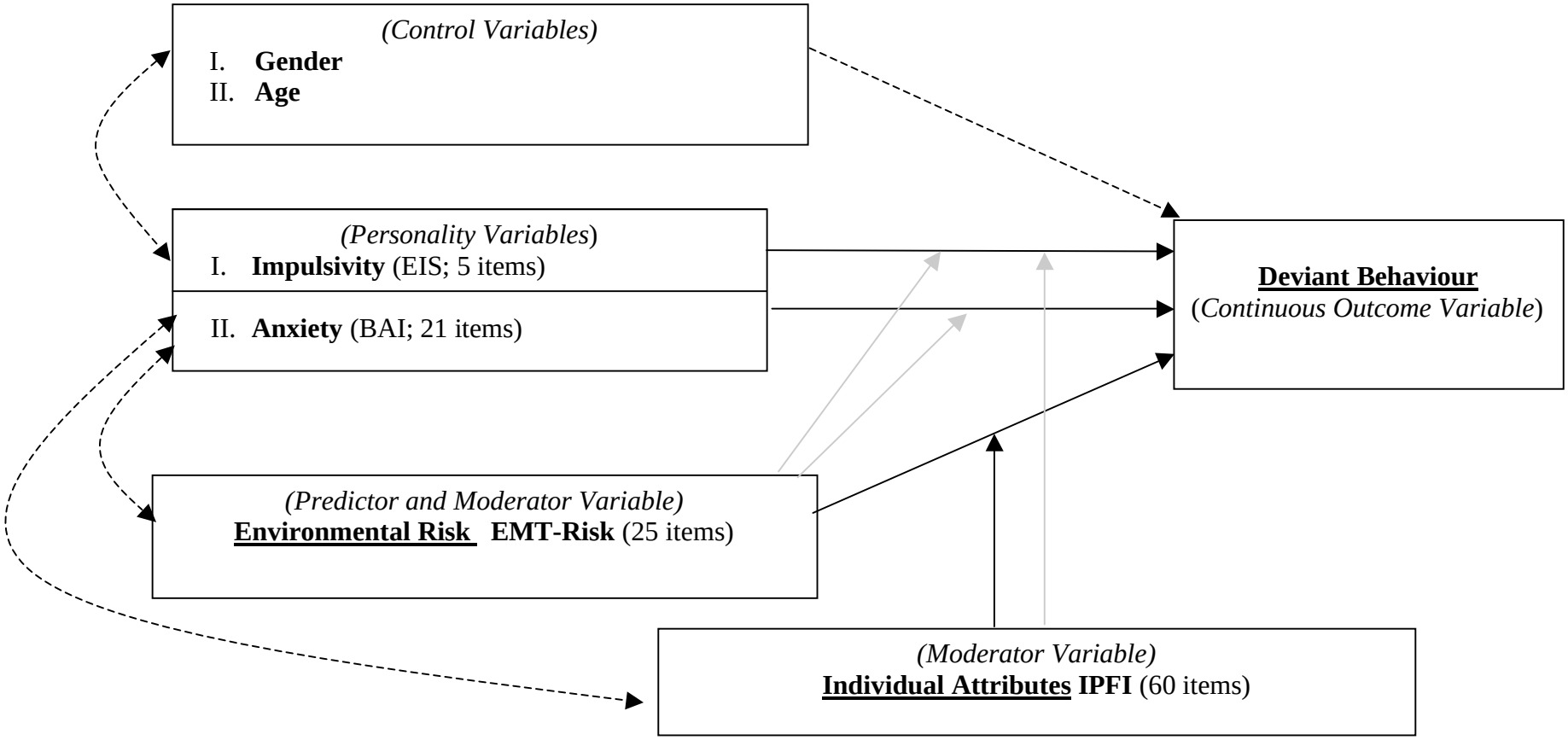
plotted using an Excel worksheet template (Dawson, 2006) that uses procedures by Aiken & West (1991) and Dawson & Richter (2006) to plot interaction effects (Figure 6). To probe this significant interaction, new conditional moderator variables were created for high (1SD above the mean) and low (1SD below the mean) conditional moderator scores and two new interaction terms were created that incorporated the new conditional moderator variables (i.e., high individual attributes by environmental risk and low individual attributes by environmental risk) (Aiken & West, 1991). Two post-hoc regressions were then run with the independent variable (environmental risk), one of the conditional moderator variables (low or high individual attributes), and the interaction term for environmental risk by the conditional moderator variable (high or low individual attributes). As such, with individual attributes as the hypothesized moderating variable, both equations generated from these analyses were significant. More specifically, the equation for the regression that included the low individual attributes moderator was $Deviancy_{est}$ = 1.582 (environmental risk) + 6.025*t* (976) = -1.545**, and the equation for the regression that included the high individual attributes moderator was $Deviancy_{est}$ = 1.779 (environmental risk) + 5.641*t* (976) = -1.906**. From these findings, it appears that deviant behaviour tends to be lower at lower levels of environmental risk when individual attributes are low, and that deviant behaviour tends to be lower at higher levels of environmental risk when individual attributes are high. However, the effect size for the general interaction, in terms of its overall relationship with deviant behaviour (controlling for the effects of the other predictors) was small (pr = -0.129 or 1.66% of the variance).



Note: Standardized values

Figure 6. Graph of Interaction between Environmental Risk and Individual Attributes

Three other interaction terms were found to be statistically significant in the final prediction model for deviant behaviour including impulsivity*individual attributes, impulsivity*environmental risk, and anxiety*environmental risk. Although these variables were retained in the model, they each revealed very low effect sizes in terms of their relationships with deviant behaviour (controlling for the effects of other predictors). More specifically, the interaction between impulsivity and individual attributes revealed a partial r correlation of pr = 0.061, thus explaining only 0.03% of the variance. The interaction between impulsivity and environmental risk revealed a partial r correlation of pr = 0.058, or 0.03% of the variance, and the interaction between anxiety and environmental risk revealed a partial r correlation of pr = -0.060, or 0.04% of the variance. Given the non-meaningful utility of these terms, these interactions were not subjected to further interpretation. A conceptual illustration of the retained variables from the final prediction model for deviant behaviour severity are presented in Figure 7.



Note: Gray arrows refer to statistically significant effects that had very low effect sizes ($pr^2 < .005$)

Figure 7. Conceptual Illustration of Final Prediction Model for Deviant Behaviour

CHAPTER V

Discussion

Based on a sample of adolescents deriving mostly from economically disadvantaged families, univariate analyses indicated that as individual attributes decreased, problem behaviour (gambling, substance use, and deviant behaviours) increased. Conversely, as environmental risk increased, adolescent problem behaviour also increased. As well, multivariate analyses identified social bonding as a compensatory factor in relation to all three adolescent problem behaviours. Furthermore, personal competence was identified as a compensatory factor in relation to deviant behaviour only. Interestingly, social competence was identified as a risk factor for substance related problems and deviant behaviour. Of the environmental risk domains, peers and neighbourhood risk were identified as salient risk factors for all three problem behaviours. Furthermore familial risk was identified as a significant risk factor for substance problems and deviant behaviour. Of all seven environmental risk and individual attribute variables, low social bonding emerged as the strongest predictor of problem gambling, followed by neighbourhood and peer environmental risk. Only one interaction term was significant across all tested models, and only for deviant behaviour. Composite individual attributes were identified as a protective factor, mitigating the relationship between composite environmental risk and deviant behaviour.

Prevalence Rates

Youth gambling behaviour. Prevalence rates for the present sample revealed that 60.2% of youth are gambling, with most best described as *Social Gamblers* (49.6%). Social Gamblers generally gamble in an infrequent manner and experience few, if any,

negative consequences. Problem gamblers made up 10.7% of the community sample; 7.9% At-Risk and 2.8% PPGs. Very large fluctuations exist among published youth gambling prevalence research both within North America and internationally. Meta-analyses and reviews that look at youth gambling behaviours and problems in North America reveal lifetime gambling rates among adolescents that range from 39% to 92% (Jacobs 2000, 2004; NRC, 1999; Shaffer & Hall, 1996). Variations in cut score criteria, omissions and/or insertion of items, and translation problems have led to serious difficulties in reliably estimating prevalence rates for adolescent problem gambling and in comparing study outcomes (Derevensky & Gupta, 2006). As such, it is difficult to state whether the prevalence rates in this sample deviate significantly from general prevalence rates. However, prevalence studies in Quebec and Ontario do report slightly higher rates, with approximately 3% to 7% of adolescents surveyed meeting the criteria for pathological gambling using the DSM-IV or DSM-IV-MR-J screens [Derevensky & Gupta, 2000 (3.4%), 2001 (3.4%); Gupta & Derevensky, 1998 (4.7%), 2000 (6.7%); Lussier et al., 2007 (3.2%)], although more recently, lower rates have also been reported [Martin, Gupta, & Derevensky, 2007 (2.1%)].

The slightly lower levels of observed social and problem gambling in the present sample suggest that students from low-income homes do not appear to be, as had been hypothesized, at increased risk for developing gambling problems. Possible explanations for this finding are discussed in greater detail below, but may also be indicative of successful psychoeducation and prevention initiatives in the Montreal area, including *The Amazing Chateau* and *Hooked City* (interactive CD ROM games for children and adolescents aged 11-18; Derevensky, 2009) and prevention workshops for youth. Although

there are very few evaluated outcomes of harm reduction prevention initiatives for youth gambling (Petry, 2005), parents (Ladouceur, Vitaro, & Côté, 2001; Côté, Vitaro, & Ladouceur, 2003) and educators (Ladouceur Ferland, Côté, & Vitaro, 2004) in Quebec are reportedly becoming increasingly aware of the potential risks involved in youth gambling behaviour, indicating that primary prevention efforts may be having a beneficial effect.

Alcohol and other drug use. Participants in the current study reported similar substance related problems (8.9%) as is reported in the 2007 National Survey on Drug Use and Health (7.7%), a large annual survey sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA, 2008). As has been cited in prior research, the proportion of substance related problems appeared to increase with age and no significant gender differences were observed (SAMHSA, 2008). With respect to gambling problems, the severity of gambling behaviour appeared to increase as AOD use increased, with 18.5% and 38.1% respectively of the youth in the At-Risk and PPG gambling categories being red-flagged for substance related problems. The link between problem gambling and alcohol, tobacco, and illicit drug use is well established in prior youth gambling research (Griffiths & Sutherland, 1998; Hardoon et al., 2004; Potenza et al., 2000).

Deviant behaviour. Engagement in deviant behaviour was most common among boys and older adolescents. The mean level of deviant behaviour also significantly differed between gambling groups, such that as gambling severity increased, endorsement of any given risky activity increased as well. The finding that adolescents who experience gambling problems are more likely to engage in delinquent or disruptive behaviour has been documented in prior youth gambling research (Griffiths & Sutherland, 1998). However, it is important to mention that the deviant behaviour scale used in the current

research does not include a cut-off level denoting problem severity, making it difficult to compare problem gambling behaviour with potentially hazardous health outcomes related to deviant behaviour.

It is noteworthy that an identifiable proportion of youth appear to become increasingly involved in multiple high-risk behaviours. The co-occurrence of various risk behaviours has been well documented in youth gambling research (Winters, Bengston, Dorr, & Stinchfield, 1998). Although this finding supports the extension of Jessor's problem behaviour theory to other health-related behaviours (Donovan, Jessor, & Costa, 1991), the nature of the association between high-risk behaviours, such as substance problems, delinquency, and gambling problems remain unclear.

Environmental Risk

As anticipated, a significant positive linear relationship was observed between all three high-risk behaviours (gambling, AOD use, and deviance) and overall environmental risk, with medium to large effect sizes denoted for each ($\eta^2 = .09$, $\eta^2 = .19$, and $r^2 = .35$ respectively). More specifically, neighbourhood risk (e.g., seeing someone get robbed, beat up, arrested, exposure to AOD use) and peer risk (lack of positive peer associations and peer AOD use) were identified as risk mechanisms for all three problem behaviours, in that they contributed to the prediction models of gambling, substance, and deviant behaviour problems over and above other known predictors, including gender, impulsivity, anxiety, and depression. Family environmental risk (poor parental supervision and lack of familial interaction) was identified as a risk mechanism in the same manner, but only with respect to substance and deviant behaviour problems, and not to the prediction of gambling problems.

Although very little research has been conducted regarding the relationship between neighbourhood risk and youth gambling behaviour, existing literature corroborates the present findings (Lussier et al., 2007). As well, several studies have demonstrated a correlation between youth gambling problems and socioeconomic status (Fisher, 1993; Kaufman, 2004; Schissel, 2001; Vitaro, Arseneault, & Tremblay, 1999). On the other hand, the correlation between adolescent AOD use and neighbourhood risk (particularly community violence), is well established (Kilpatrick et al., 2000; Kliewer et al., 1998; Schwab-Stone et al., 1995; Sullivan et al., 2004). Similarly, in regards to deviant behaviour, urban disadvantaged neighbourhoods (Farrell et al., 2005; van Domburgh, Vermeiren, Blokland, & Doreleijers, 2009) have been identified as risk mechanisms for delinquent and offending behaviour (e.g., theft and violence).

The link between peer risk and youth gambling behaviour supports prior findings that peer modeling and social learning are involved in the onset of gambling problems (Gupta & Derevensky, 1997; Hardoon & Derevensky, 2001). Many adolescents report that they gamble because their friends engage in this behaviour (Griffiths, 1990). Peer AOD use has also been identified as an important risk factor for adolescent substance-related problems (Hofler et al., 1999; von Sydow, Lieb, Pfister, Hofler, & Wittchen, 2002). Similarly, in terms of deviant behaviour, gang involvement (Johansson & Kempf-Leonard, 2009) and deviant peers (Vitaro et al., 2001; Wanner et al., 2009) have been identified as risk factors to delinquent and offending behaviour (e.g., theft and violence).

Interestingly, family risk only contributed to the prediction model for AOD use and deviant behaviour, but not to the prediction model for problem gambling. This finding corroborates recent research on the additive and moderating effects of common

risk factors for youth gambling, substance use, and delinquency, in which parental supervision related to lower levels of juvenile delinquency and AOD use but not youth gambling problems (Wanner et al., 2009). A possible explanation for this is offered by the authors as being due, in part, to a lack of parental awareness regarding the inherent risks related to youth gambling behaviour (Ladouceur et al., 2001).

Individual Attributes

As anticipated a significant negative linear relationship was observed between the problem behaviours and composite individual attributes, such that as composite scores increased, gambling, substance, and deviant behaviour severity decreased, with small effect sizes denoted for each ($\eta^2 = .04$, $\eta^2 = .03$, and $r^2 = .12$ respectively). More specifically, social bonding (prosocial ties to one's school, family, and community) was the strongest predictor, and was identified as a compensatory mechanism for all three problem behaviours, in that it contributed to the prediction models for gambling, substance, and deviant behaviour problems over and above other known predictors, including gender, impulsivity, anxiety, and depression. As well, personal competence (one's individual identity and sense of personal development) was identified as a compensatory factor in the same manner, but only with respect to deviant behaviour, and not to the prediction models for substance and gambling problems. Interestingly, social competence (one's ability to adjust in social situations) was positively associated with substance problems and deviant behaviour, thus indicating a significant risk factor for the two problem behaviours. That is, reporting high social competence in combination with the other variables in the model improved the prediction of substance problems and deviant behaviour.

The identification of social bonding as a compensatory mechanism is in line with the original hypothesis and longitudinal adolescent substance and delinquent behaviour research (Costa et al., 1999; Crosnoe et al., 2002; Jessor et al., 2006). Existing studies on the identification of compensatory factors in the field of youth gambling behaviour corroborate these findings. More specifically family cohesion, family support, school connectedness, and prosocial norms have been found to be negatively associated with gambling problems (Dickson et al., 2008; Kaufman, 2004; Lussier et al., 2007; Magoon & Ingersoll). Although it was found that social competence demonstrated a positive main effect with substance problems and deviant behaviour, and therefore ran contrary to the original hypothesis, the finding itself is not surprising. As described in the introduction, literature on the subject of social competence has resulted in mixed findings, with mounting evidence from recent longitudinal studies indicating a positive relationship between high levels of social competence and smoking, cannabis use, and aggression (Brendgen et al., 2004; Orobio de Castro et al., 2007; Veselska et al., 2008).

In terms of protective processes, only one interaction term among the three series of regressions for gambling, substance, and deviant behaviour problems, was both statistically and meaningfully significant. The final prediction model for deviant behaviour revealed a small putative moderating effect for composite individual attributes on the relationship between environmental risk and deviant behaviour. Interpretation of this interaction revealed that deviant behaviour appeared to be lower at lower levels of environmental risk, when individual attribute scores were also low. As well, deviant behaviour tended to be lower at higher levels of environmental risk when individual attribute scores were also higher. It should be noted that although the effect size was small, interaction terms between

risk and protective factors typically result in small effect sizes (Luthar & Cushing 1999). Although no such interaction term was significant in the binary logistic regression models for gambling and substance related problems, it should also be noted that logistic regressions are known to be a relatively insensitive test for such effects (Jessor et al., 1995; Preacher, MacCallum, Rucker, & Nicewander, 2005), and that the power for detecting such differences is reduced if sample sizes are highly unequal (Fleiss, Tytum, & Ury, 1980) as was the case for both the gambling and substance-related variables.

Another interesting finding was the tiny, though statistically significant interaction term in the final prediction model for deviant behaviour. On its own, anxiety was positively associated with deviant behaviour. However, environmental risk putatively moderated the relationship, such that the relationship between anxiety and deviant behaviour was mitigated. The notion that a risk mechanism, such as environmental risk, could serve a protective role in the relationship between risk (in this case anxiety) and problem behaviour (in this case deviant behaviour) is interesting but also speaks to the complexity of mechanisms at play in the onset, development, and maintenance of problem behaviour (Fergusson et al., 2007).

Adversity among Adolescents in the Present Sample

Although the schools that were solicited to participate in the current research were made up largely of inner-city youth from low-income homes, and although this population is widely understood to be at high-risk for numerous maladaptive outcomes, the present sample did not appear to be exposed to particularly elevated levels of environmental risk or engage in particularly elevated levels of substance or gambling problem behaviour. Despite efforts to procure a naturally occurring high-risk sample by

using the classification systems of two separate government organizations (CGTSIM and MELS), mean composite scores from the environmental risk measure were the same as mean composite scores for the same instrument reported in recent research using a large community sample from the Montreal area (Lussier et al., 2007). The normal distribution and adequate variability of risk exposure in the current sample (M = 1.90; SD = 0.30), as well as significant mean differences in environmental risk among gambling groups, AOD groups, and deviance severity, also seem to contradict the identification of these students as being exposed to significant environmental risk. Furthermore, the relatively typical to low self-reported levels of gambling and substance-related problems, further challenge the notion of adversity in the present sample. This finding was puzzling and led to further probing into the nature of the equations used to identify 'underprivileged' youths by the CGTSIM and MELS.

The CGTSIM releases an annual publication entitled *Classification des écoles primaires et classification des écoles secondaires* that classifies schools on the island of Montreal according to degree of privilege. At the time that this data was collected (2006-2007 academic year), the equation used to classify schools by the CGTSIM was based almost exclusively on familial revenue (98%). However, the CGTSIM has since revamped their equation, such that familial revenue now only accounts for 50% of the formula and other important demographic factors such as mother's educational level, single-parent status, and employment status of both parents account for the other 50%.

The MELS also releases an annual publication entitled *Indices de défavorisation par école* that hierarchically classifies schools across the province of Quebec according to degree of privilege using two indices. The low-income cut-off index (LICO) is based on

an equation that classifies schools solely according to the familial income level of registered students, whereas the socioeconomic environment indicator index (SEEI) is based on an equation that classifies schools according to students' mother's educational level and level of parental activity in seeking employment if unemployed. For the purposes of this study, schools were selected based on the CGTSIM (2006) ranking of 1-27 out of 90 (0-30% categories) and based on a decile ranking of 8-10 on either the LICO or SEEI indices (MELS, 2006).

Given, the drastic changes in the CGTSIM equation since the time of data collection, the three schools that participated in the current research were cross-checked with the 2008-2009 CGTSIM classification listing (CGTSIM, 2009). Two of the three schools were still classified within the underprivileged categories. However, the school where the majority of data was collected for this study (n = 813) rose in privilege level to a ranking of 28 in 2008-2009. This new ranking, based on the revised equation, no longer falls in the underprivileged categories. As well, although two of the three schools that participated in the current study had decile rankings of 10 on both the LICO and SEEI decile rankings, the school where the majority of the data was collected for this study received a decile ranking of 10 on the LICO index but only a decile ranking of 5 on the SEEI, indicating that although the majority of students came from homes with a low familial revenue, there was no such trend regarding mother's education level and parental economic inactivity. It should also be noted that the SEEI may actually be a stronger predictor of maladaptive outcomes than the LICO. A recent comparison of the two indices by the MELS revealed a correlation between undereducated mothers and academic underachievement of r = 0.54, and a correlation between parental economic inactivity and

underachievement of r = 0.41, whereas, the correlation between the living below the LICO line and academic underachievement was only r = 0.39 (MELS, 2003). Similarly, Assessment of socioeconomic status by familial revenue alone is also problematic because of the often temporary and transient nature of living below the LICO line.

Although many students in the present sample may not be described as low SES in terms of maternal education and parental economic activity, one could expect, based on existing literature, that economic disadvantage alone could result in elevated levels of environmental risk and problem behaviours. However, it may be that inner-city youths from low income homes are not as vulnerable in Canada, where social programs and universal healthcare are more readily accessible. Much of the research on inner-city youths living in disadvantaged neighbourhoods comes from large urban city centres in the United States, where access to healthcare and social programs is more limited. Other possible explanations relate to the demographic characteristics of the school population in which the majority of data was collected. That is, largely first-generation immigrant families, with relatively typical levels of maternal education and parental economic activity, despite low familial revenue.

The student body of the school from which the majority of data was collected (*n* = 813) was largely made up of first-generation immigrant youth. In fact, only 38% of the school's student body (at the time of data collection) were born in North America. Next to Quebec (36%), the birthplace for most students in the school was the Republic of China (13.7%). Research among first-generation immigrant adolescents is not common. However, existing literature indicates that a protective parenting style (a warm but otherwise authoritarian style) was most common among first-generation Hispanic

families (Domenech Rodriguez, Donovick, & Crowley, 2009). Likewise, parenting practices among immigrant Chinese and European-American families revealed that immigrant Chinese parents placed a greater emphasis on parental control and training (Chao, 1994). An authoritarian parenting style, described as high parental control and low levels of autonomy-granting (Kotchick & Forehand, 2002), has generally been associated with maladaptive developmental outcomes (Shelton, Frick, & Wootton, 1996), while authoritative (responsive, demanding, and autonomy granting) parenting styles have often been associated with adaptive outcomes (Carlson, Uppal, & Prosser, 2000). However, these findings may be more relevant to Caucasian rather than ethnic youth (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Chao, 1994). For example, authoritarian parenting has been associated with positive outcomes for African American (Lamborn, Dornbusch, & Steinberg, 1996) and Asian American youth (Chao, 1996).

In summary, possible explanations for the non-alarming levels of self-reported risk and high-risk behaviours in the present sample of mostly low-income, inner city youth include societal differences in terms of the risks associated with poverty in Canadian versus American cities (where much of the research on inner-city youths is conducted and where access to healthcare and social programs is more restricted), the potentially protective and authoritarian parenting styles of first-generation immigrant families, socioeconomic factors such as maternal education level and parental economic activity (that may be more salient predictors of socioeconomic status than income status alone), and the potentially beneficial effects of psychoeducation and prevention initiatives in the Montreal area (as discussed earlier in this chapter).

Implications

Although gambling has entertained people throughout history (Caltabiano, 2003), over the last 20 years there has been both a promulgation of legalization and an expansion of different forms of gambling. Consequently, questions regarding how to prevent youth from developing gambling problems, have led several youth gambling researchers toward a harm reduction approach (Dickson et al., 2004; Gupta & Derevensky, 2008; Lussier, Derevensky, & Gupta, 2009; Messerlian, Derevensky, & Gupta, 2005).

Harm-Reduction. Given that certain high-risk behaviours are widely accepted in society (e.g., drinking alcohol), some prevention specialists have suggested that abstinence models are not realistic and thus impractical (Beck, 1998; Poulin & Elliott, 1997). Instead, they have advocated movement toward self-control and responsible involvement. Harm reduction strategies aim to limit the inherent risks associated with high-risk behaviours without demanding abstinence per se. Youth gambling researchers have similarly begun to advocate for a harm-reduction model (Messerlian et al., 2005). Estimates of youth problem gambling are predicted to rise as gambling activities increase in availability and popularity (Abbott et al., 2004; Derevensky, 2007). Though more complex and controversial in terms of its goals than an abstinence model, a harm reduction approach may be increasingly realistic and palatable as a way of protecting young people.

Resilience Education Programs. The utility of research on compensatory and protective processes lies in its assimilation into prevention programs and subsequent evaluation regarding the program's efficacy. Prevention programs that incorporate the

promotion of protective and compensatory processes have received some evaluative attention that supports the plausibility of translating research on protective processes into effective prevention and intervention programs (Battistich, Schaps, & Wilson, 2004; Lynch, Geller, & Schmidt, 2004). Programs that are based on up to date research tend to be multifaceted and to include strategies for strengthening compensatory and protective factors while concurrently reducing exposure to risk. For example, programs such as FAST Track, Seattle Social Development Project (SSDP), and Head Start were designed to reduce problem behaviours and ameliorate developmental outcomes for children growing up in high-risk environments. Follow up studies for the SSDP demonstrate that at age 18, youth were more attached and committed to school than peers in a control condition. As well, participants reported better grades, less misbehaviour at school, less heavy alcohol use in the past year, and fewer sexual partners than did the control group (Hawkins, Smith, Hill, Kosterman, & Catalano, 2007). Findings from the present study indicate that initiatives designed to concurrently promote social bonding and personal competence, and reduce neighbourhood, peer, and familial risk may lead to lower levels of problem gambling, substance use, and deviant behaviour, although prospective longitudinal research would be required to confirm these findings.

Final Conclusion and Summary

The primary purpose of the current research was to evaluate the potential compensatory and protective mechanisms of three individual attributes (social bonding, personal competence, and social competence) in relation to gambling, substance, and deviant problem behaviours. Above and beyond the effects of other known predictors (gender, impulsivity, anxiety, and depression), social bonding was identified as a

compensatory factor for all three problem behaviours, whereas personal competence was identified as a compensatory factor for deviant behaviour only. Social competence was not identified as a compensatory factor, but rather a risk factor for substance problems and deviancy. In terms of protective processes composite individual attributes were identified as a putative moderator of the relationship between environmental risk and deviant behaviour.

The secondary purpose of this study was to evaluate potential risk and vulnerability mechanisms of environmental risk (family, peers, neighbourhood) in relation to three problem behaviours. Above and beyond the effects of other known predictors, peers and neighbourhood risk were identified as risk factors for all three problem behaviours, whereas family risk was identified as a risk factor for substance problems and deviant behaviour only. In terms of vulnerability processes, no interaction terms were deemed statistically and meaningfully significant. The addition of environmental risk to the prediction models of problem behaviour washed out the compensatory effects of the individual attributes. As such, the absence of overall environmental risk may be more salient to the development of youth gambling problems than the presence of compensatory factors. Although risk has been identified as a stronger predictor than compensatory factors in prior youth gambling research (Dickson et al., 2008), the converse has also been reported (Lussier et al., 2007).

The third purpose of the current research was to investigate whether youths from low-income homes engaged in greater problem behaviour than normative prevalence rates. Findings from the current research indicate that this does not appear to be the case. The proportion of social and problem gamblers in the present sample was slightly less than

published prevalence rates, whereas the proportion of adolescents identified as at-risk for substance problems was relative to what has been reported by SAMSHA (2008).

Although findings were not identical across problem behaviours, the overlap in identified risk and compensatory factors suggest that problem gambling fits a similar risk/protection model as that of problem behaviour theory, whereby various problem behaviours are thought to co-occur as manifestations of the same overarching framework (Jessor, 1998) and that prevention programs geared toward fostering compensatory factors, particularly social bonding, and reducing common risk factors, particularly neighbourhood and peer environmental risk may strengthen youths' abilities to resist gambling dependency and other high-risk behaviours.

Statement of Original Contribution

This was the first study to examine the compensatory mechanisms of three individual attributes (specifically social bonding, personal competence, and social competence), while controlling for other known predictors, including gender, impulsivity, anxiety, and depression. This was the first study to examine the potential protective processes of composite individual attributes as moderators of the relationships between other known predictors (i.e., environmental risk, impulsivity, anxiety, and depression) and youth gambling problems. This was also the first study to examine the potential vulnerability mechanisms of composite environmental risk scores as moderators of the relationships between other known predictors (impulsivity, anxiety, and depression) and youth gambling problems. Furthermore, this was the first study to examine 3-way interactions, between environmental risk and the potential putative moderating effect of composite individual attributes on the relationships between known predictors (anxiety,

impulsivity, and depression) and gambling problems. Finally, this was the first study to investigate these compensatory, protective, and vulnerability processes concurrently with other high-risk behaviours (i.e., AOD use and deviant behaviour). This study is one of very few to address the prevalence of youth gambling problems among youth living in low-income homes.

Limitations of the Current Study and Future Directions

Although mean differences in the risk exposure and individual attribute scales among gambling groups were in the anticipated directions, differences were small in scale, with the greatest scaled score difference being only .39 for risk exposure and .22 for individual attributes (both between the Non-Gamblers and PPGs). Although, this may be due in part to the large sample size (N = 1,053), this finding alone may not translate into practical implications for prevention and intervention efforts. All measures in this study are self-report. Consequently, correlations may be inflated due to shared method variance.

The EMT-Risk scale is not standardized. Future research regarding the relationship between environmental risk and problem behaviour should consider a standardized measure of environmental risk. Similarly, the deviant behaviour scale was also not standardized. Given, the interesting interaction effect between individual attributes and environmental risk in relation to deviant behaviour, it would be useful to replicate these findings using a standardized measure of deviant behaviour. As well, very little research has investigated the relationship between neighbourhood risk and youth gambling problems although existing research supports the identification of this domain as a salient risk mechanism for problem gambling (Lussier et al., 2007). Future research might further investigate this risk factor to better understand it’s relation to the development of youth

gambling problems. However, findings pertaining to the Neighbourhood domain scale must be interpreted cautiously as the internal consistency reliability for this scale, as well as for the Family domain scale, were questionable (though not unacceptable), with Cronbach's alphas = .66 and .62 respectively (George & Mallery, 2003).

Although participants in this study were clearly exposed to some degree of risk (largely deriving from low-income homes), deviations in the formulae used by government organizations to define degree of privilege (familial revenue alone or in conjunction with other socioeconomic factors), unique demographic characteristics (the sample was largely made up of first-generation immigrant youth), relatively typical perceived environmental risk scores, and relatively low prevalence rates for youth gambling problems and substance related disorders indicate that this sample was not exposed to particularly elevated levels of adversity. It would be interesting for future research to include a sample of adolescents exposed to significant adversity in order to investigate what compensatory, protective, risk, and vulnerability factors are at play in relation to youth problem behaviour, but also to investigate factors that differentiate vulnerable from resilient adolescents. Additional research is required to determine how common risk, compensatory, protective, and vulnerability factors lead to co-morbid disorders in certain youth and not in others and to what extent unique risk factors can be identified.

Finally, the design of this study was cross-sectional, preventing causal interpretations of the relationships between environmental risk, individual attributes, other known predictors, and problem behaviours. Replication of the findings from the present research, as well as prospective longitudinal research is required to determine causal links and to investigate how the relationships between these variables develop over time.

It is important not only to continue the identification of risk and compensatory mechanisms, as well as protective and vulnerability processes relevant to youth gambling behaviour, but also to identify the commonalities (and differences) among other problem behaviours. Furthermore, it remains important to investigate *how* risk and protective factors influence one another (Cowen, Work, & Wyman, 1997), and in doing so, consider gender, age, and ethnicity within a framework that promotes strengths as well as deficits.

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Appendix A

English and French Questionnaires

All information is confidential and anonymous.

For ALL of the following questions, please fill in the marks like this: ● (not like: ◢ or ⊕ or ⊘ or √)

1. Gender: O Male O Female

2. Grade:

7	8	9	10	11	CEGEP
O	O	O	O	O	O

3. Age:

11	12	13	14	15	16	17	18 or older
O	O	O	O	O	O	O	O

4. What is your mother's occupation? _____

5. What is your father's occupation? _____

1) **SECTION A:** In the **PAST 12 MONTHS** how often have you played each of the following games **FOR MONEY**?

	Never	Less than once a month	1 – 3 times a month	Once a week or more
Lottery (scratch cards, 649, draws)	O	O	O	O
Horse racing	O	O	O	O
Sports betting (mis-o-jeu)	O	O	O	O
Bingo	O	O	O	O
Slot machines	O	O	O	O
Electronic gaming machines (video poker, VLT)	O	O	O	O
Casino	O	O	O	O
Poker	O	O	O	O
Cards	O	O	O	O
Internet gambling	O	O	O	O
Stock market	O	O	O	O
Other (please specify below)	O	O	O	O

_____

2) To your knowledge do any of these people have a gambling problem? *(you can have more than one answer)*

mother/stepmother	O	friend	O	
father/stepfather	O	classmate	O	
sister	O	brother	O	
other relative	O	other person in your life	O	Please list _____

3) To your knowledge do any of these people have a drinking/drug problem? *(you can have more than once answer)*

mother/stepmother	O	other relative	O	
father/stepfather	O	friend	O	
sister	O	classmate	O	
brother	O	other person in your life	O	Please list _____

4) Whom do you live with? (*you can have only one answer)*

Half the time with my father, and half the time with my mother	O		
With my mother only	O	With my mother and her boyfriend (husband)	O
With my father only	O	With my father and his girlfriend (wife)	O
With my mother and my father	O	Other (please specify)	O

SECTION B: Please Complete.

1. In the past year, how often have you found yourself thinking about gambling or planning to gamble?

O Never O Once or Twice O Sometimes O Often

2. During the course of the past year have you needed to gamble with more and more money to get the amount of excitement you want?

O Yes O No

3. In the past year, have you ever spent <u>much</u> more than you planned to on gambling?

O Never O Once or Twice O Sometimes O Often

4. In the past year, have you felt bad or fed up when trying to cut down or stop gambling?

O Never O Once or Twice O Sometimes O Often O Never tried to cut down

5. In the past year, how often have you gambled to help you escape from problems or when you are feeling bad?

O Never O Once or Twice O Sometimes O Often

6. In the past year, after losing money gambling, have you returned another day to try and win back money you lost?

O Never O Less than half the time O More than half the time O Every time

7. **In the past year, has your gambling ever led to lies to your family?**

O Never O Once or Twice O Sometimes O Often

8. **In the past year, have you ever taken money from the following <u>without permission</u> to spend on gambling:**

a) School dinner money or fare money?

O Never O Once or Twice O Sometimes O Often

b) Money from your family?

O Never O Once or Twice O Sometimes O Often

c) Money from outside the family?

O Never O Once or Twice O Sometimes O Often

9. **a) In the past year, has your gambling ever led to arguments with family/friends or others?**

O Never O Once or Twice O Sometimes O Often

b) In the past year, has your gambling ever led to missing school?

O Never O Once or Twice O Sometimes O Often

SECTION C: For each of the following sentences, please fill in the bubble under the answer that is closest to how you feel about what the sentence says.

YES! **= If you believe very strongly that the sentence is true for you, it is the way <u>you feel almost all of the time</u>.**
yes **= If you sort of agree that the sentence is true for you, it is the way <u>you feel most of the time</u>.**
No **= If you sort of believe the sentence is false for you, <u>you do not feel that way most of the time</u>.**
NO! **= If you believe very strongly that the sentence is false, <u>you almost never feel this way</u>.**

	YES!	*yes*	*no*	*NO!*
1. I can tell my parents the way I feel about things.....	O	O	O	O
2. I like to see other people happy.....	O	O	O	O
3. Sometimes you have to physically fight to get what you want...	O	O	O	O
4. I will probably die before I am thirty.....	O	O	O	O
5. I will always have friends.....	O	O	O	O
like to help around the house.....	O	O	O	O
7. I might smoke cigarettes when I get older.....	O	O	O	O

YES! **= If you believe very strongly that the sentence is true for you, it is the way <u>you feel almost all of the time</u>.**
yes **= If you sort of agree that the sentence is true for you, it is the way <u>you feel most of the time</u>.**
No **= If you sort of believe the sentence is false for you, <u>you do not feel that way most of the time</u>.**
NO! **= If you believe very strongly that the sentence is false, <u>you almost never feel this way</u>.**

	YES!	*yes*	*no*	*NO!*
8. I really want to graduate from college	O	O	O	O
9. I like the way I act	O	O	O	O
10. I get mad easily	O	O	O	O
11. I get along well with other people	O	O	O	O
12. Being part of a team is fun	O	O	O	O
13. Grown-ups seem to have fun when they drink alcohol	O	O	O	O
14. My family expects too much of me	O	O	O	O
15. People usually like me	O	O	O	O
16. Other people decide what happens to me	O	O	O	O
17. I think I will have a nice family when I get older	O	O	O	O
18. If I disagree with a friend, I can tell them	O	O	O	O
19. Drinking alcohol is bad for your health	O	O	O	O
20. Finishing high school is important	O	O	O	O
21. Sometimes I am ashamed of my parents	O	O	O	O
22. I can be trusted	O	O	O	O
23. I am afraid my life will be unhappy	O	O	O	O
.. I like being around people	O	O	O	O
25. I will probably drink alcohol when I am old enough	O	O	O	O

YES! **= If you believe very strongly that the sentence is true for you, it is the way <u>you feel almost all of the time</u>.**
yes **= If you sort of agree that the sentence is true for you, it is the way <u>you feel most of the time</u>.**
No **= If you sort of believe the sentence is false for you, <u>you do not feel that way most of the time</u>.**
NO! **= If you believe very strongly that the sentence is false, <u>you almost never feel this way</u>.**

	YES!	*yes*	*no*	*NO!*
26. School is a waste of time	O	O	O	O
27. It is important to think before you act	O	O	O	O
28. Bad things happen to people like me	O	O	O	O
29. Helping others makes me feel good	O	O	O	O
30. My family has let me down	O	O	O	O
31. Following the rules is stupid	O	O	O	O
32. My life is all mixed up	O	O	O	O
33. I do whatever I feel like doing	O	O	O	O
34. If I have a reason, I will change my mind	O	O	O	O
35. It is hard for me to make friends	O	O	O	O
36. It's okay to use drugs if you don't get caught	O	O	O	O
37. I try hard to do well in school	O	O	O	O
38. I like to do things with my family	O	O	O	O
39. Most people can be trusted	O	O	O	O
40. I can do most things I try	O	O	O	O
41. If I study hard, I will get better grades	O	O	O	O
42. When I am mad, I yell at people	O	O	O	O
43. I think I can have a nice house when I grow up	O	O	O	O

YES! **= If you believe very strongly that the sentence is true for you, it is the way <u>you feel almost all of the time</u>.**
yes **= If you sort of agree that the sentence is true for you, it is the way <u>you feel most of the time</u>.**
No **= If you sort of believe the sentence is false for you, <u>you do not feel that way most of the time</u>.**
NO! **= If you believe very strongly that the sentence is false, <u>you almost never feel this way</u>.**

	YES!	*yes*	*no*	*NO!*
44. If I don't understand something, I will ask for an explanation	O	O	O	O
45. My friends respect me	O	O	O	O
46. I always like to do my part	O	O	O	O
47. It is more important to play fair than to win	O	O	O	O
48. Sometimes I break things on purpose	O	O	O	O
49. I will probably never have enough money	O	O	O	O
50. I am often too embarrassed to ask questions	O	O	O	O
51. I often feel lonely	O	O	O	O
52. If I have a chance, I might try drugs	O	O	O	O
53. A lot of days I would rather not go to school	O	O	O	O
54. There is some good in everybody	O	O	O	O
55. When I try to be nice, people notice	O	O	O	O
56. I hate being in front of a group	O	O	O	O
57. It is important to do your part in helping at home	O	O	O	O
58. If you work hard, you will get what you want	O	O	O	O
59. Marijuana makes you happy	O	O	O	O
60. I would like to quit school as soon as I can	O	O	O	O
61. People usually drink alcohol at good parties	O	O	O	O

YES! **= If you believe very strongly that the sentence is true for you, it is the way <u>you feel almost all of the time</u>.**
yes **= If you sort of agree that the sentence is true for you, it is the way <u>you feel most of the time</u>.**
No **= If you sort of believe the sentence is false for you, <u>you do not feel that way most of the time</u>.**
NO! **= If you believe very strongly that the sentence is false, <u>you almost never feel this way</u>.**

	YES!	*yes*	*no*	*NO!*
62. I can't wait to be old enough to drink	O	O	O	O
63. I am curious about alcohol and drugs	O	O	O	O
64. I enjoy talking with my family	O	O	O	O
65. Helping others is very satisfying	O	O	O	O
66. I like the way I look	O	O	O	O
67. If I feel like it, I hit people	O	O	O	O
68. To make a good decision, it is important to think about what will happen afterwards	O	O	O	O
69. I often disappoint people	O	O	O	O
70. I don't like most people	O	O	O	O
71. I am responsible for what happens to me	O	O	O	O

SECTION D: We would like some information about your family and neighborhood. Remember, it is very important that you answer and read each question carefully.

1. → Here is a list of things that are true in some families and not in others. Please answer "yes" if each statement is usually true of your family, and "no" if it is not.

	Yes	*No*
The rules in our house are clear	O	O
I have a clear time when I have to be home	O	O
I have a regular time and place to do homework	O	O
I have regular chores to do at home	O	O

2. → **Here are some other things that happen in some families and do not happen in others. Indicate whether these things happen in your family all the time (that is, every day or almost every day); often (once a week or so); not very often (less than once a week); or never. If you do not live with your parents, think of the adult(s) who you do live with when we ask about parents.**

	All of the time	*Often*	*Not very often*	*Never*
The whole family eats dinner together	O	O	O	O
Parents help you with your homework	O	O	O	O
You go to a movie or out to dinner with your parents	O	O	O	O
You talk to your parents about school	O	O	O	O

3. → **The following list indicates things that might happen to kids, or things that kids might do. Please indicate whether you have done these things three or more times in the last year, only once or twice or not at all.**

	3 or More Times	*Once or Twice*	*Not at All*
Got sent to the principal's office or had detention	O	O	O
Skipped school for a whole day	O	O	O
Purposely damaged other people's property	O	O	O
Stole something	O	O	O
Got into a fist fight	O	O	O
Tried drugs such as marijuana, cocaine or LSD	O	O	O
Got stopped by the police	O	O	O
Had a little bit of beer, wine or wine coolers, one or two drinks	O	O	O
Had a lot of beer, wine or wine coolers, more than two drinks	O	O	O
Gone to class high on alcohol or drugs	O	O	O
Been in a car with an adult who was drinking	O	O	O
Sniffed glue or paint to get high	O	O	O
Talked back to a teacher	O	O	O
Argued with your parents	O	O	O
Broken into a house or store	O	O	O
Been around other kids who were drinking alcohol	O	O	O
Been around other kids who were using illegal drugs	O	O	O

	3 or More Times	*Once or Twice*	*Not at All*
Been around other kids who were gambling	O	O	O
Been in a bar or casino with an adult who was gambling	O	O	O

4. → Next, we have some questions about your closest friends, say your four or five closest friends. Would you say most of them, some of them or none of them do each of the following things.

	Most	*Some*	*None*
Study hard at school	O	O	O
Go to church	O	O	O
Smoke cigarettes	O	O	O
Drink alcohol once in a while	O	O	O
Try drugs like marijuana or cocaine once in a while	O	O	O
Like school a lot	O	O	O
Get along with their parents really well	O	O	O

5. → Here is a list of things that happen in many neighborhoods. Please indicate how often these things happen in your neighborhood. Do they happen all the time (that is, every day or almost every day); often (once a week or so); not very often (less than once a week); or never.

	All of the time	*Often*	*Not very often*	*Never*
You talk to your neighbours	O	O	O	O
You see people drinking alcohol on the street	O	O	O	O
Someone gets robbed	O	O	O	O
Kids play sports together	O	O	O	O
You see the police arrest someone	O	O	O	O
People help each other	O	O	O	O
You see a fight	O	O	O	O

SECTION E: The following questions ask about you and your experiences, including those with alcohol and other drugs. Some questions ask how often certain things have happened. Others ask if you agree with a statement. Please read each question carefully. Fill in the circle under the answer that is right for you. *Fill in only **one** response option for each question.* Please answer every question.

	Never	*Once or Twice*	*Sometimes*	*Often*
How often have you used alcohol or other drugs:				
1. At home	O	O	O	O
2. At places on the street where adults hang around	O	O	O	O
3. With older friends	O	O	O	O
4. At the homes of friends or relatives	O	O	O	O
5. At school activities, such as dances or football games	O	O	O	O
6. At work	O	O	O	O
7. When skipping school	O	O	O	O
8. To enjoy music or colors, or feel more creative	O	O	O	O
While driving a racing boat	O	O	O	O
How often have you:				
10. Made excuses to your parents about your alcohol or drug use	O	O	O	O
11. Gotten drugs from a dealer	O	O	O	O
12. Used alcohol or drugs secretly, so nobody would know you were using	O	O	O	O
13. Made excuses to teachers about your alcohol or drug use	O	O	O	O
14. Been upset about other people talking about your using or drinking	O	O	O	O
15. Lost your sense of taste for several days after using drugs	O	O	O	O
When using alcohol or other drugs, how often have you:	*Never*	*Once or Twice*	*Sometimes*	*Often*
16. Spilled things, bumped into things, fallen down, or had trouble walking around	O	O	O	O
17. Seen, felt, or heard tings that were not really there	O	O	O	O
Spent money on things you wouldn't normally buy	O	O	O	O
19. Found out things you said or did while using or drinking that you did not remember	O	O	O	O

order to get or pay for alcohol or other drugs, how often have you:	*Never*	*Once or Twice*	*Sometimes*	*Often*
20. Sold drugs	O	O	O	O
21. Bought drugs from a security guard	O	O	O	O

Please answer the following questions about your experiences:	*Yes*	*No*
22. I am always nice, even to people who are not nice	O	O
23. I worry a lot about little things for no reason	O	O
24. There have been times when I took advantage of someone	O	O
25. I am bothered by unusual thoughts	O	O
26. There have been times when I was mad at an adult even though I knew they were right	O	O
27. I feel sad, blue, or depressed much of the time	O	O
28. I often suffer from headaches or a nervous stomach	O	O
29. I am always willing to admit it when I make a mistake	O	O
I think about killing myself	O	O
31. There have been times when I felt like swearing or smashing things	O	O
32. There is something wrong with the way my mind works	O	O
33. Someone in my family hits me when they are angry	O	O
34. I am afraid of someone because they have been sexual with me	O	O

During the past 12 months, how many times (if any):	*Never*	*1-2 Times*	*3-5 Times*	*6-9 Times*	*10-19 Times*	*20-39 Times*	*40+ Times*
35. Have you had alcoholic beverages (including beer, wine, and liquor) to drink	O	O	O	O	O	O	O
36. Have you used marijuana (grass, pot) or hashish (hash, hash oil)	O	O	O	O	O	O	O
37. Have you used hard drugs other than alcohol or marijuana.	O	O	O	O	O	O	O

	Never	*Grade 6 or before*	*Grade 7-8*	*Grade 9-10*	*Grade 11 or after*
38. I first got high	O	O	O	O	O
39. I first used regularly	O	O	O	O	O

SECTION F: Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past week, including today, by filling in the corresponding bubble.

	Not at all	*Mildly - it did not bother me much*	*Moderately – it was very unpleasant but I could stand it*	*Severely – I could barely stand it*
1. Numbness or tingling	O	O	O	O
2. Feeling hot	O	O	O	O
3. Wobbliness in legs	O	O	O	O
4. Unable to relax	O	O	O	O
5. Fear of the worst happening	O	O	O	O
6. Dizzy or lightheaded	O	O	O	O
7. Heart pounding or racing	O	O	O	O
8. Unsteady	O	O	O	O
9. Terrified	O	O	O	O
10. Nervous	O	O	O	O
11. Feeling of choking	O	O	O	O
12. Hands trembling	O	O	O	O
13. Shaky	O	O	O	O
14. Fear of losing control	O	O	O	O
15. Difficulty breathing	O	O	O	O
16. Fear of dying	O	O	O	O
17. Scared	O	O	O	O
18. Indigestion or discomfort in abdomen	O	O	O	O
19. Faint	O	O	O	O
20. Face flushed	O	O	O	O
21. Sweating (not due to heat)	O	O	O	O

SECTION G: Please answer the following questions about your experiences	*Yes*	*No*
1. Do you generally do and say things without stopping to think?	O	O
2. Do you often get into trouble because you do things without thinking?.....	O	O
3. Are you an impulsive person?.....	O	O
4. Do you usually think carefully before doing anything?.....	O	O
5. Do you mostly speak before thinking things out?	O	O

SECTION H: Below are some sentences about how you feel. Decide how often *you* feel this way. Decide if you feel this way: almost never, hardly ever, sometimes, or most of the time. Fill in the circle under the answer that best describes how you really feel. Remember, there are no right or wrong answers. Just choose the answer that tells how you usually feel.

	Almost never	**Hardly ever**	**Some-times**	**Most of the time**
1) I feel happy.....	O	O	O	O
2) I worry about school.....	O	O	O	O
3) I feel lonely.....	O	O	O	O
4) I feel my parents don't like me	O	O	O	O
5) I feel important.....	O	O	O	O
6) I feel like hiding from people	O	O	O	O
7) I feel sad.....	O	O	O	O
8) I feel like crying.....	O	O	O	O
9) I feel that no one cares about me	O	O	O	O
10) I feel like having fun with other students ...	O	O	O	O
12) I feel sick	O	O	O	O
12) I feel loved.....	O	O	O	O
13) I feel like running away.....	O	O	O	O
14) I feel like hurting myself.....	O	O	O	O

	Almost never	Hardly ever	Some-times	Most of the time
15) I feel that other students don't like me.....	O	O	O	O
16) I feel upset.....	O	O	O	O
17) I feel life is unfair.....	O	O	O	O
18) I feel tired	O	O	O	O
19) I feel I am bad	O	O	O	O
20) I feel I am no good.....	O	O	O	O
21) I feel sorry for myself.....	O	O	O	O
22) I feel mad about things	O	O	O	O
23) I feel like talking to other students.....	O	O	O	O
24) I have trouble sleeping	O	O	O	O
25) I feel like having fun.....	O	O	O	O
26) I feel worried.....	O	O	O	O
27) I get stomach aches.....	O	O	O	O
28) I feel bored.....	O	O	O	O
29) I like eating meals	O	O	O	O
30) I feel like nothing I do helps any more	O	O	O	O

SECTION I: Below are questions which focus on feelings and emotional experiences. When the word "crying" is used, it refers to **tears in one's eyes** due to emotional reasons (sobbing and sniffling is not a necessary condition to meet our definition of crying), not because of irritation to the eye. The following items describe some of the functions of crying as well as some emotions that are associated with crying. Please indicate after each item to what extent you agree.

	DO NOT AGREE						*AGREE*
	1	*2*	*3*	*4*	*5*	*6*	*7*
1. Crying helps me to deal with my problems	O	O	O	O	O	O	O
2. I believe that it is useful to cry when life becomes stressful	O	O	O	O	O	O	O
3. My life would be better if I were able to really have a good cry	O	O	O	O	O	O	O
4. I use crying to help me feel better, when I have problems	O	O	O	O	O	O	O
5. Crying is an important and effective way of dealing with life's difficulties	O	O	O	O	O	O	O

	DISS						15
	DO NOT AGREE						*AGREE*
	1	*2*	*3*	*4*	*5*	*6*	*7*
6. I would rather cry about a problem than keep all my sadness inside	O	O	O	O	O	O	O
7. Under certain conditions when things are bad enough I have cried almost uncontrollably	O	O	O	O	O	O	O
8. If I let myself cry deeply I sleep better	O	O	O	O	O	O	O
9. I find that I feel better after a good cry	O	O	O	O	O	O	O
10. I feel relaxed after a good cry	O	O	O	O	O	O	O
11. After a good crying spell I am better able to cope with my problems	O	O	O	O	O	O	O
12. After a good cry I am more optimistic about the future	O	O	O	O	O	O	O
13. I try not to cry when I am upset	O	O	O	O	O	O	O
14. After crying I feel warm all over	O	O	O	O	O	O	O
15. I feel peaceful after a good cry	O	O	O	O	O	O	O
16. Crying is the healthiest thing you can do when you are feeling sad	O	O	O	O	O	O	O
17. When I am not able to cry in a stress situation I stay feeling tense	O	O	O	O	O	O	O
18. Mostly I can control my tears	O	O	O	O	O	O	O
19. I feel ashamed when I am crying	O	O	O	O	O	O	O
20. After crying I feel often more miserable than before	O	O	O	O	O	O	O
21. I like to cry	O	O	O	O	O	O	O
22. Other people generally become gentler when I cry	O	O	O	O	O	O	O
23. I hate to cry	O	O	O	O	O	O	O
24. I can manipulate with tears	O	O	O	O	O	O	O

Thank you for your time and participation!

For Office Use Only:

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Toutes les informations sont confidentielles et anonymes.

Réponds à chaque question en noircissant le cercle correspondant comme ceci : ◉ ou ● (et non comme ceci : Ⓘ ou ⊕ ou ⊘ ou √)

1. **Sexe:** ○ **masculin** ○ **féminin**

2. **Niveau scolaire:**

Sec.1	Sec.2	Sec.3	Sec.4	Sec.5	CÉGEP
○	○	○	○	○	○

3. **Âge:**

11	12	13	14	15	16	17	18 et plus
○	○	○	○	○	○	○	○

4. **Quel est le type d'emploi occupé par ta mère?** _____

5. **Quel est le type d'emploi occupé par ton père?** _____

SECTION A

1) **Au cours des 12 derniers mois,** à quelle fréquence as-tu participé aux jeux ci-dessous énumérés **pour de l'argent**?

	jamais	moins d'une fois par mois	1 à 3 fois par mois	une fois par semaine ou plus
Billets à gratter (« gratteux »)	○	○	○	○
Courses de chevaux	○	○	○	○
Paris sportifs	○	○	○	○
Bingos	○	○	○	○
Machines à sous	○	○	○	○
Appareils de loterie vidéo (e.x. : ALV, vidéo poker)	○	○	○	○
Casino	○	○	○	○
Poker	○	○	○	○
Cartes	○	○	○	○
Mises sur Internet	○	○	○	○
Marché boursier	○	○	○	○
Autres (spécifie ci-dessous)	○	○	○	○

_____

2) Selon toi, une de ces personnes de ton entourage éprouve-t-elle des problèmes liés au jeu?
(tu peux avoir plus d'une réponse)

mère/belle-mère	O	ami(e)	O	aucune	O
père/beau-père	O	camarade de classe	O		
soeur	O	frère	O		
autre membre de la famille	O	autre connaissance	O	spécifie	_____

3) Selon toi, une de ces personnes de ton entourage éprouve-t-elle des problèmes de consommation de drogues ou d'alcool? *(tu peux avoir plus d'une réponse)*

mère/belle-mère	O	autre membre de la famille	O	aucune	O
père/beau-père	O	ami(e)	O		
soeur	O	camarade de classe	O		
frère	O	autre connaissance	O	spécifie	_____

4) Avec qui vis-tu? Noircis une seule réponse :

La motié du temps avec mon père, l'autre moitié du temps avec ma mère	O		
Avec ma mère seulement	O	Avec ma mère et son ami (conjoint, chum)	O
Avec mon père seulement	O	Avec mon père et son amie (conjointe, blonde)	O
Avec mon père et ma mère	O	Autre, spécifie :	_____

SECTION B: Le jeu fait référence aux jeux d'argent

1. **Au cours des 12 derniers mois, t'est-il arrivé de penser aux jeux ou de planifier quand tu allais jouer?**

O jamais O une ou deux fois O parfois O souvent

2. **Au cours des 12 derniers mois, t'est-il arrivé de devoir parier de plus en plus d'argent pour ressentir le même niveau d'excitation?**

O Oui O Non

3. **Au cours des 12 derniers mois, t'est-il arrivé de dépenser au jeu <u>beaucoup</u> plus d'argent que tu avais prévu?**

O jamais O une ou deux fois O parfois O souvent

4. **Au cours des 12 derniers mois, t'est-il arrivé de devenir frustré ou de mauvaise humeur alors que tu essayais de jouer moins souvent ou même d'arrêter?**

O jamais O une ou deux fois O parfois O souvent O jamais essayé de jouer moins

5. **Au cours des 12 derniers mois, as-tu joué pour oublier tes problèmes ou lorsque tu te sentais mal?**

O jamais O une ou deux fois O parfois O souvent

6. **Au cours des 12 derniers mois, après avoir perdu de l'argent au jeu, as-tu joué de nouveau les jours suivants pour tenter de regagner cet argent?**

O jamais O moins que la moitié du temps O plus que la moitié du temps O toujours

7. **Au cours des 12 derniers mois, tes habitudes de jeu t'ont-elles mené à mentir à ta famille?:**

O jamais O une ou deux fois O parfois O souvent

8. **Au cours des 12 derniers mois, as-tu pris de l'argent <u>sans permission</u> dans le but de la dépenser au jeu :**

a) **argent prévu pour ton dîner/transport?**

O jamais O une ou deux fois O parfois O souvent

b) **argent des membres de ta famille?**

O jamais O une ou deux fois O parfois O souvent

c) **argent provenant de l'extérieur de ta famille?**

O jamais O une ou deux fois O parfois O souvent

9. a) **Au cours des 12 derniers mois, tes habitudes de jeu t'ont-elles engendré des disputes avec ta famille/amis(es) ou autres?**

O jamais O une ou deux fois O parfois O souvent

b) **Au cours des 12 derniers mois, tes habitudes de jeu t'ont-elles mené à t'absenter de l'école?**

O jamais O une ou deux fois O parfois O souvent

SECTION C - Directives: Noircis le cercle qui convient le plus à ce que tu ressens au sujet de chacune des affirmations.

OUI! = Si cette affirmation est très vraie pour toi, c'est ainsi que <u>tu te sens la plupart du temps</u>.
oui = Si cette affirmation est en quelque sorte vraie pour toi, c'est ainsi que <u>tu te sens souvent</u>.
non = Si cette affirmation est en quelque sorte fausse pour toi, <u>tu ne te sens généralement pas ainsi</u>.
NON! = Si cette affirmation est très fausse pour toi, <u>tu ne te sens presque jamais ainsi</u>.

	OUI!	*oui*	*non*	*NON!*
1. Je peux parler avec mes parents de ce que je ressens.....	O	O	O	O
2. J'aime voir les autres heureux.....	O	O	O	O

OUI! = Si cette affirmation est très vraie pour toi, c'est ainsi que <u>tu te sens la plupart du temps</u>.
oui = Si cette affirmation est en quelque sorte vraie pour toi, c'est ainsi que <u>tu te sens souvent</u>.
non = Si cette affirmation est en quelque sorte fausse pour toi, <u>tu ne te sens généralement pas ainsi</u>.
NON! = Si cette affirmation est très fausse pour toi, <u>tu ne te sens presque jamais ainsi</u>.

	OUI!	*oui*	*non*	*NON!*
3. Il faut parfois se battre physiquement pour obtenir ce que l'on veut	O	O	O	O
4. Je vais probablement mourir avant d'avoir 30 ans	O	O	O	O
5. J'aurai toujours des amis(es)	O	O	O	O
6. J'aime aider à la maison	O	O	O	O
7. Je fumerai peut-être lorsque je serai plus âgé(e)	O	O	O	O
8. Je veux vraiment compléter des études collégiales un jour	O	O	O	O
9. J'aime comment j'agis	O	O	O	O
10. Je me fâche facilement	O	O	O	O
11. Je m'entends bien avec les autres	O	O	O	O
12. Faire partie d'une équipe est amusant (sport, musique, etc)	O	O	O	O
13. Les adultes semblent s'amuser lorsqu'ils boivent de l'alcool	O	O	O	O
14. Ma famille a de trop grandes attentes par rapport à moi	O	O	O	O
15. En général, on m'apprécie	O	O	O	O
16. Les autres décident de ce qui m'arrive	O	O	O	O
17. Je pense que j'aurai une belle famille lorsque je serai plus âgé(e)	O	O	O	O
18. Si je ne suis pas d'accord avec un ou une ami(e), je lui dis	O	O	O	O
19. Boire de l'alcool est mauvais pour la santé	O	O	O	O

	OUI!	*oui*	*non*	*NON!*
20. Il est important de terminer l'école secondaire.	O	O	O	O
21. J'ai parfois honte de mes parents	O	O	O	O
22. On peut me faire confiance	O	O	O	O
23. J'ai peur que ma vie soit malheureuse	O	O	O	O
24. J'apprécie la compagnie des autres	O	O	O	O
25. Je boirai probablement de l'alcool lorsque je serai suffisamment âgé(e)	O	O	O	O
26. L'école est une perte de temps	O	O	O	O
27. Il est important de réfléchir avant d'agir	O	O	O	O
28. De mauvaises choses arrivent à des gens comme moi	O	O	O	O
29. Je me sens bien lorsque j'aide les autres	O	O	O	O
30. Ma famille m'a laissé(e) tomber	O	O	O	O
31. Suivre les règles est stupide	O	O	O	O
32. Ma vie est désordonnée, désorganisée	O	O	O	O
33. Je fais toujours ce que j'ai envie de faire	O	O	O	O
34. Si j'ai une raison, je vais changer d'idée	O	O	O	O
35. Je trouve difficile de me faire des amis ou amies	O	O	O	O
36. C'est correct de consommer des drogues si on ne se fait pas prendre	O	O	O	O
37. Je travaille fort pour réussir à l'école	O	O	O	O
38. J'aime faire des activités avec ma famille	O	O	O	O

	OUI!	*oui*	*non*	*NON!*
39. On peut faire confiance à la plupart des gens.....	O	O	O	O
40. Je réussis la plupart des choses que j'entreprends.....	O	O	O	O
41. Si j'étudie beaucoup, j'obtiendrai de meilleures notes.....	O	O	O	O
42. Lorsque je me fâche, je crie après les autres	O	O	O	O
43. Je pense que j'aurai une belle maison un jour.....	O	O	O	O
44.Je demande des explications lorsque je ne comprends pas quelque chose	O	O	O	O
45. Mes amis(es) me respectent	O	O	O	O
46. Je prends toujours plaisir à aider, à contribuer (faire ma part).....	O	O	O	O
47. Il est moins important de gagner que d'être juste et honnête	O	O	O	O
48. Il m'arrive de briser des choses par exprès	O	O	O	O
49. Je n'aurai probablement jamais assez d'argent	O	O	O	O
50. Je suis souvent trop gêné(e) pour poser des questions	O	O	O	O
51. Je me sens souvent seul(e).....	O	O	O	O
52. Si j'en ai l'occasion, j'essaierai peut-être des drogues.....	O	O	O	O
53. Souvent, je préfèrerais ne pas aller à l'école.....	O	O	O	O
54. Il y a du bon en tous et chacun	O	O	O	O
55. Lorsque j'essaie d'être gentil(le), les autres le remarquent.....	O	O	O	O
56. Je déteste parler ou me produire devant un groupe	O	O	O	O
57. Il est important de faire sa part pour aider à la maison	O	O	O	O

	OUI!	*oui*	*non*	*NON!*
58. Si on travaille fort, on obtient ce que l'on veut	O	O	O	O
59. La marijuana (mari, pot) rend heureux	O	O	O	O
60. J'aimerais arrêter d'aller à l'école le plus vite possible	O	O	O	O
61. Dans les bons « partys » les gens boivent de l'alcool	O	O	O	O
62. J'ai hâte d'être assez âgé(e) pour boire	O	O	O	O
63. Je suis curieux(se) de connaître l'effet des drogues et de l'alcool	O	O	O	O
64. J'aime discuter avec ma famille	O	O	O	O
65. Il est gratifiant (satisfaisant) d'aider les autres	O	O	O	O
66. J'aime mon apparence	O	O	O	O
67. Je frappe les gens lorsque j'en ai envie	O	O	O	O
68. Il est important de réfléchir pour prendre une bonne décision	O	O	O	O
69. Je déçois souvent les gens de mon entourage	O	O	O	O
70. Je n'aime pas la majorité des gens	O	O	O	O
71. Je suis responsable de ce qui m'arrive	O	O	O	O

SECTION D: Nous aimerions avoir des informations sur ta famille et ton quartier. Rappelle-toi de lire attentivement et de répondre à toutes les questions.

1. **Voici une liste d'énoncés qui sont vrais pour certaines familles. Réponds « oui » si l'énoncé est habituellement vrai pour ta famille, et « non » si il ne l'est pas.**

	oui	*non*
Les règles sont claires dans notre maison	O	O
Mon heure de rentrée est précise	O	O
J'ai un endroit et un temps précis pour faire mes devoirs	O	O
J'ai des tâches régulières à la maison	O	O

2. Voici d'autres énoncés de ce qui se produit dans certaines familles, et pas dans d'autres. Indique si ces énoncés se produisent dans ta famille tout le temps (c'est-à-dire, tous les jours ou presque tous les jours); souvent (une fois par semaine environ); pas souvent (moins d'une fois par semaine); ou jamais. Tu dois répondre en fonction de l'adulte avec qui tu habites si tu n'habites pas avec tes parents.

	tout le temps	*souvent*	*pas souvent*	*jamais*
Toute la famille mange ensemble à l'heure du souper	O	O	O	O
Tes parents t'aident avec tes devoirs	O	O	O	O
Tu vas au cinéma ou tu vas au restaurant avec tes parents...	O	O	O	O
Tu parles à tes parents de l'école	O	O	O	O

3. La liste des énoncés ci-dessous décrivent des choses qui peuvent arriver à des jeunes ou des choses qu'ils peuvent faire. Indique si tu as fais ces choses trois fois ou plus, une ou deux fois, ou jamais au cours des douze derniers mois

	3 fois ou plus	*une ou deux fois*	*jamais*
Être envoyé(e) au bureau du directeur ou en retenue	O	O	O
Sécher les cours pour une journée entière (absence non justifiée)	O	O	O
Endommager intentionnellement (briser par exprès) la propriété d'autrui	O	O	O
Voler quelque chose	O	O	O
Me bagarrer (battre; coups)	O	O	O
Essayer des drogues (marijuana, cocaïne, ou LSD).....	O	O	O
Me faire arrêter par la police	O	O	O
Consommer un peu de bière, de vin ou de cooler alcoolisé, un ou 2 verres....	O	O	O
Consommer beaucoup de bière, de vin ou de cooler alcoolisé, plus de 2 verres ...	O	O	O
Assister à un cours en étant sous l'effet de l'alcool ou de la drogue	O	O	O
Être passager dans un automobile conduit par un adulte qui a bu de l'alcool.	O	O	O
Inhaler (« sniffer ») de la colle ou de la peinture pour me geler.....	O	O	O
Tenir tête (s'obstiner) à un professeur	O	O	O
Me disputer avec mes parents.....	O	O	O
Entrer par effraction (sans permission) dans une maison ou un commerce	O	O	O

	3 fois ou plus	*une ou deux fois*	*jamais*
Être en compagnie de jeunes qui buvaient de l'alcool	O	O	O
Être en compagnie de jeunes qui consommaient des drogues illégales	O	O	O
Être en compagnie de jeunes qui participaient à des jeux d'argent?	O	O	O
S'être trouvé(e) dans un bar ou un casino avec un(e) adult(e) qui participait à des jeux d'argent?	O	O	O

4. Nous avons maintenant des questions sur tes amis proches, tes quatre ou cinq amis qui te sont vraiment les plus proches. Dirais-tu que la plupart d'entre eux, quelques-uns d'entre eux, ou aucun d'entre eux font les énoncés ci-dessous.

	la plupart	*quelques-uns*	*aucun*
Étudier fort à l'école	O	O	O
Aller à l'église	O	O	O
Fumer des cigarettes	O	O	O
Boire de l'alcool de temps en temps	O	O	O
Essayer des drogues, comme la marijuana (mari) ou la cocaïne de temps en temps	O	O	O
Apprécier beaucoup l'école	O	O	O
S'entendre vraiment bien avec leurs parents	O	O	O

5. Voici une liste des choses qui se produisent dans beaucoup de quartiers. Indique si ces choses se produisent fréquemment dans ton quartier. Se produisent-elles tout le temps (tous les jours ou presque tous les jours), souvent, (une fois par semaine environ), pas souvent (moins d'une fois par semaine), ou jamais.

	tout le temps	*souvent*	*pas souvent*	*jamais*
Tu parles avec tes voisins	O	O	O	O
Tu vois des gens qui boivent de l'alcool dans la rue	O	O	O	O
Des gens se font voler	O	O	O	O
Des enfants font du sport ensemble	O	O	O	O
Tu vois la police arrêter quelqu'un	O	O	O	O
Les gens s'entre-aident	O	O	O	O
Tu vois une bagarre	O	O	O	O

SECTION E: Voici des questions sur toi et sur les expériences que tu as vécues, y compris ta consommation d'alcool et de drogues. Pour certaines questions, tu dois indiquer la fréquence à laquelle s'est produit un évènement tandis que, dans d'autres cas, tu dois répondre par un « oui » ou un « non ». Lis chaque phrase attentivement. Indique ta réponse en noircissant un cercle dans la colonne appropriée. Réponds à toutes les questions.

Combien de fois as-tu consommé de l'alcool ou des drogues :	*jamais*	*une ou deux fois*	*quelquefois*	*souvent*
1. à la maison	O	O	O	O
2. dans des endroits publics fréquentés par des adultes	O	O	O	O
3. avec des amis(es) plus âgés que toi	O	O	O	O
4. chez des amis(es) ou la parenté	O	O	O	O
5. dans le cadre d'activités scolaires, comme les danses et les activités sportives	O	O	O	O
6. au travail	O	O	O	O
7. les jours que tu as séché tes cours	O	O	O	O
8. pour apprécier la musique où les couleurs, ou te sentir plus créatif	O	O	O	O
9. en conduisant un bâteau à haute vitesse	O	O	O	O

Combien de fois as-tu :	*jamais*	*une ou deux fois*	*quelquefois*	*souvent*
10. menti à tes parents concernant ta consommation d'alcool ou de drogues	O	O	O	O
11. obtenu de la drogue d'un vendeur de drogue	O	O	O	O
12. consommé de l'alcool ou de la drogue en cachette, afin que personne ne le sache	O	O	O	O
13. menti à des professeurs concernant ta consommation d'alcool ou d'autres drogues	O	O	O	O
14. été fâché(e) de voir que des gens discutaient du fait que tu consommais de l'alcool ou d'autres drogues	O	O	O	O
15. perdu l'habilité de goûter les aliments pendant plusieurs jours après avoir consommé de l'alcool ou d'autres drogues	O	O	O	O

Quand tu as consommé de l'alcool ou de la drogue, combien de fois as-tu :	*jamais*	*une ou deux fois*	*quelquefois*	*souvent*
16. renversé des choses, cogné contre un objet, tombé, ou eu des problèmes à marcher	O	O	O	O
17. vu, senti ou entendu des choses qui n'étaient pas vraiment là	O	O	O	O
18. dépensé de l'argent pour des choses que tu n'aurais pas achetées en temps normal	O	O	O	O
19. découvert des choses que tu as dit ou fait pendant que tu étais sous l'effet de l'alcool ou de la drogue, mais dont tu ne te souviens pas	O	O	O	O

Afin de payer de l'alcool ou de la drogue, combien de fois as-tu :	*jamais*	*une ou deux fois*	*quelquefois*	*souvent*
20. vendu de la drogue	O	O	O	O
21. acheté des drogues d'un garde de sécurité	O	O	O	O

S'il te plaît, réponds aux questions suivantes qui traitent de tes expériences :	*oui*	*non*
22. je suis toujours gentil(le), même avec les gens qui ne le sont pas	O	O
23. Je m'inquiète souvent sans raison ou à propos de petites choses	O	O
24. il m'est arrivé(e) de profiter de certaines personnes	O	O
25. j'ai des idées étranges qui me dérangent	O	O
26. il m'est déjà arrivé(e) d'être fâché(e) contre un adulte même si je savais qu'il avait raison	O	O
27. je suis triste ou déprimé(e) la plupart du temps	O	O
28. je souffre souvent de maux de tête ou d'estomac	O	O
29. je suis toujours prêt(e) à admettre que j'ai fait une erreur	O	O
30. je pense à me suicider	O	O
31. il m'est arrivé d'avoir le goût de sacrer ou de briser des choses	O	O
32. mon esprit ne fonctionne pas bien	O	O
33. une personne de ma famille me frappe lorsqu'elle est fâchée	O	O
34. j'ai peur d'une personne parce qu'elle a eu des rapports sexuels avec moi	O	O

Au cours des douze derniers mois, combien de fois (s'il y a lieu) :	*jamais*	*1-2 fois*	*3-5 fois*	*6-9 fois*	*10-19 fois*	*20-39 fois*	*40+ fois*
35. as-tu consommé des boissons alcoolisées (y compris de la bière, du vin et des liqueurs alcoolisées)	O	O	O	O	O	O	O
36. as-tu consommé de la marijuana (mari) ou du hashich	O	O	O	O	O	O	O
37. as-tu consommé des drogues dures autres que l'alcool et la marijuana (mari, pot)	O	O	O	O	O	O	O

	jamais	*avant la 6ième année*	*sec. 1-2*	*sec. 3-4*	*sec. 5 ou après*
38. à quel âge ai-je ressenti une euphorie (« high »)	O	O	O	O	O
39. à quel âge ai-je consommé sur une base régulière	O	O	O	O	O

SECTION F: Voici une liste de symptômes courants dus à l'anxiété. Lis chaque symptôme attentivement. Indique, en noircissant le cercle dans la colonne appropriée, à quel degré tu as été affecté(e) par chacun de ces symptômes au cours de la dernière semaine, aujourd'hui inclus.

	pas du tout	**un peu** cela ne m'a pas beaucoup dérangé	**modérément** c'était très déplaisant mais supportable	**beaucoup** je pouvais à peine le supporter
1. sensations d'engourdissement ou de picotement.....	O	O	O	O
2. Bouffées de chaleur.....	O	O	O	O
3. « jambes molles », tremblements dans les jambes...	O	O	O	O
4. incapacité de se détendre.....	O	O	O	O
5. crainte que le pire ne survienne.....	O	O	O	O
6. étourdissement ou vertige, disorientation.....	O	O	O	O
7. battements cardiaques marques.....	O	O	O	O
8. mal assuré(e), manque d'assurance dans mes mouvements.....	O	O	O	O
9. terrifié(e)	O	O	O	O
10. nervosité.....	O	O	O	O
11. sensation d'étouffement.....	O	O	O	O
12. tremblement de mains.....	O	O	O	O
13. tremblements, chancelant(e)	O	O	O	O
14. crainte de perdre le contrôle.....	O	O	O	O
15. respiration difficile.....	O	O	O	O
16. peur de mourir.....	O	O	O	O
17. sensation de peur, « avoir la frousse »	O	O	O	O
18. indigestion ou malaise abdominal.....	O	O	O	O
19. sensation de défaillance ou d'évanouissement..	O	O	O	O
20. rougissement du visage.....	O	O	O	O
21. transpiration (non associée à la chaleur)	O	O	O	O

SECTION G : Lis chaque phrase attentivement. Indique ta réponse en noircissant un cercle dans la colonne appropriée.

	oui	*non*
1. En général fais-tu ou dis-tu des choses sans y réfléchir avant?	O	O
2. Est-ce que tu te mets souvent dans le trouble parce que tu fais des choses sans penser?	O	O
3. Es-tu une personne impulsive (réagir vite sans penser)?	O	O
4. As-tu l'habitude de bien réfléchir avant de faire quelque chose?	O	O
5. As-tu l'habitude de parler sans avoir bien pensé à ce que tu voulais dire?	O	O

SECTION H : Ci-dessous se trouvent des phrases concernant ce que tu ressens. Pour chaque phrase, indique s'il t'arrive presque jamais, rarement, parfois ou souvent de te sentir ainsi. Noircis le cercle de la réponse qui convient à ce que tu ressens réellement. Rappelle-toi qu'il n'y a pas de bonnes ou de mauvaises réponses. Choisis la réponse qui indique ce que tu ressens habituellement.

	presque jamais	**rarement**	**parfois**	**souvent**
1) Je me sens heureux(se)	O	O	O	O
2) Je suis inquiet ou inquiète à cause de l'école	O	O	O	O
3) Je me sens seul(e)	O	O	O	O
4) Je sens que mes parents ne m'aiment pas	O	O	O	O
5) Je me sens important(e)	O	O	O	O
6) J'ai envie de me cacher des autres	O	O	O	O
7) Je suis triste	O	O	O	O
8) J'ai envie de pleurer	O	O	O	O
9) Je sens que personne ne tient à moi	O	O	O	O
10) J'ai envie de m'amuser avec d'autres élèves	O	O	O	O
11) Je me sens malade	O	O	O	O
12) Je me sens aimé(e)	O	O	O	O
13) J'ai envie de m'enfuir	O	O	O	O
14) J'ai envie de me faire mal	O	O	O	O
15) J'ai l'impression que les autres élèves ne m'aiment pas	O	O	O	O

	presque jamais	rarement	parfois	souvent
16) Je me sens troublé(e)	O	O	O	O
17) J'ai l'impression que la vie est injuste	O	O	O	O
18) Je me sens fatigué(e)	O	O	O	O
19) J'ai l'impression que je ne suis pas bon(ne)	O	O	O	O
20) J'ai l'impression que je ne suis bon(ne) à rien	O	O	O	O
21) J'ai pitié pour moi même	O	O	O	O
22) Je me sens fâché(e)	O	O	O	O
23) J'ai envie de parler aux autres élèves	O	O	O	O
24) J'ai du mal à dormir	O	O	O	O
25) J'ai envie de m'amuser	O	O	O	O
26) Je me sens inquiet ou inquiète	O	O	O	O
27) J'ai mal au ventre	O	O	O	O
28) Je m'ennuie	O	O	O	O
29) J'aime manger des repas	O	O	O	O
30) J'ai l'impression que tout ce que je fais ne mène à rien	O	O	O	O

SECTION I: Ce questionnaire concerne les sentiments et les experiences émotionnelles. Quand le mot « pleurer » est utilisé, il réfère **aux larmes des yeux** qui sont dues à des raisons émotionnelles, non à une irritation des yeux. Les items suivants décrivent plusieurs des fonctions des pleurs ainsi que quelques émotions qui sont associées aux pleurs. Veuillez indiquer après chaque item dans quelle mesure vous êtes d'accord avec la proposition.

	pas du tout d'accord						***tout à fait d'accord***
	1	***2***	***3***	***4***	***5***	***6***	***7***
1. Pleurer m'aide à surmonter mes problèmes	O	O	O	O	O	O	O
2. Je crois qu'il est utile de pleurer lorsque la vie deviant stressante	O	O	O	O	O	O	O
3.Ma vie serait meilleure si j'étais capable de laisser libre cours à mes larmes	O	O	O	O	O	O	O
4. Je me mets à pleurer pour me sentir mieux quand j'ai des problèmes	O	O	O	O	O	O	O
5. Pleurer est une manière importante et efficace de gestion des difficultés de la vie	O	O	O	O	O	O	O

	pas du tout d'accord						*tout à fait d'accord*
	1	*2*	*3*	*4*	*5*	*6*	*7*
6. Je préfère pleurer au sujet d'un problème plutôt que de garder en moi ma tristesse	O	O	O	O	O	O	O
7. Dans certaines conditions, quand les choses allaient vraiment mal, j'ai pleuré de manière presque incontrôlable	O	O	O	O	O	O	O
8. Quand je me laisse pleurer à chaudes larmes, je dors mieux	O	O	O	O	O	O	O
9. Je trouve que je me sens mieux quand je pleure un bon coup	O	O	O	O	O	O	O
10. Je me sens relaxé(e) après avoir pleuré un bon coup	O	O	O	O	O	O	O
11. Après un moment où j'ai pleuré un bon coup, je suis plus en mesure de faire face à mes problèmes	O	O	O	O	O	O	O
12. Après avoir bien pleuré, je suis plus optimiste	O	O	O	O	O	O	O
13. J'essaie de ne pas pleurer quand je suis bouleversé(e)	O	O	O	O	O	O	O
14. Après avoir pleuré, j'ai chaud partout	O	O	O	O	O	O	O
15. Je me sens apaisé(e) après avoir laissé libre cours à mes larmes	O	O	O	O	O	O	O
16. Pleurer est la chose la plus saine que l'on puisse faire lorsqu'on est triste	O	O	O	O	O	O	O
17. Quand je ne suis pas capable de pleurer dans une situation de stress, je continue à me sentir tendu(e)	O	O	O	O	O	O	O
18. La plupart du temps je peux contrôler mes larmes	O	O	O	O	O	O	O
19. Je me sens honteux(se) quand je pleure	O	O	O	O	O	O	O
20. Après avoir pleuré, je suis souvent triste	O	O	O	O	O	O	O
21. J'aime pleurer	O	O	O	O	O	O	O
22.Les autres personnes deviennent généralement plus gentilles lorsque je pleure.	O	O	O	O	O	O	O
23. Je déteste pleurer	O	O	O	O	O	O	O
24. Je peux manipuler les autres avec des larmes	O	O	O	O	O	O	O

Nous te remercions d'avoir pris le temps de répondre!

à l'usage du bureau seulement :

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨