Etiological factors related to gambling problems: The impact of childhood maltreatment and subsequent psychological stressors

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ABSTRACT

The goal of the current research design was to determine whether childhood maltreatment is a significant risk factor in the development of gambling problems. Moreover, the aim was to address the cumulative effects of risk factors by assessing a broader range of adversities from a developmental psychopathology perspective. This study included 1,324 young adults (42.8% males; 57.2% females) attending college, with ages ranging from 17 to 22 years. Participants completed self-report measures on gambling and substance use problems, childhood maltreatment, psychological symptomology, stress, and resilience. Approximately 36.5% of the sample met criteria for a substance use disorder, 4.0% reported problems with gambling and substance use, and 2.1% were problem gamblers. Problem gamblers and individuals with substance related problems reported the overall highest levels of childhood maltreatment, psychological symptomology, stress, and lowest levels of resilience. Gender (being male), high stress, and childhood maltreatment accurately predicted gambling group membership (76.7%). Importance of childhood maltreatment as a risk factor in conjunction with other variables supported the hypothesis regarding the cumulative effects of adversity and was well able to predict future outcomes at 82%. No single risk factor differentiated between the problem gamblers from the problem substance users. The results of this study highlight the substantial interrelation between childhood abuse and other negative circumstances that increase the risk for general addiction group and problem gambling group membership. This study underscores the importance of routine assessment for childhood trauma in individuals presenting for gambling and substance use treatment and provides an important facet toward our understanding of problem gambling.

RÉSUMÉ

Le but de la présente étude était de déterminer si les mauvais traitements subis durant l'enfance est un facteur de risque significatif dans le développement de problèmes de jeu. De plus, le but était de vérifier les effets cumulatifs des facteurs de risque en évaluant un plus grand éventail de difficultés, au moyen d'une perspective développementale de la psychopathologie. Cette étude comprenait 1324 jeunes adultes (42.8% hommes ; 57.2% femmes), étudiants du CEGEP, âgés de 17 à 22 ans. Les participants ont rempli des questionnaires auto-rapportés ciblant les problèmes de jeu et la dépendance aux substances. Environ 36.5% des participants ont rencontré les critères diagnostiques d'un trouble lié à une substance, 4.0 % ont rapporté des problèmes de jeu et de dépendances à une substance, et 2.1% étaient des joueurs à risque. Les joueurs à risque et les individus ayant des problèmes de dépendance ont rapporté les plus hauts niveaux de mauvais traitements subis lors de leur enfance, de symptomatologie psychologique, de stress, ainsi que les plus bas niveaux de résilience, en comparaison avec les participants ne présentant aucun problème notable. Le genre (être un homme), un haut niveau de stress et un mauvais traitement durant l'enfance ont prédit avec succès l'appartenance au groupe de joueurs à risque (76.5 %). L'importance des mauvais traitements subis durant l'enfance en tant que facteur de risque conjointement avec d'autres variables, soutenait l'hypothèse concernant les effets cumulatifs des difficultés et était capable de prédire les résultats à 82 %. Aucun facteur de risque en soi, ne différenciait entre les joueurs à risque et ceux ayant un problème de dépendance. Les résultats de cette étude soulignent les relations substantielles entre l'abus subi durant l'enfance et d'autres circonstances négatives qui augmentent le risque d'appartenance au groupe de joueurs à risque et au groupe ayant des problèmes de dépendance. Cette étude souligne l'importance d'évaluer, de façon

routinière, les traumatismes vécus durant l'enfance chez les individus voulant être traités pour leurs problèmes de jeu et de dépendance, en plus d'accroître notre compréhension de la problématique entourant les jeux de hasard et d'argent.

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CHAPTER I

INTRODUCTION

Over the past decade, gambling venues have dramatically increased in popularity, achieving legalization in most states, provinces, and many countries. Currently, many individuals live in an environment where gambling activities such as lotteries, video lottery terminals, and sports betting are both easily accessible and socially acceptable. Among young adults, the rates of problem gambling appear to be double the adult rate, with gambling problems likely emerging during late adolescence. Considerable knowledge has been gained over the past several years concerning gambling problems, yet the phenomenon and etiology of excessive gambling behavior is still not clearly understood by researchers and clinicians.

While prior research has identified several predisposing variables that may place individuals at heightened risk for the development of a serious gambling problem, our present knowledge is incomplete. According to Jacobs' (1986) *General Theory of Addictions*, early adverse childhood events may contribute to the development and maintenance of gambling problems, as well as other addictions. Moreover, research and clinical experience in the field of developmental psychopathology has well documented the negative impact of childhood maltreatment on later adjustment. Studies of maltreatment have linked such early adverse childhood events to short and long-term impairments in adulthood, with substance abuse disorders being one of the most frequently researched and cited negative outcomes associated with childhood maltreatment.

The aim of the present research study was to empirically examine the relationship between childhood maltreatment and problem gambling amongst young adults. Furthermore, the goal of this study was to incorporate the substance abuse and maltreatment literature as a scientific framework for empirically testing whether problem gamblers were more emotionally

vulnerable than non-gamblers and social gamblers. This study systematically examined whether individuals with excessive gambling problems are similar to those experiencing substance use problems with respect to a history of adverse childhood events. Most studies have examined the relationship between single adversity and a single disorder, documenting the unique effects of specific childhood adversities on specific adult disorders. This study sought to address the cumulative effects of risk factors by assessing a broader range of adversities and disorders in order to explore the effects of commonly occurring adversity clusters. The interaction between psychological, psychosocial, and environmental characteristics that mediate the impact of adverse life events and adjustment was examined.

Given the goal of investigating the cumulative effects of risk factors, it is anticipated that these results will shed light upon certain factors that place young adults at heightened risk for involvement with gambling problems and will provide valuable clinical information. Knowledge gained concerning the factors that mediate the impact of adverse childhood events can potentially contribute to the development of more efficacious therapeutic techniques and better secondary prevention with at-risk populations. Moreover, the clinical assessment, identification, and treatment of those suffering from addiction problems will be improved by understanding the factors that influence the acquisition and maintenance of gambling problems.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review examines three main areas of research including gambling pathology, maltreatment as a risk factor for addictive behavior, and other factors affecting long-term psychosocial adjustment.

Gambling and Related Literature

Individuals today are exposed to an increasingly widespread and easily accessible variety of gambling venues and advertising. Most U.S states, all Canadian provinces, and approximately 90 countries worldwide have some form of legalized gambling (Azimer, 2000; NORC, 1999; Stinchfield & Winters, 1998). Prior to 1970, legal gambling in Canada was generally restricted to occasional charity bingo, raffles, and wagers between individuals. By 1993, legal gambling expanded to include slot machines and video lottery terminals (VLTs), casinos, large-scale bingo operations, sports wagering, scratch tickets, pull-tabs, Internet gambling, and off-track betting on horses (Ladouceur, 1996). What once began as a way to raise funds for specific identified projects has rapidly turned into a multi-billion dollar industry (National Council of Welfare, 1996). Gambling is no longer only a means to raise funds, but has become a socially acceptable pastime for both adults and youth (Abbott, 2001; Azimer, 2000; Derevensky, Gupta, & Hardoon, 2003). Not only is gambling currently viewed as socially acceptable, but it is seen as a personal right (Azimer, 2000), with less perceived harmful social implications than alcohol or drug use. A study of gambling behaviour and attitudes by Azimer (2000) found that the vast majority of adults surveyed did not consider gambling addiction to be as serious a social problem as alcohol or drug addiction.

Prevalence

Gambling has been defined as an activity that involves an element of risk where money could be won or lost (Felsher, Gupta, & Derevensky, 2004; Gupta & Derevensky, 1998b; 1998b). Despite the current controversy in the literature regarding the nomenclature used to classify gamblers, it is best conceptualized on a continuum ranging from non-gambling, to social or recreational gambling, to at-risk or problem gambling, and to pathological/compulsive gambling (NRC, 1999). Based on diagnostic screens, the term *social gambler* represents those individuals who gamble but do not experience difficulty controlling their gambling. Social gambling typically occurs with friends or colleagues and lasts for a limited period of time with predetermined acceptable losses (Coman, Burrows, & Evans, 1997). *At-risk gambling* is used to describe those individuals who endorse a number of gambling-related problems (e.g., personal, financial, familial, or social) on diagnostic gambling screens. These individuals are considered "at-risk" for the development of severe gambling problems; not meeting sufficient criteria to be classified as pathological gamblers. Individuals engaging in excessive gambling and experiencing serious gambling-related problems are currently referred to as *pathological gamblers*. While there is some focus on revising these classifications (Derevensky, Gupta, & Winters, 2002; Shaffer & Hall, 2001), they remain the most widely used categories to represent youth gambling behaviour (Felsher, Derevensky, & Gupta, 2003; 2004; Gupta & Derevensky, 1998a; Hardoon, Gupta, & Derevensky, 2004; Kaufman, 2002; Ste-Marie, Gupta, & Derevensky, 2002).

According to the American Psychiatric Association (2000), 2.5 million adults are pathological gamblers who demonstrate *"persistent and recurrent maladaptive gambling behaviour that disrupts personal, family or vocational pursuits"* (p. 615). Volberg (1994), using

the South Oaks Gambling Screen (SOGS), a well-established gambling measure, found the prevalence of pathological gambling among adults in the general population to be 1% to 2.3%. A more recent Canadian survey by Cox, Yu, Afifi, and Ladouceur (2005) reported the 12-month prevalence of gambling problems in Canada to be 2.0%. Cox et al. (2005) reported interprovincial variability with Manitoba and Saskatchewan (2.9%) having the highest problem gambling rates and Quebec (1.7%) and New Brunswick (1.5%) the lowest. Among young adults, the rates of pathological gambling appear to be double the adult rate, with gambling problems likely to emerge during adolescence. Shaffer, Hall, and Vanderbilt's (1997) meta-analysis of 23 college studies reported that 5% of students met the criteria for pathological gambling, while another 7% met the criteria for at-risk gambling. An update of the meta-analysis with an expanded number of studies found the estimate of pathological gambling among young adults to be 5.6%, with the student rate being three times the adult rate of 1.9% (Shaffer & Hall, 2001). An earlier study of college participants using the SOGS by Lesieur, Cross, Frank, Welch, White, and Rubenstein (1991) found even higher rates with 15% of students reporting gambling related problems, and 5.5% meeting the criteria for pathological gambling. Not only are college-age students more likely to meet the criteria for gambling problems than adults in the general population, the overall rate of general gambling participation at the college level is high, with 87% of students reporting having gambled as least once in the previous year (Winters, Bengston, Door, & Stinchfield, 1998).

Etiology of pathological gambling and psychopathology

A number of researchers have attempted to identify typologies of gamblers with most studies clustering subjects into homogenous samples. Blaszczynski and Nower (2002) developed a conceptual model, delineating three discrete pathways leading to the development of a distinct

subgroup of pathological gamblers. The three pathways, *behaviorally conditioned problem gambler, emotionally vulnerable problem gambler,* and the *antisocial impulsivist problem gambler,* demarcate gambling as a heterogeneous addiction with complex genetic, biological, psychosocial, and environmental factors. Although a number of pathways may lead to the development of pathological gambling, the *emotionally vulnerable* problem gambler is particularly relevant to the current study as these individuals are likely sensitive to the effects of maltreatment. Blaszczynski and Nower (2002) suggested that emotionally vulnerable gamblers present with anxiety and/or depression, have a history of poor coping and problem solving skills, and have experienced significant negative life events. Accordingly, the motivation to gamble for these emotionally vulnerable individuals is likely driven by a desire to modulate affective states or to meet psychological needs. Preliminary work by Steel and Blaszczynski (1996) found that one group of pathological gamblers loaded highly on psychological distress indices having a history of depression, family psychiatric histories, and elevated anxiety. Other researchers have reported a strong relationship between gambling and psychopathology. Community samples with youth problem gamblers found that those who gamble excessively were more likely to exhibit low self-esteem (Gupta & Derevensky, 1998b), high rates of depression (Getty, Watson, & Frisch, 2000; Gupta & Derevensky, 1998a; 1998b; Kaufman, 2002; Marget, Gupta, & Derevensky, 1999; Nower, Derevensky, & Gupta, 2000), elevated rates of anxiety (Ste-Marie, Gupta, & Derevensky, 2002), and increased suicidal ideation and suicide attempts (Gupta & Derevensky, 1998a; Ladouceur, Dubé, & Bujold, 1994; Nower, Gupta, Blaszczynski, & Derevensky, 2004).

Despite an underlying vulnerability, the majority of individuals report that they gamble as a way to make money, for excitement, entertainment, or as a means to relieve boredom (Felsher

et al., 2004; Gupta & Derevensky, 1998a). Whatever the rationale for gambling, a *need state* model (Walker, 1992) asserts that excessive gambling is a behaviour that is carried out to fulfill some personal need. One such need, well documented in the literature, is that gambling may fulfill the purpose of regulating affective states. It has been suggested that depression precedes excessive gambling behaviour wherein gambling is used to cope with a long-term depressive condition (Custer & Milt, 1985; Walker, 1992). Jacobs (1986) hypothesized that gambling involvement offers a means to escape unpleasant negative affect. An empirical study using a community sample of youth by Gupta and Derevensky (1998a) and Kaufman (2002) found that at-risk and pathological gamblers reported significantly more depressive symptomology than non-gamblers and social gamblers, with probable pathological gamblers reporting negative emotional affective states. Bland, Newman, Orn, & Stebelsky, (1993) and Cunningham-Williams, Cottler, Compton, Spitznagel (1998) reported that problem gamblers were three times more likely than non-gamblers to meet the criteria for alcohol and drug abuse, multiple affective problems, and obsessive-compulsive disorder.

While no studies have conclusively determined whether gambling problems or depression comes first, prospective studies conducted in the area of depression and substance abuse have provided some support for the finding that depression precedes drug addiction and alcohol use (Tennen, Affleck, Armeli, & Carney, 2000). Not only is there a high rate of depression among pathological gamblers, but suicidal ideation and attempts have been found to be common amongst individuals with gambling problems (Ladouceur et al., 1994). Kaufman (2002) reported that probable pathological gamblers were seven times more likely to report suicide attempts than non-gamblers. Moreover, 25% of the at-risk and probable pathological gamblers endorsed

suicidal ideation. These results were similar to other findings in community samples conducted by Gupta and Derevensky (1998a), Ladouceur et al. (1994) and Lesieur et al. (1991).

Research findings thus far have suggested that individuals with gambling problems experience a range of psychological problems, with excessive gambling being used as a way to relieve depression, anxiety, as a means to cope with adversity, and low self-esteem (Gupta & Derevensky, 2000; Hardoon, Derevensky, & Gupta, 2002; Kaufman, 2002; Nower & Blaszczynski, 2004; Ohtsuka, Bruton, DeLuca, Bog, 1997). Findings from such studies lend support for Blaszczynski and Nower's (2002) conceptualization of the *emotionally vulnerable gambler*. Further, findings from research in the field of addiction suggest that comorbidity between addictive behaviours and other psychological disorders is commonplace. As such, the high rate of comorbidity between substance dependence and gambling problems warrants further consideration.

Pathological gambling and comorbidity with substance use disorders

Research in both the general population and clinical treatment programs reveals that pathological gambling does not occur in isolation but tends to co-occur with other addictive behaviours (Bland et al., 1993; Ciarrocchi & Richardson, 1989; Crockford & El-Guebaly, 1998). That is, many problem behaviours cluster together, such that individuals who exhibit one type of problem behaviour tend to engage in several others. In community studies, it has been observed that pathological gamblers were similar to other addicted populations, with high comorbidity between substance abuse disorders and gambling problems (Bland et al., 1993; Cunningham-Williams et al., 2000; Hardoon et al., 2002; Horodecki, 1992; Ladouceur et al., 1994; Lesieur, et al., 1991; Linden, Pope, & Jonas, 1986; Schwartz & Lindner, 1992; Winters & Anderson, 2000). Despite the fact that gambling does not involve the ingestion of a substance, it presents with

similar physiological effects including dissociative states, tolerance, and altered physiological arousal (APA, 2000). While pathological gambling is listed as an impulse control disorder in the DSM-IV rather than as an addiction per se, there is a trend among some scientific and clinical communities to regard pathological gambling as an addictive disorder (Ciarrocchi & Kirschner, 1991; Custer, 1982; Evans, 2003; Jacobs, 1986; Sumitra & Miller, 2005). Evans (2003) called gambling a "drugless addiction" where problem gamblers describe their experiences as being similar to those with a chemical dependence. In addition to empirical reports, the diagnostic criteria for pathological gambling have been patterned after the criteria for substance use (e.g., tolerance, withdrawal, etc.) (NRC, 1999; Sumitra & Miller, 2005). Similar to alcoholics and illicit drug abusers, pathological gamblers develop a preoccupation with gambling, think about past gambling experiences, gamble for longer periods of time and with more money than they intended, plan future gambling activities, and have an inability to stop gambling despite a desire to do so (APA, 2000). Moreover, in order to maintain the desired level of excitement, the pathological gambler continues to place increasingly larger bets and gamble more frequently. Like substance abusers, if pathological gamblers are restrained from gambling they may become irritable, social relationships may become strained, and they may engage in antisocial activities in order to accrue the funds needed to maintain the long-term chase in an attempt to recoup lost expenditures (APA, 2000).

The prevalence rate of lifetime substance abuse among pathological gamblers from community and treatment settings range from 25% to 63% (Crockford & El-Guebaly, 1998). Aside from the one study of Alcoholic Anonymous and Gambler Anonymous participants conducted by Briggs, Goodin, and Nelson (1996) that found no relationship between alcoholism and pathological gambling, the majority of the research reveals a strong relationship between the

two disorders. Similar to studies of adult pathological gamblers, Hardoon et al.'s (2002) community study found that 50% of adolescent pathological gamblers also reported substance abuse problems. Moreover, adolescent studies by Shaffer et al. (1997) and Winters and Anderson (2000) report a greater than chance relationship between gambling and drug behaviours. Stinchfield, Cassuto, Winters, & Latimer's (1997) analysis of Minnesota students in 1992 and 1995 found that lifetime alcohol use was one of the strongest predictors of gambling behaviour. In their research examining the underlying risk factors of gambling and substance use, Ciarrocchi and Kirschner (1991) reported that both alcoholic and pathological gambler inpatients demonstrated similar personality traits on the MMPI compared to normal controls. Their results support Jacobs' (1986) *General Theory of Addictions,* emphasizing the generality of predisposed personality characteristics that interact with situation specific factors in order to influence the development of a particular addiction type (Ciarrocchi & Kirschner, 1991).

A theoretical model for gambling addiction

Jacobs' (1986) *General Theory of Addictions* provides a framework for the biological and psychosocial basis in the development and maintenance of addiction. Accordingly, an addiction is defined as a "*dependent state acquired over time to relieve stress*" (Jacobs, 1986, p. 15). Jacobs argued that there are two related sets of predisposing factors that determine whether or not an individual is at risk for developing and maintaining an addictive pattern of behaviour; an abnormal physiological resting state that is either hypo- or hyper- aroused and the experience of chronic and traumatic occurrences during childhood and/or adolescence. These predisposed personality variables interact with other situation specific factors in order to influence the development of a particular addiction, with certain individuals inherently more vulnerable to the development of an addiction.

Not only did Jacobs suggest that specific predisposing factors influence the development of an addiction, but he suggested that the reinforcing qualities of gambling or substance abuse maintain this addictive pattern of behaviour. By engaging in these behaviors, individuals with an abnormal physiological resting state achieve optimal levels of arousal, returning their system to a more homeostatic state. Such return to a more homeostatic state enables the individual to escape a painful reality providing the illusion of being successful, an altered sense of identity, admired, or with fantasies of being important. Moreover, when gambling, the individual's preoccupation with a poor self-image and/or past traumas is deflected, potentially creating an altered sense of identity and enhancing one's self-image. The high frequency of dissociation among gamblers, as indicated by scores on dissociative scales, has provided some evidence that pathological gamblers escape their problems and obtain relief from psychological distress while gambling by going into a trance-like state, losing track of time, and by feeling like a different person (Gupta & Derevensky, 1996; 1998b; Jacobs, 1988; Kaufman, 2002; Kuley & Jacobs, 1988; Martinez-Pina et al., 1991; Ste-Marie et al., 2002). In addition to the predisposing factors that may make an individual vulnerable to gambling problems, Jacobs (1988) found that when engaging in addictive behaviours, dissociative-like experiences were common among overeaters and alcoholics. According to Jacobs, it is these dissociative-like experiences that are thought to separate the addicts from non-addicted individuals who use the same substances or engage in the same activities.

While Jacobs' theory offers a plausible explanation for the development and maintenance of addictive patterns of behaviour, attempts to empirically evaluate this theory within the addiction literature have been limited primarily to the inference of arousal states. Kaufman's (2002) comprehensive study sought to move beyond examination of physiological vulnerability

and examined emotional vulnerability via life stressors. While Kaufman evaluated the role of stress as a predisposing emotional vulnerability for the development of an addiction, Jacobs' explicit hypothesis concerning the role of childhood maltreatment has yet to be empirically examined. Establishing a link between gambling problems and early childhood adverse events is essential when looking for an etiological explanation and may provide additional support for Jacobs' theory.

Maltreatment as a Risk Factor in the Development of an Addiction

Definition of maltreatment

Child maltreatment occurs when a parent, guardian, or caregiver mistreats or neglects a child resulting in injury, significant emotional or psychological harm, or serious risk of harm to the child (Health Canada, 1998). Moreover, child maltreatment entails the betrayal of a caregiver's trust and authority and may take many forms. The most standard forms of maltreatment include physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect. According to Briere (1992), many adults raised in North America regardless of gender, race, or social class have experienced some level or type of maltreatment during childhood. These negative early childhood experiences often have a significant impact on later behavior and adaptive psychological functioning; however, the impact is likely dependant upon the degree or severity of maltreatment, external stressors, perpetrator, and the developmental level of the child at the time of maltreatment (Briere, 1992).

Prevalence

Over the last decade there has been a dramatic rise in reports of suspected abuse and neglect in Canada and the United States (Health Canada, 1998; Kaplan, Pelcovitz, & Labruna, 1999; Sedlack & Broadhurst, 1996). The total number of abused and neglected children in the United States increased dramatically between 1986 and 1993, with two thirds more children

experiencing harm caused by abuse and neglect (Sedlack & Broadhurst, 1996). More recently, published U.S. government statistics (U.S. Dept. of Heath and Human Services, 2002), suggests the rate of victimization per thousand children in the national population to be 12.3. The Canadian Incidence Study of Reported Child Abuse and Neglect (CIS) reported rates of child abuse and neglect to be equally disturbing, with an estimated 217,319 child investigations conducted in Canada. Of those investigations, 47% were substantiated, with an incidence rate of 21.71 cases of substantiated maltreatment per 1,000 (Trocmé, Fallon, Maclaurin, & Daciuk, 2003a; Trocmé, Tourigny, MacLaurin, & Fallon, 2003b). According to the CIS study (Trocmé et al., 2003a), the rate of substantiated childhood maltreatment has increased 125% from 9.64 cases per 1,000 in 1998 to 21.71 per 1,000 substantiated cases in 2003. Neglect (30%) was the most common form of substantiated maltreatment type, followed by exposure to domestic violence (28%), physical abuse (24%), emotional maltreatment (15%), and sexual abuse (3%). While these statistics appear to be alarmingly high, they reflect only those cases that have come to the attention of authorities with the actual number of victims of child abuse and neglect likely being far higher.

Maltreatment types

Evidence suggests that different types of maltreatment are often associated with different sequelae; however, most studies of maltreated children do not adequately differentiate among the different types of maltreatment (Briere & Runtz, 1988, 1990; Claussen & Crittenden, 1991; Egeland, Sroufe, & Erikson, 1983; Higgins & McCabe, 2000a; Higgins & McCabe, 2000b; Silverman, Reinherz, & Giaconia, 1996). In an attempt to account for such methodological limitations, Briere and Runtz (1988) conducted a study using a university sample and found that four types of maltreatment were present within the same families. Moreover, Braver, Bumberry,

Green, and Rawson's (1992) study with university counseling clients reported that the majority of individuals who reported physical abuse also reported emotional abuse. Moeller and Bachmann (1993), using a larger community sample of 668 middle class women, reported that 29% of women experienced exposure to one type of childhood maltreatment, 19% to two types of maltreatment, and 5.4% to three types of maltreatment. More recently, Higgins and McCabe (2000a) found high correlations between scores on five maltreatment scales and Moran, Vuchinich, and Hall (2004) found that all four types of maltreatment were significantly related to higher levels of substance abuse among adolescents. Werkerle et al.'s (2006) study of adolescents in the Ontario welfare system found that overlapping types of maltreatment was commonplace. These studies highlight the need to assess all forms of maltreatment when looking at relationships of maltreatment to adjustment.

While the study of psychological maltreatment and neglect is often forgotten, it remains at the core of negative childhood developmental outcomes (Garrison, 1987; Hart, Binggeli, & Brassard, 1998; Kairys & Johnson, 2002). An empirical study of community and referred children by Claussen and Crittenden (1991) found that physical maltreatment rarely occurred in the absence of psychological maltreatment; whereas psychological maltreatment occurred without the presence of physical abuse. Ninety percent of the children who experienced physical abuse also experienced psychological maltreatment, whereas only 45% of children who experienced psychological maltreatment also reported physical abuse. Not only does psychological maltreatment often accompany other forms of maltreatment and affect later adult adjustment, there is evidence to suggest that neglect may be more harmful to certain aspects of development than physical abuse (Gauthier, Stollack, Messé, & Aronoff, 1996; Kairys & Johnson, 2002). It has been argued that neglect may be particularly harmful due to the ensuing

lack of mutual interaction between the child and the caregiver. Moreover, neglect is likely to have a different psychological meaning for a child than physical abuse since neglect could be equivalent to complete psychological abandonment; whereas, physical abuse may not be (Gauthier et al., 1996). Children who are neglected may feel unworthy of attention from the caregiver; whereas, those who are physically abused may view themselves as worthy of some attention, even if it is negative. A study of university students by Gauthier et al. (1996) examined the effects of reported neglect and childhood physical maltreatment on the severity of psychological symptomology. As predicted, young adults who reported childhood neglect had significantly greater psychological problems and were more likely to report current symptoms of anxiety, depression, somatization, and hostility than those who reported only physical abuse. Not only has neglect been found to contribute to psychological symptomology but Egeland and Erickson (1987) reported that children whose mothers were psychologically unavailable, but not physically abusive, showed marked declines in both intellectual and social competence. Their results suggested that psychological unavailability and neglect was just as, or more detrimental to adjustment and development than physical abuse (Egeland & Erickson, 1987). Such studies of psychological abuse and neglect underscore the need and utility for examining the impact of "silent" forms of maltreatment (Edwards, Holden, Felitti, & Anda, 2003; Gauthier et al., 1996; Hart et al., 1998; Kairys & Johnson, 2002; Moran et al., 2004). These research findings on psychological abuse and neglect emphasize the inappropriateness of focusing research on only one form of maltreatment, since other forms of maltreatment are often present as well. Due to the overlap between the various types of maltreatment, especially psychological maltreatment with other types of abuse, an ecological approach is required, where the child's total experience of

victimization from multiple sources is taken into account (Belsky, 1993; Briere & Runtz, 1988, 1990; Claussen & Crittenden, 1991; Edwards et al., 2003; Higgins & McCabe, 2000a).

Early childhood maltreatment and later psychological adjustment

It is hardly novel to suggest that traumatic experiences have significant adverse mental heath consequences. A considerable body of research has accumulated suggesting the relevance of early forms of trauma on adult mental health (Edwards et al., 2003; Egeland et al., 1983; Gautier et al., 1996; Kaplan et al., 1999; MacMillan, Fleming, Streiner, Lin, Boyle, Jamieson, Duku, Walsh, Wong, & Beardslee, 2001a; MacMillan & Munn, 2001b; Malinosky-Rummell & Hansen, 1993; Silverman et al., 1996). Principal among these are sexual abuse (Browne & Finkelhor, 1986; Fergusson, Horwood, & Lynskey, 1996; Green 1993; Molnar, Buka, & Kessler, 2001; Yama, Tovey, & Fogas, 1993), physical violence and abuse (Bryer, Nelson, Miller, & Krol, 1987; Silverman, et al., 1996), and parental psychopathology and substance abuse (Beitchman, Zuker, Hood, Dacosta, Akman, & Cassavia, 1992; Jumper, 1995; Malinosky-Rummel, & Hansen, 1993). While there is evidence to suggest that various mediating factors are implicated in mental health outcomes, it is clearly justifiable to propose that major adverse experiences have long-term psychiatric significance. Turner and Lloyd's (1995) community study of lifetime trauma and mental health found a compelling relationship between the number of traumas experienced prior to age 18 and lifetime risk for psychological disorders such as major depressive disorder and substance abuse or dependence. They suggested that cumulative childhood adversity represents a significant dimension of risk for the onset of psychiatric and substance abuse disorders. In a National Comorbidity Study of 15-24 year olds by Kessler, Davis, and Kendler (1997), 25.6% of the respondents experienced no adversities, 23.2% reported

one, 16.1% reported two, and 35.0% reported three or more of the 26 childhood adversities included in their study.

Work within this domain suggests that childhood victimization experiences are associated with a wide variety of negative outcomes including low self-esteem, depression, dependency, anxiety, fear, aggressive behavior, and multiple other problem behaviors (Briere & Runtz, 1988, 1990; deGraff, Bijl, Smit, Vollebergh, & Spijker, 2002; Edwards et al., 2003; Egeland et al., 1983; Fergusson et al., 1996; Gibb, Alloy, Abramson, Rose, Whitehouse, Donova, & Hogan, 2001; Johnson et al., 2002; Kaplan et al., 1999; Macmillan et al., 2001a; 2001b; Malinosky-Rummell & Hansen, 1993; Moran et al., 2004; Wekerle, Wall, MacMillan, Boyle, Trocme, & Leung, 2006). Mullen, Martin, Anderson, Romans, and Herbison (1996) found in their community study of women that those who reported being exposed to some form of maltreatment in childhood had more mental, interpersonal, and sexual problems than those who did not report childhood maltreatment, leading the authors to conclude that any form of serious childhood maltreatment could negatively disrupt the developmental process, with individuals reporting more than one type of maltreatment faring worse than adults reporting single types of abuse (Mullen et al., 1996). Using data from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), Johnson et al. (2002), reported that physically abused children demonstrated a variety of symptomology including aggression, depression, anxiety, and anger. A longitudinal community study conducted by Silverman et al. (1996) examined the relationship between childhood physical and sexual maltreatment and functioning in mid-adolescence (age 15) and functioning in early adulthood (age 21). Relative to the children who were not abused, young adults who recalled being maltreated as children demonstrated significantly more deficits at both time points (during mid adolescence and young adulthood), elevated levels of emotional

and behavioral problems, and DSM–III psychiatric disorders (Silverman et al., 1996). Such findings point to the short-term and the enduring long-term nature of psychological sequelae associated with physical and sexual maltreatment. Such studies with maltreated victims highlight the increased risk for later psychiatric disorders and accompanying emotional problems (deGraff et al., 2002; Edwards et al., 2003; Fergusson et al., 1996; Johnson et al., 2002; Gauthier et al., 1996; Kaplan et al., 1999; Macmillan et al., 2001a; 2001b). Based on research findings, it appears as though childhood experiences of maltreatment have either a direct or indirect influence on general adult adjustment.

In addition to short-term and long-term individual factors related to adjustment problems there is evidence to suggest that indivduals exposed to child maltreatment tend to come from family environments characterized by multiple disadvantages, including poverty, impaired parenting skills, stress, amongst many other factors (Katerndahl et al., 2005; Mullen et al., 1996). Such families with multiple disadvantages are less likely to provide responsive care, a factor which that has been shown to contribute to children's difficulties in emotion regulation (Eisenberg, Cumberland, & Spinrad, 1998). The association between childhood maltreatment and later adjustment may be reflective of the family context within which the abuse occurred rather than as a direct effect of traumatic experience on individual adjustment. Unfortunately, the examination of family context outside of child maltreatment experiences and other biopsychosocial factors was beyond the scope of this study.

Maltreatment and substance abuse disorders

The relationship between childhood maltreatment and the risk of alcohol misuse and abuse has been well documented (deGraff et al., 2002; Johnson & Leff, 1999; Kunitz, Levy, McColoskey, & Gabriel, 1998; Langeland, Draijer & van den Brink, 2004; Malinosky-Rummel

& Hansen, 1993; Moran et al., 2004; Wekerle et al., 2006; Widom, Weiler, & Cottler, 1999). Silverman et al. (1996) reported that maltreated participants experienced significantly more alcohol and drug abuse dependence than non-maltreated individuals. Moran et al. (2004) reported that all four types of maltreatment were significantly related to higher levels of tobacco, alcohol, and illicit drug use among a sample of 10th through 12th grade students. Wekerle et al. (2006) reported that past year binge drinking and cannabis use to be higher among youth involved with the child welfare system compared to the general population of Ontario youth. With general community studies concluding that individuals exposed to childhood maltreatment are at greater risk for developing an addiction, it is not surprising that clinical studies conducted at substance use treatment facilities have also found high rates of childhood maltreatment among their clients. Harmer, Sanderson, and Mertin (1999) found that the majority of the participants in a residential rehabilitation program for problem drug users reported significantly more aversive childhood experiences than participants in the general population. Glover, Janikowski, and Benshoff (1995, 1996) noted that 40% of males in a chemical dependency treatment facility experienced some form of incest, a rate of sexual abuse higher than typically found in the general population. Furthermore, those with a history of incest were more likely to report being treated for multiple drug and alcohol problems. Widom et al. (1999) posited that exposure to childhood maltreatment may lead to substance abuse through various mechanisms such as a maladaptive coping strategies, self-medication, or low self-esteem.

Maltreatment and pathological gambling

Research has pointed to the potential adjustment difficulties associated with childhood maltreatment. In addition to an increase in depressive symptomology, anxiety, and other psychiatric problems, the relationship between substance abuse problems and childhood

maltreatment experiences has been well founded. Considering the significant overlap between substance use and the gambling literature, it seems likely that childhood maltreatment could represent a viable etiological explanation for a subset of individuals who develop serious gambling problems.

Similar to research that has found that children of alcoholics are at an increased risk for alcohol problems, Nower and Blaszczynski (2004) suggested that a family history of problem gambling may be one risk factor in the development of gambling problems. Another risk factor, consistent with Jacobs' notion of predisposing factors, is a childhood experience of negative feelings and rejection. Accordingly, excessive gambling likely produces an emotional escape from feelings of inadequacy and negative mood via the effects of dissociation (Jacobs, 1986). Grant and Kim's (2002) study with outpatient pathological gamblers found 43% of pathological gamblers reported neglectful paternal parenting and 39% reported neglectful maternal parenting. Based on these findings, Grant and Kim concluded that for these individuals, gambling acted as a vehicle from which to escape negative emotional states, particularly feelings of worthlessness and inadequacy resulting from poor parental support. Hardoon et al. (2002) hypothesized that a lack of perceived social support from parents might act as a risk factor for gambling related problems among adolescents. Strong support for this hypothesis was found; 50% of pathological gamblers and 30% of at-risk gamblers reported that they perceived their families as unsupportive. Youth with gambling problems considered their parents and other family members to be uncaring, harsh, and overly critical. Such negative perceptions and perceived lack of support was associated with problem gamblers feeling detached from family (Hardoon et al., 2002). Similar to maltreated children, problem gamblers reported feeling unsupported and rejected by their families. Further, these findings give rise to a neglect hypothesis with respect to

a parental behavioral antecedent of pathological gambling, lending support to Blaszczynski and Nower's (2002) theory of the '*emotionally vulnerable*' gambler. Such findings suggest that not only do parental relationships and early home environment affect later general psychological adjustment but they also contributed to specific psychiatric disorders such problem gambling. Recently, Jacobs' (2002) modified his *General Theory of Addictions* by emphasizing the importance of chronic childhood trauma and developed the Jacobs' Neglect and Abuse Protocol (JNAP) for adult pathological gambling, alcohol, and drug addiction in order to measure such traumatic events. Jacobs (2002), in a preliminary investigation regarding the incidence of childhood trauma among pathological gamblers, alcoholics, and drug addicts in residential and outpatient treatment settings, found that 80% of the pathological gamblers, 75% of adult substance abusers, and 44% of adolescent substance abusers reported one or more types of abuse or neglect.

In light of this research, establishing a link between gambling activity and traumatic childhood events seems essential in establishing etiological explanations of addictive behaviour and provides support for theories that emphasize the importance of developmental "triggers" in association with biological and psychosocial predispositions. A vast literature examining the relationship between maltreatment and substance abuse combined with the results of these preliminary studies implicate poor parental and family functioning, specifically child maltreatment, in the development of addiction. Both empirical research and clinical reports have yet to fully explain or understand why certain individuals with predisposing factors develop an addiction while others do not. One possible explanation is the presence of mediating factors that buffer against early adversity.

Mediating Factors in Long-Term Adjustment

Resilience

Many individuals demonstrate the necessary prerequisites of a vulnerability-stress model (i.e., physiological vulnerability, emotional vulnerability) yet never develop an addiction or psychopathology. One needs to account for other plausible explanations for these individual variations. Researchers have argued that the presence of various personal and/or situational variables (e.g., coping style) can lessen or "buffer" the deleterious effects of stress on mental health (Cohen & Wills, 1985; Monroe & Simmons, 1991). Such buffers, mediators, or protective factors may serve to shield against the onset of various psychological disorders including depression, substance abuse, and anxiety (Depue & Monroe, 1986; Rutter, 1987). Resilience has been conceptualized as the capacity for successful adaptation despite challenging or threatening circumstances, the development of competence under conditions of severe adversity, and recovery from trauma (Garmezy, Masten, & Tellegen, 1984; Masten 1994; Masten, Best, & Garmezy, 1990; Rutter, 1990). Rutter (1987) defined resilience as a buffering factor that protects individuals from psychiatric disorders and described resilient individuals as possessing self-esteem, self-efficacy, as having effective problem solving skills, and satisfying interpersonal relationships. Resilient individuals have the ability to successfully cope with multiple stressors and risk factors in their lives in an adaptive way, further promoting competence (Werner & Smith, 1982).

Resilience is not a unidimensional concept but consists of a delicate balance between risk and protective factors. A ten-year study conducted by Rutter (1979) found that no one single variable or risk factor significantly predicted poor outcome; however, the cumulative effect of any two stressors increased the level risk four fold. Rutter (1979) proposed that the more

stressors or risk factors individuals experience, the greater the likelihood they will experience for poor psychological outcomes. Garmezy (1985), Luthar and Zigler (1991), and Werner (1989) identified three levels of both individual and environmental characteristics that help to protect the individual against the impact of biological and psychosocial risk factors. Three categories of positive factors have been delineated (O'Grady & Metz, 1987; Werner & Smith 1982; Werner 1989; Zimrim, 1986): (a) dispositional attributes (e.g., intellectual ability, sociability, temperament, self-reliance, competence in communication, coping strategies), (b) familial characteristics marked by the presence of warmth, emotional support, positive styles of attachment, and a close bond with at least one caregiver (Garmezy, 1991; Luthar & Zigler, 1991; Rutter, 1987), and (c) external support factors (e.g., positive relationships with adults). It has been demonstrated that all these factors may affect adjustment either positively or negatively acting either as a risk or protective factor. Given the multitude of risk factors that may lead to adjustment difficulties and the presumption that individuals maltreated in childhood grew up in family environments containing at least one risk factor (e.g., maltreatment at the hands of a caregiver), dispositional attributes (e.g., coping strategies, competence in communication) were examined in this study as the potential protective factors buffering the effects of negative family experiences. Stress resiliency and the ability to recover from stressful events, as well as an individual's attitude and coping skills were evaluated as the protective dispositional characteristics that may buffer against the harmful effects of a maltreatment history.

The study of protective and risk factors and resiliency has become an important component of research aimed at understanding the course of adaptive and maladaptive behaviour. Lynskey and Fergusson's (1997) community study found that 24.3% of participants who had been sexually abused in childhood did not meet the criteria for any psychiatric disorder

at age 18. This resilient group differed from those who developed psychiatric disorders on factors related to the abuse (age of abuse, perpetrator), family factors (parental attachment, family history of substance abuse problem), and nature of peer affiliation in adolescence. These findings further suggested that other personality characteristics were important factors in mitigating the effects of childhood sexual abuse. A prospective community study of at-risk abused and neglected individuals by McGloin and Widom (2001) revealed that 22% of maltreated individuals met the criteria for resilience despite major life stresses and risk posed by their early childhood experiences. Such results suggested that resilient individuals not only recovered from and were able to move past the trauma of their youth, but exhibited success in their lives.

Resilience encompasses many factors that may affect development and adjustment. Coping style has been cited as an important factor in determining the development of healthy adult adjustment and subsequent level of resilience. In addition to personal and environmental factors that contribute to healthy development, resilient individuals are typically considered to have better coping skills; whereby, less resilient individuals are considered to have maladaptive coping styles.

Coping and addictive behavior

The onset of various psychological and physical disorders has been linked to the occurrence of stressful life experiences. Within the adult literature, severe life stress has been related to the onset and maintenance of several psychological problems, including major depression, anxiety disorders, suicide attempts, substance abuse problems, and chronic physical illness. The stress coping model posits life stress as a general risk factor in the development of later problems, with coping responses either impeding or accelerating the development of such

problems (Wills & Filer, 1996). The stress coping model, originally conceptualized by Lazarus and Folkman (1984), suggests that when the demands of the environment exceed the resources the person has available to meet those demands, stress occurs. The individual appraises the potential seriousness and changeability of the problem and then chooses a coping strategy that will most likely ameliorate the problem. Coping has been defined as the "*constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person's resources*" (Lazarus & Folkman, 1984, p. 141) or as a response to diminished physical, emotional, and psychological sequelae of stressful events (Snyder & Dinoff, 1999).

The stress-coping theory of addictive behaviour that has been applied to alcohol and drug abuse may serve to increase our understanding of problem gambling. Exposure to environmental stressors and the coping style one uses has been reliably related to alcohol and drug abuse disorders. Newcomb and Harlow (1986) found that life stress was related to an increase in substance use over time. High stress was not simply the consequence of prior substance use but also acted as a general predisposing factor for substance use (Wills, 1990). Like substance misuse, research in the field of gambling has shown that stress/anxiety and coping styles represent precipitating and perpetuating factors in the etiology and maintenance of problem gambling (Blaszcyznski & McConaghy, 1989; Kaufman, 2002; Ste-Marie et al., 2002). Research in the field of gambling has found that individuals often participate in gambling activities as a means to cope with stress (Comans et al., 1997; Kaufman, 2002; Gupta & Derevensky, 2000; Taber, McCormick, & Ramirez, 1987). Moreover, Sharpe and Tarrier (1993) postulated that the difference between those who were able to control their gambling versus those who could not was related to the employment of different coping skills. Problem gamblers exhibited poor

problem solving skills, poor self-control, and a paucity of healthy coping skills. Whereas, healthy coping styles have been shown to decrease the reliance upon gambling, problem gambling has been associated with unhealthy or ineffective mechanisms (avoidant coping) (Comans et al., 1997; Kaufman 2002; Lightsey & Hulsey, 2002). According to Jacobs' theory, addictive types of behaviors such as gambling or substance use offer a temporary escape from a stressful reality. A study by Comans et al. (1997) found that 51% of female problem gamblers engaged in such behavior as a means to relieve stress while 46% reported having gambled to relieve boredom and depression. Stressful events often result in negative emotions wherein the individual chooses a coping strategy that is ineffective, perpetuating a vicious cycle where one gambles in order to escape these negative feelings (Taber et al., 1987).

Not only have poor coping skills been associated with excessive gambling, but also style of coping is thought to be predictive of gambling problems. Two ineffective coping styles avoidance and emotion-oriented coping have been cited in the literature as important predictors of later psychological problems. Lightsey and Hulsey (2002) found in a sample of college students that individuals who used problem-focused coping and solution oriented strategies reported less gambling involvement compared to respondents who used emotionally focused strategies. Similarly, research by Getty et al. (2000), Gupta and Derevensky (2000), and Nower, Derevensky, and Gupta (2000) found that individuals with gambling problems utilized predominantly avoidant or emotion focused styles of coping. Kaufman (2002) found that at-risk and pathological gambling youth had significantly higher emotion-oriented coping scores than social gamblers and non-gamblers. Further, pathological gamblers reported significantly more avoidance-oriented coping skills, whereas non-gamblers reported significantly more task-oriented coping than the other gambling groups (Kaufman, 2002). Such studies suggest problem

or task-oriented coping could be a protective factor against the potential harmful effects of psychological and physical stress.

Coping and adverse childhood events

In addition to the role of exposure to environmental stress in the development of a substance use disorder, childhood events such as maltreatment can have a lasting impact upon the development of effective coping strategies and stress management. In addition to a predisposition towards psychopathology caused by maltreatment experiences, research has shown that individuals exposed to early trauma are at further risk for chronic stress (Turner & Lloyd, 1995). This increased risk of psychopathology is influenced by early childhood trauma that adversely affects the acquisition of coping skills. As such, maltreated individuals often exhibit deficits in stress management as seen by their avoidance and inability to resolve daily life stressors (Turner & Lloyd, 1995). Dubé, Anda, Felitti, Edwards, and Croft (2002) examined the relationship between eight adverse childhood experiences and later alcohol use. In their sample, 61% of respondents with alcohol abuse problems experienced at least one adverse event. These results fit with the 'drinking-to-cope' hypothesis, where adverse events lead to depression or anxiety, compelling the individual to use alcohol in order to escape, cope, or regulate unpleasant emotions (Abbey, Smith & Scott, 1993; Copper, Russell, Skinner, Frone, & Mudar, 1992). Sheridan's (1995) research with incarcerated men and women revealed that 67% reported abusing alcohol/drugs to block out painful feelings/events, 51% to relax/reduce tension, and 47% to escape reality. Maltreated individuals often engage in a number of 'unhealthy' activities in order to soothe or interrupt the painful affects of abuse (Briere, 1992). The tension-reduction hypothesis suggests that following severe child maltreatment, the survivor learns to deals with abuse related dysphoria by distracting behaviors, along with dissociative responses (Briere,

1992). Given that childhood maltreatment occurs during childhood, a time when the individual is still developing, it is likely that the opportunity to learn appropriate coping responses may be hindered. Tension-reducing responses may have been initially beneficial for the child to manage emotionally distressing events at the expense of the acquisition of healthy coping responses to trauma (Briere, 1992). While it is evident that maltreatment experiences negatively affects later adjustment, the way in which the individual perceives the abuse event has been found to influence long-term outcomes and the coping strategy employed (Leintenberg, Greenwald, & Cado, 1992; Varia, Abidin, & Dass, 1996). As with findings from other coping studies (e.g., Briere & Runtz, 1988; Chu & Dill, 1990; Leintenberg et al., 1992; Sanders & Giolas, 1991), individuals who denied or avoided dealing with their abuse histories have been found to have maladaptive psychological adjustment and greater social adjustment problems than individuals who acknowledged their abusive experiences.

Summary and Conclusions

Pathological gambling is a serious societal concern with far reaching implications. While there have been several hypotheses regarding the etiological factors related to excessive gambling behavior, Jacobs (1986, 1988) proposed that individuals with an unbalanced physiological resting state and those exposed to traumatic events in childhood (e.g., maltreatment) are at increased risk for an addiction. Moreover, it has been well documented that a greater proportion of individuals who meet the criteria for a substance abuse disorder have experienced negative and traumatic events in childhood, more so than in the general population. Despite the increased risk of negative outcomes associated with childhood maltreatment, resiliency has been shown to act as a protective factor and to mediate the impact of early negative events. In contrast, poor coping skills and a lack of internal resources may exacerbate

an already poor developmental trajectory. Individuals who have been maltreated as children may therefore be less likely to have the skills and resources necessary to recover from such traumatic events and experiences.

Current Research Project

The goal of the current research project was to determine whether childhood maltreatment is a significant risk factor in the development of gambling problems, and other adjustment problems, more generally. While childhood maltreatment may not impact later adjustment directly, it may act as a contributing risk factor. Many of the existing studies have examined a limited set of risk factors and typically have investigated predictors in isolation from each other. This approach has limited our ability to develop a comprehensive model for understanding pathological gambling. The goal of this study was to go above and beyond previous single adversity, single disorder studies. The principle aim of this study was to investigate the role of life experiences [e.g., stress, psychiatric symptomology, and personal competencies in the face of adversity (level of resilience)] as potential contributing factors for gambling problems. The examination of multiple risk factors will improve our understanding of the etiology underlying excessive gambling behavior. Moreover, the goal of this study was to compare problem gamblers with individuals experiencing substance use problems.

Hypotheses

Given the aims of the current study, several hypotheses have been proposed. First, it was hypothesized that childhood maltreatment will act as a risk factor for gambling and substance abuse problems. Secondly, it was hypothesized that child maltreatment will not necessarily directly impact the development of problem gambling or substance abuse, but will be influenced by subsequent risk factors. An interactional approach was used to investigate the relationship

between adverse early developmental events, current levels of stress, psychiatric symptoms, and protective resources. As such, it was predicted that excessive gambling and substance use would occur as a result of poor developmental experiences in combination with other risk factors (e.g., high levels of stress, low levels of resiliency). Finally, it was hypothesized that the factors predicting problem gambling would be similar to those predictive of substance use problems. This prediction was based upon the fact that gambling problems share similar properties to substance use disorders and was predicated upon Jacobs' *General Theory of Addictions*. If problem gamblers and those with substance use problems differ, these differences will be examined. It has been relatively well established that individuals who have been maltreated in childhood are at-risk for substance use problems compared to non-maltreated individuals. To date, no research has systematically evaluated the impact of maltreatment history as a correlate of problem gambling.

CHAPTER III

METHOD

Participants

Participants included 1,324 young adults from CEGEP[1], with 42.8% of the sample consisting of males and 57.2% females. The mean age of the sample was 18.66 (SD = 1.51) and ranged from 17 to 22 (see Table 1). Participants' gender by age was approximately equal.

[1] CEGEP is a particular feature of Québec's education system. It constitutes an intermediary level between compulsory secondary education and university education. CECEP education offers two year pre-university programs and three-year technical programs leading to a Diploma of College Studies (DCS). A DCS is required by Quebec residents for admission to university.

Table 1

Sample Distribution

TOTAL SAMPLE[1]		GENDER	
Age	N	Male	Female
17	328	9.7	15.0
18	425	13.3	18.8
19	242	8.6	9.7
20	140	5.0	5.6
21	79	2.9	3.0
22	110	3.2	5.1
TOTAL	1324	42.8	57.2

[1]Percent of sample

The majority of the sample (94%) was drawn from a large urban CEGEP situated in Montreal's downtown core, while 6% of the sample was drawn from a small CEGEP located in Gatineau, Quebec. The CEGEP located in downtown Montreal has a heterogeneous student body with students from a variety of religious, socio-economic, and cultural backgrounds. While the selection of classes for data collection was determined by professors' willingness for data collection, all professors representing a variety of disciplines (social sciences, health sciences, engineering, nursing, illustration and design, computer science, business administration, and social service departments) and all cohorts were targeted. Moreover, questionnaires were administered in several classes that were requirements for various disciplines.

Instruments

DSM-IV Criteria for Pathological Gambling (Stinchfield & Winters, 1998; 2003). The DSM-IV diagnostic criteria (APA, 2000) has been frequently used as the gold standard to measure the prevalence of pathological gambling. The DSM-IV assesses a number of important variables related to pathological gambling including; progression and preoccupation, tolerance, withdrawal and loss of control, escape, chasing, lies and deception, illegal activities, and

familial/work disruption. The items were worded in behavioral terms with the time frame for this measure being past year gambling behavior. Stinchfield and Winters (1998) paraphrased the 10 DSM-IV diagnostic criteria into 10 DSM criteria items for pathological gambling. The response options for this measure was dichotomous; 'Yes' or 'No.' The DSM-IV criteria were scored by summing endorsed items across the 10 criteria with a cutoff score of 5 or more indicative of pathological gambling.

This measure is reported to be a reliable and valid measure of pathological gambling, both in the general population and with treatment samples (Stinchfield, 2003). Internal consistency for this measure had an $\alpha = 0.81$ for the general population, $\alpha = 0.77$ for a gambling treatment sample, and an $\alpha = 0.98$ for the combined group. Evidence for convergent validity between the DSM-IV and the South Oaks Gambling Screen (SOGS) was $r = 0.77$ ($p < 0.01$) and $r = 0.75$ ($p < 0.01$) for the general population and gambling treatment groups, respectively. Stinchfield (2003) reported that there was an increasing probability of being in the gambling treatment group with each increase in DSM-IV score. A score of 0, 1, or 2 resulted in almost no chance of being a gambling treatment client; whereas, a score of 3 indicated a 29% chance, and a score of 4 indicated a 63% chance of being a gambling treatment client. Furthermore, a score of 5 indicated an 82% likelihood of gambling treatment membership, with scores of 6 or greater indicating virtual certainty of being in the gambling treatment group.

Gambling Activities Questionnaire (GAQ) (Gupta & Derevensky, 1996). The GAQ is a measure that examines familial gambling, comorbidity with other addictive behaviors, types of gambling activity, along with the frequency of gambling behavior during the past 12 months. For the current study, only the descriptive information concerning the types of activities and frequency of gambling involvement was used. These descriptive questions were presented as a

list of gambling activities; participants were required to indicate how often they engaged in a given activity during the past 12 months (*never, less than once a month, once a week or more*). Each item was discrete, analyzed individually, and no cumulative scores were calculated. Although reliability and validity research has not been conducted on this scale, it has been used frequently within the youth gambling literature (Felsher et al., 2003; 2004; Gupta & Derevensky, 1998a; 1998b; Hardoon et al., 2002; Kaufman, 2002; Ste-Marie et al., 2002). Results from these studies suggest that this scale has good construct validity; participation and frequency with various gambling activities.

The Adolescent Diagnostic Interview—Light (ADI-L) (Winters & Henly, 1993; Winters, Stinchfield, Fulkerson, & Henly, 1993). The ADI-L is intended to serve as a structured diagnostic interview for researchers and service providers to formally assess DSM-IV criteria for all psychoactive substance use disorders. This instrument can also be used as a pencil and paper measure where participants respond to a series of questions (Winters, personal communication, October 26, 2003). While the ADI-L is intended to be administered to individuals between the ages of 12 and 19, it may be extended to include young adults (Winters, personal communication, October 26, 2003). The ADI provides diagnostic decisions for all the major substance use categories (no diagnosis, abuse, or dependence). In addition to the Yes/No response format, many questions were followed with a query about the frequency with which the behaviour or event occurred (DSM-IV criteria requires the feature of repetition or recurrence) (e.g., if a respondent answered "yes" to the item, they were required to indicate whether the event occurred *"less than 5 times" or "5 or more times").* Abuse and dependence symptoms were determined according to the scoring guidelines. The original questionnaire presented items separately for alcohol, cannabis use, and other drug abuse. For the purposes of this study, items

were grouped in order to obtain an overall rating of substance abuse and dependence, without differentiating between alcohol, cannabis, and other drug problems (e.g., *"Have you ever used alcohol/drugs at school or on the job?")*.

The criteria for substance abuse and dependence were based on the DSM-IV criteria (APA, 2000). Accordingly, substance abuse was defined as *"a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to repeated use of substances"* (APA, 2000, p.198). The criteria for substance abuse included failure to fulfill role obligations, recurrent use in physically hazardous situations, substance related legal problems, and continued use despite persistent social problems (APA, 2000). Substance dependence was defined as *"a cluster of symptoms indicating that the individual continues the use of substances despite significant substance related problems, with a cluster of three or more symptoms occurring at any time during the same 12-month period"* (APA, 2000, p.176). Criteria for dependence included: tolerance, withdrawal, taking substances in larger amounts than intended, unsuccessful control of substance use, amount of time spent in activities to obtain or recover from substance use, social/occupational/recreational activities reduced due to substance use, and substance use continued despite physical/psychological problem (APA, 2000). Unlike substance dependence, substance abuse required only one criteria to be present, with a diagnosis of substance abuse pre-empting a diagnosis of substance dependence. Unlike substance dependence, substance abuse does not include compulsive use (APA, 2000). Winters and Anderson (2000) suggested that the DSM-IV adult criteria for substance abuse and dependence is similarly appropriate for youth. They cited studies by Stewart and Brown (1995) and Martin, Kaczynski, Maisto, Bukstein, & Moss (1995) supporting the utility of abuse and dependence diagnostic criteria as applied to adolescents.

The ADI has been found to be a reliable and valid measure of alcohol and cannabis substance use disorders in adolescents. Test-Retest reliability for the alcohol dependence criteria had kappa coefficients ranging from .54 to .78, whereas the two alcohol abuse criteria had coefficients of .53 and .64. For the seven cannabis dependence criteria, the coefficients ranged from .52 to .79 and the cannabis abuse criteria had coefficients of .63 and .70. The ADI has been shown to provide diagnostic ratings that are related to the problem severity measure (Winters et al., 1993). The criterion validity was conducted in order to examine the relationship between ADI diagnoses to independent diagnostic assessments. Results indicated that misclassifications of ADI ratings did not favor one type of error over another (Winters et al., 1993).

Childhood Trauma Questionnaire (CTQ) (Bernstein & Fink, 1998). The CTQ is a highly sensitive screening measure that can be administered quickly across a broad range of settings to detect cases of abuse and neglect. It is a 28-item self-report inventory, requiring 5-10 minutes to screen for maltreatment experiences before the age of 18 years. Items were rated on a 5-point likert-type scale, with response options ranging from "*Never true*" to "*Very often true.*" Most items were phrased in behavioural, non-evaluative terms to avoid negatively charged labels (e.g., *"When I was growing up, someone tried to touch me in a sexual way or tried to make me touch them"*), while other items called for more subjective evaluations (e.g., *"When I was growing up I believe that I was sexually abused"*). Instructions asked respondents about their "experiences growing up" and therefore, did not distinguish between current and past maltreatment.

The CTQ consists of 25 items (five items for each of the five scales); *emotional abuse, physical abuse, sexual abuse, emotional neglect,* and *physical neglect.* These items reflect common definitions of child abuse and neglect found in the literature (Couch & Milner, 1993; Finkelhor, 1994; Knutson, 1995; Malinosky-Rummell & Hansen, 1993). *Emotional abuse* refers

to verbal assaults on a child's sense of worth or well-being, or any humiliating, demeaning, or threatening behavior directed toward a child by an older person. *Physical abuse* includes bodily assaults on a child by an older person that pose risk of, or result in injury. *Sexual abuse* constitutes sexual contact or conduct between a child and an older person. While explicit coercion is frequent, it is not an essential feature of these experiences. *Emotional neglect* encompasses failure of caretakers to provide basic psychological and emotional needs such as love, encouragement, belonging, and support. *Physical neglect* refers to the failure of caregivers to provide for a child's basic physical needs, including food, shelter, safety, supervision, and health. In addition to the 5 scales, a Minimization/Denial scale consisting of 3 items was included: "*there was nothing I wanted to change about my family,*" "*I had a perfect childhood,*" and "*I had the best family in the world.*" This scale reflects the tendency to provide exaggerated desirable responses rather than actual item content (e.g., the tendency to respond in a socially desirable manner rather than responding according to personal experiences and feelings) and was used to verify the validity of the responses.

The psychometric properties of the CTQ were studied across seven samples of clinical and non-referred individuals (N = 2,201), representing men and women from a broad range of ages, income levels, race/ethnicity, and diagnoses. Reliability coefficients ranged from satisfactory to excellent, with the highest coefficient for the Sexual Abuse Scale (median = .92) and the lowest for the Physical Neglect Scale (median = .66). Trauma reports on the CTQ were quite reliable with high intraclass correlations between the first and second testing: Emotional Abuse, r = .80; Physical Abuse, r = .80; Sexual Abuse, r = .81; Emotional Neglect, r = .81 and Physical Neglect, r = .79. Reliability analysis of the items that comprise the 5 scales for the current sample was conducted. Cronbach alpha's for the following subscales were; Emotional

Abuse (α= .81); Physical Abuse (α= .80); Sexual Abuse (α = .89); Physical Neglect (α = .54); and Emotional Neglect (α = .85). All subscales, except for the physical neglect subscale produced good reliability. Measures of childhood trauma have focused for the most part, on only one or two forms of maltreatment (typically sexual or physical abuse). The CTQ represents an improvement in terms of content validity by providing broader, more comprehensive content coverage.

Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983). The PSS is a widely used psychological instrument for measuring the perception of stress. This 10-item instrument assesses the degree to which situations in one's life are appraised to be stressful. Items were designed to assess how unpredictable, uncontrollable, and overloaded respondents find their lives while including a number of direct queries about current levels of experienced stress. The measure was designed for use in community samples with at least a junior high school education. The questions on the PSS addressed feelings and thoughts during the last month. In each case the respondents indicated their level of stress on a five-point scale (0 = *never*; 1 = *almost never*; 2 = *sometimes*; 3 = *fairly often*; and 4 = *very often).* Normative data has been collected using over 2,000 respondents and is reported to be relevant to outcomes in expected ways (Cohen, Kamarck, & Mermelstein, 1983). Reliability analysis using the current sample yielded a coefficient alpha of α = .86.

Brief Symptom Inventory (BSI) (Derogatis, 1993). This self-report instrument is the short form of the Symptom Checklist-90 (SCL-90). Like the SCL-90, the BSI instrument assesses psychological symptom patterns. It is a measure of current, point-in-time, psychological symptom status. The BSI includes 53-items, takes approximately 8-10 minutes to administer, and requires a 6th grade reading level. Each item of the BSI was rated on a 5-point scale of distress

(0-4), ranging from "*not at all*" (0) at one pole to "*extremely*" (4) at the other. The operational definitions for each subscale are presented in Table 2.

Table 2

BSI subscale description

BSI Symptom Dimensions	**Description**
1. Somatization (SOM)	Distress arising from perceptions of bodily dysfunction.
2. Obsessive-Compulsive (O-C)	Thoughts, impulses, and actions that are experienced as unremitting and irresistible by the individual.
3. Interpersonal Sensitivity (I-S)	Feelings of personal inadequacy and inferiority, particularly in comparison with others. Self-depreciation and marked discomfort during interpersonal interactions are characteristic.
4. Depression (DEP)	Indicator of clinical depression. Symptoms of dysphoric mood and affect are represented, as are lack of motivation and loss of interest in life.
5. Anxiety (ANX)	General signs of nervousness, tension, panic attacks and feelings of terror. Cognitive components involve feelings of apprehension and some somatic correlates of anxiety.
6. Hostility (HOS)	Thoughts, feelings, or actions that are characteristic of the negative affect state of anger.
7. Phobic Anxiety (PHOB)	Persistent fear response to a specific person, place, object, or situation – that is irrational and disproportionate to the stimulus and leads to avoidance or escape behavior.
8. Paranoid Ideation (PAR)	Represents paranoid behavior as a disordered mode of thinking. Characteristics include hostility, suspiciousness, and delusions.
9. Psychoticism (PSY)	Items are indicative of a withdrawn, isolated, schizoid lifestyle, as first rank symptom of schizophrenia such as thought control.
10. Additional items	These symptoms load on several dimensions and contribute to the global score. The symptoms are poor appetite, trouble falling asleep, thoughts of death or dying, and feelings of guilt.

The BSI was scored and profiled in terms of nine primary symptom dimensions and three global indices of distress. The nine primary symptom dimensions included *Somatization* (SOM), *Obsessive-Compulsive* (O-C), *Interpersonal Severity* (I-S), *Depression* (DEP), *Anxiety* (ANX), *Hostility* (HOS), *Phobic Anxiety* (PHOB), *Paranoid Ideation* (PAR), and *Psychoticism* (PSY). The *Global Severity Index* (GSI), the *Positive Symptom Distress Index* (PSDI), and the *Positive Symptom Total* (PST) indices were used to assess overall psychopathological status and general psychological well-being. Reliability analysis with the current sample was found to be good for the total BSI ($\alpha = .97$).

The Personal Style Inventory (PSI) (Sheridan, 2003; Sheridan & Radmacher, 1998). The PSI measures stress resiliency (an individual's ability to "bounce back" from stressful events). The scale provides a broad assessment of the range of personal factors that mediate reactions to stressful events. Items reflect attitudes, coping styles, cognitive patterns, habits, and competencies that have been identified as "resilience." The PSI is a 75-item checklist inventory measuring the full range of personal factors influencing reactions to stress. It is appropriate for use with adults with at least a 7^{th} grade reading level and requires approximately 5 to 15 minutes to complete. Respondents indicate a "yes" if the item applied to them and "no" if the item did not apply to them. Each *yes* response was counted as an endorsement, except for the 29 reverse keyed items which were reverse coded. In those cases a *no* response was counted as an endorsement. The total PSI score was obtained by summing the number of points across all items, with a lower score being indicative of greater resilience to stress. The three subscales were scored by totaling the endorsements for each subset of PSI items.

The first factor, *Attitudes and Coping Skills* (30 items), reflects positive attitudes and competencies encompassing concepts important in the stress resistance literature including hope,

optimism, sense of coherence, coping skills, primitive versus mature defense, meaningfulness, challenge, social competence, structure and organization, and self-efficacy. This subscale reflects negative versus positive attitudes and the various competencies for resisting stress. The second factor, *Hypersensitivity/Criticism* (19 items), reflects perfectionistic sensitivity coupled with self-criticism, self-abnegation, and over-involvement with others. The third subscale, *Communication/Expressiveness* (8 items) reflect communication and expressiveness, a concept linked to stress reactivity.

The PSI has been reported to have good internal consistency, reliability coefficients ranging from .90-.91 (Harmless, 1996), with an α of .91 obtained from a sample of 758 participants (Sheridan, Radmacher, & Petren, 1997). Coefficient alphas for the three subscales; Positive Attitudes/Coping Skills, Hypersensitivity/Criticism, and Communication / Expressiveness were .86, .84, and .80, respectively. Test-retest data was .89. Reliability analysis of individual items for the total PSI yielded a Cronbach's alpha of $\alpha = .87$.

Demographic Information: Demographic information including gender, age, and parents' ethnicity was collected. Maltreatment variables, such as duration, frequency, and severity of abuse have not been sufficiently measured on the CTQ or in the maltreatment literature (Malinsoky-Rummel & Hansen, 1993). These variables have been shown to moderate outcomes of sexual abuse and to be a critical component in later adjustment (Browne & Finkelhor, 1986). As such, four additional questions regarding maltreatment history were added to complement the standardized maltreatment questionnaire (CTQ). Participants indicated whether they believe they had been maltreated in childhood (e.g., neglect, sexual/physical/emotional abuse). A confirmation of maltreatment led to further questions regarding the seriousness/severity of the maltreatment incident(s) experienced, ranging from

tolerable (1) to *extremely severe* (5). Participants indicated to what extent they feel the maltreatment incident(s) impacts their current lives (*"I have not been maltreated/abused/neglected,"* "*it affects everything I do,*" "*it affects a lot of my life, but not everything I do and feel,"* and "*it does not affect my life or feelings at all*"). A question regarding the frequency with which they believe the maltreatment (e.g., neglect, sexual/physical/emotional abuse) occurred was presented in order to determine severity of maltreatment (*never, once or twice, several times,* and *frequently*). In order to determine whether current adjustment difficulties were long-term consequences of childhood maltreatment or short-term responses to recent maltreatment experiences, participants indicated the last time a maltreatment incident occurred, *"In your best estimate, how long ago has* ***any*** *maltreatment occurred?"* The response options were as follows; *"Never," "It is still occurring," "1-2 years ago," or "3-7 years ago."*

Given that resilience research has shown that individuals who were considered better able to cope with stressful life events were academically competent, participants reported on their academic history including past and current academic problems, (e.g., "*Have you ever sought professional help for a learning problem,*" and "*Are you currently experiencing academic problems*"). Furthermore, participants indicated whether they believe their parents had/or currently have a gambling or substance use disorder. Given that the aim of this study was to examine the risk factors related to negative childhood and adolescence experiences, participants were also asked whether they ever had received professional help for an emotional/psychological problem.

Procedure

All English CEGEPs throughout the Montreal Region were contacted and formal applications to conduct research were made. Once the research was approved, individual professors across all disciplines were approached to have their students participate. This involved contacting professors via email and telephone to ask if they would be willing to receive an information package including a description of the research study, the procedure, copies of the CEGEP approval letter, consent forms, a copy of the questionnaire, and the approved Ethics Certificate. Data collection was organized at a mutually agreeable time. The principal investigator was primarily responsible for administering the questionnaire in individual classrooms.

Informed consent from students was obtained prior to their participation. Participants were informed that the study examined etiological factors and a number of different issues related to gambling, substance use, experiences growing up as a child, and high risk behaviors among young adults. Participants were informed that participation was voluntary and they could terminate their participation at any time without consequence. Due to the sensitive nature of the study and to ensure that no harm would occur as a result of some of the questions posed, participants were provided with the name and number of the principal investigator should they desire to speak with someone regarding the content of the questionnaire. Participating students required between 45-60 minutes to complete all instruments. No deceptive practices were included and participants were assured of anonymity, confidentiality, and were randomly assigned an identification number. Professors were asked to either leave the room or to remain at the front of the classroom in order to respect participants' confidentiality and participants completed the questionnaire individually. While gambling can be defined as wagering something

of financial value (e.g., jewellery), for this study, gambling was defined as an activity that involved an element of risk whereby *money* is wagered. The principal investigator was present at all times to answer any questions and provide clarification if necessary.

Data coding and entry. The data was coded and entered using a Fugitsu scanner (Scan partner 620C) and Optimal Mark Recognition software (Remark Office OMR 5.5). This software recognizes optimal marks (bubbles and checkboxes) and barcodes. Once the data was collected, completed questionnaires were scanned into the image scanner and subsequently saved as an SPSS 11.0 file set for analysis. This procedure has proven to have a very low data entry error rate.

CHAPTER IV

RESULTS

The results section is presented in two parts. The first section delineates demographic and descriptive information for the entire sample, gender differences, gambling groups, and substance use groups. The testing of hypotheses relevant to the current study is presented in the second section. Regressions conducted in the second section corrected for the potential bias involved when conducting multiple comparisons.

Data Analyses

Participants were divided into groups based upon gambling severity as measured by their gambling behavior (Gambling Activities Questionnaire) and the DSM-IV gambling diagnostic criteria. These groups included non-gamblers, social gamblers (DSM-IV score 0-2), at-risk gamblers (DSM-IV score 3-4), and pathological gamblers (DSM-IV score $\geq$ 5). Analyses included a series of statistical procedures using SPSS 11.0. The original research design involved conducting a MANOVA with gambling groups and gender entered as grouping

variables) to determine whether there were significant differences within the grouping variables on the dependent measures. Dependent measures included measures of childhood maltreatment (CTQ; emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect), psychological symptomology (BSI; global severity index, positive symptoms total, positive symptom distress index), current level of stress (PSS), and stress resiliency (PSI; total score, coping/attitude, hypersensitivity/criticism, communication/expressiveness). Initial analyses did not reveal any significant differences between individuals classified as at-risk or pathological gamblers on any of the dependent variables.

There is currently a debate in the gambling literature as to whether at-risk and pathological gamblers are in fact two distinct groups. Based upon recent studies conducted by Kaufman (2002) and Hardoon et al. (2004), these two groups were not significantly different from one another. As such, all reported ANOVAs, MANOVAs, and logistic regressions were conducted with the combined at-risk and pathological gambling group, referred to as the *problem gambler group*. The combination of these two gambling groups provided for more meaningful comparisons, as group size was significantly increased and thus the analyses were more powerful.

Missing Data

Preliminary analyses of the data revealed that a small number of participants omitted items on subscales of the PSI, CTQ, ADI, and on the BSI. Typically, when there is missing data, subscale scores are not computed. While this does not appear to be a large number given the overall sample size, the entire case is often excluded when there is any missing data. Given that this loss was determined to be unduly restrictive, an appropriate method to replace missing data was based upon instructions provided by the instrument technical manual. According to the

technical manual, the BSI may still be valid as long as no more than 25% ($\geq$ 13 items) are omitted. Any omissions less than 13 out of 53 items allows for the calculation of the global severity index without substantially affecting it (Derogatis, 1993). Any cases missing more than 13 items were counted as missing data and excluded from the analyses. For this measure, a total of 37 cases (2.8%) of sample were considered as missing data. When less than 13 items were missing, corrections for missing data were made on the nine primary symptom dimensions subscales and the three global indices. The corrections made for missing data were computed by using the actual number of responses (rather than the total possible number of responses) for the denominator in the division of summed scores (Derogatis, 1993). For example, if the sum of the item values was 75 and the respondent omitted 3 out of the 53 items, the global severity index would be 75/50 or 1.50. Similar adjustments were made to each of the subscale scores in order to achieve an adjusted estimate of the BSI profile. Before adjustments were made, an examination of the data was conducted to ensure that missing data was randomly distributed and not a result of serious distortions.

Unlike the BSI, the CTQ does not offer specific instructions for dealing with missing data. A mean score for each scale was calculated with cases missing more than three items per subscale counted as missing data. Across the five subscales, 19 participants were counted as missing data. Examination of the data revealed that missing data usually occurred across all five of the subscales and not in any one specific subscale. To further confirm the validity of responses a lie scale was computed according to the instrument technical manual with values of 0 suggesting a valid report of maltreatment and scores of 1-3 suggestive of underreporting maltreatment (false negatives) (Bernstein & Fink, 1998). A chi-square analysis was conducted to determine whether participants who under-reported maltreatment on the CTQ differed from

those who did not under-report on the rest of the scale in order to determine whether these participants should be removed from further analyses. Results revealed that participants who under-reported on the CTQ provided similar responses to individuals who did not under-report, χ^2 (3, N = 1318) = 2.53, p = .47. Moreover, an ANOVA was performed to determine whether there was a difference in under-reporting among the four gambling groups. The pathological gamblers did not significantly differ from the non-gamblers, social gamblers, or at-risk gamblers with respect to under-reporting of childhood maltreatment. Given that no pattern or discernable difference amongst the gambling groups was found, it is unlikely that under-reporting had a significant effect on the results.

The *Adolescent Diagnostic Interview –Light* (ADI) is a structured diagnostic interview to formally assess DSM-IV criteria for substance abuse and substance dependence. Each symptom criteria (e.g., tolerance, withdrawal) for substance abuse and dependence were scored as follows; if questions 1, 2, *or* 3 was positively endorsed, the participant met symptom criteria. Given that the participant was required to endorse only one question in order to meet symptom criteria, randomly missing items did not pose a problem. In order to meet criteria for substance dependence, at least 3/7 criteria were required to be present, whereas to meet diagnostic criteria for substance abuse 1/4 criteria were required. Given the requirement that 3/7 criteria were required for a diagnosis of substance dependence and 1/4 criteria were required for a diagnosis of substance abuse, randomly missing data did not affect the total scores. For example, if a participant omitted three criteria but had three positively endorsed symptom scores, they still met the criteria for substance dependence, since only three positive endorsements were required to be considered as having a substance use disorder.

Like the CTQ, there were no formal suggestions for dealing with missing data on the PSS or the PSI (Sheridan, personal communication, May 7, 2004). As such, an extrapolated formula was developed to calculate the value in order to replace the missing item for both these scales:

> Extrapolated Raw Score = (Score for Non-Missing Items) * [(Total Number of Items on the Scale) / (Total Number of Non-Missing Items for the Scale)].

This formula was applied if there were less than 15% of missing items on the total scale and the three subscales of the PSI. Across the PSI total scale and the three subscales combined, 2.5% of responses resulted in missing cases (N = 33). In addition to the long version of the PSS that was used for this study, the PSS scale also contains a short form consisting of four items. Given the good statistical validity of the short form (Cohen et al., 1983), it was decided that respondents must respond to at least 4/10 items into order to calculate a score. Any individual missing more than four items was omitted (N = 10). Although some researchers have argued against calculating scores for measures when there is missing data, this rule is primarily applied to scales used for a clinical population and for clinical purposes. Given that the current study consists of a community sample and for research purposes the use of the above procedures for missing data rather than excluding cases was deemed viable.

Gambling Prevalence and Participation

Gambling Groups

The DSM-IV (APA, 2000; Stinchfield, 2003) assesses a number of important variables related to pathological gambling: progression and preoccupation, tolerance, withdrawal and loss of control, escape, chasing, lies and deception, illegal activities, and family or school disruption. This screen, along with the GAQ, assessing past year gambling behavior was used to classify participants into four groups; *Non-Gambler* (no gambling during the past year), *Social Gambler* (DSM scores of 0-2), *At-Risk Gambler* (DSM scores of 3-4), and *Pathological Gambler* (DSM

scores of ≥ 5). As depicted in Table 3, 21.5% of participants were classified as non-gamblers, 72.2% as social gamblers, 4.2% as at-risk gamblers, and 2.1% as pathological gamblers. With respect to gender differences, males reported significantly more gambling problems than females, χ^2 (3, N = 1323) = 42.87, p = .01. More specifically, males were 6 times more likely to be classified as a pathological gambler and 3.5 times more likely to be classified as an at-risk gambler than females. Pathological gambling was the lowest in the first year of CEGEP and jumped significantly in year 2 and year 3[2], χ^2 (6, N = 1302) = 16.48, p = .01. A chi-square analysis revealed that this difference was due to skewed gender differences, with significantly χ^2 (3, N = 705) = 18.08, p = .001 more females than males (n = 422 versus n = 283) in Year 1 of CEGEP.

Table 3

Gambling Severity by Gender and Developmental Level

Sample				Gambling Group			
				Non-gambler (n=285)	Social-gambler[1] (n=955)	At-Risk gambler[2] (n=55)	Pathological gambler[3] (n=28)
	N	M age	SD	%	%	%	%
Gender							
Male	566	18.72	1.49	18.4	70.5	7.1	4.1
Female	757	18.61	1.53	23.9	73.4	2.0	0.7
CEGEP							
Year 1	705	18.01	1.33	23.8	70.9	4.3	1.0
Year 2	381	18.90	1.17	19.9	72.7	3.9	3.4
Year 3	216	20.34	1.14	15.3	77.3	3.7	3.7
TOTAL	1327	18.66	1.51	21.5	72.2	4.2	2.1

[1] DSM IV score (0-2). [2] DSM IV score (3-4). [3] DSM score (≥ 5). 4 participants did not complete the GAQ or DSM IV.

[2] It should be noted that most individuals in years 2 and 3 of CEGEP were of legal age (≥ 18) to engage in provincially regulated forms of gambling whereas those in year 1 were generally underage (≤ 17).

Participation in Gambling Activities

Participants were asked about their general gambling behavior and frequency of such behavior within the past 12 months. Overall, results of Chi-square analyses revealed that a large percentage of students engaged in multiple gambling activities within the past year. Overall, 78.1% of students reported gambling within the past year (81.3% males, 75.8% females). The distribution of gambling involvement and gambling participation by gender can be found in Table 4.

Table 4

Involvement in Gambling Activities: Gender Differences

Activities	Gambling Involvement[a]				
	Never	Occasional[1]		Regular[2]	
		Male	Female	Male	Female
Cards**	62.5	37.7	28.7	7.7	2.9
Scratch tickets*	52.8	41.7	46.9	1.9	3.0
Lottery draws	66.5	30.3	31.2	3.7	2.0
Sports lottery**	87.9	19.5	3.3	4.3	0
Sports pools**	82.3	28.1	7.0	3.7	0.1
Bingo**	84.3	9.9	18.9	0.5	0.8
Casino	70.3	32.6	25.5	2.5	0.1
VLT machines**	76.3	27.5	18.7	2.5	0.3
Internet*	96.9	2.8	2.6	0.9	0
Stock Market**	92.6	10.4	3.2	2.3	0.3
Racetrack**	97.2	4.0	1.1	0.9	0.1
Other	92.7	11.3	2.1	2.3	0.4

[a] Percentage. [1] Refers to gambling less than once a week. [2] Refers to gambling once a week or more
*$p < .05$. **$p < .001$.

Gambling activity preferences were analyzed by gambling group. With respect to regular involvement in gambling activities, pathological gamblers reported engaging in all activities significantly more than social gamblers and at-risk gamblers. A linear trend across gambling severity was observed, with those experiencing greater gambling-related problems participating

in all gambling venues on a more frequent basis. Detailed information regarding gambling activity preferences among the gambling groups is presented in Table 5.

Table 5

Regular[a] Involvement in Gambling Activities: Gambling Severity

Activities	Gambling Groups					
	Social Gambler[1] %	At-Risk Gambler[2] %	Pathological Gambler[3] %	χ^2	df	*p*
Cards**	3.9	32.7	39.3			
Scratch tickets**	2.4	7.3	25.0	387.96	(6, 1323)	.001
Lottery draws**	2.3	16.4	17.9	254.59	(6, 1323)	.001
Sports lottery**	1.2	10.9	25.9	188.60	(6, 1318)	.001
Sports pools**	1.1	10.9	21.4	192.93	(6, 1318)	.001
Bingo**	0.8	0	3.6	73.27	(6, 1321)	.001
Casino**	0.7	5.5	17.9	252.09	(6, 1322)	.001
VLT machines**	0.5	7.3	25.0	290.08	(6, 1320)	.001
Internet**	2.7	10.9	14.3	70.81	(6, 1319)	.001
Stock Market**	0.8	3.6	17.9	120.44	(6, 1322)	.001
Racetrack**	0.2	1.8	10.7	113.24	(6, 1321)	.001
Other**	0.9	1.8	22.2	151.91	(6, 1321)	.001

[a] Refers to gambling once a week or more. [1] DSM-IV score (0 - 2). [2] DSM-IV score (3 - 4). [3] DSM-IV score (≥ 5). ** $p < .001$.

Prevalence of Substance Use Problems

The *Adolescent Diagnostic Interview* (ADI) was used to assess DSM-IV substance use problems. Overall, 21.3% of the sample demonstrated substance abuse symptoms. As illustrated in Table 6, males were significantly more likely than females to endorse all substance abuse criteria and to meet the criteria for substance abuse than females.

Table 6

Endorsed Substance Abuse Criteria: Gender Differences

ADI - Substance Abuse[1]	DSM-IV Criteria					
	Male %	Female %	TOTAL %	χ^2	df	*p*
CRITERIA						
1. Role impairment**	32.4	20.9	25.8	22.43	(1, 1313)	.001
2. Hazardous use**	29.7	12.7	20.0	57.56	(1, 1298)	.001
3. Legal problems**	19.3	4.7	10.9	70.25	(1, 1311)	.001
4. Social problems**	34.5	15.8	23.8	61.93	(1, 1309)	.001
Substance abuse diagnosis**	25.1	18.5	21.3	8.40	(1, 1312)	.004

[1] Substance abuse pre-empts a diagnosis of substance dependence. ** $p < .001$.

Overall, 19.2% of the sample demonstrated symptoms of substance dependence. As seen in Table 7, males met the criteria for all substance dependence symptoms significantly more often than females and were twice as likely to meet the criteria for a substance dependence.

Table 7

Endorsed Substance Dependence Criteria: Gender Differences

ADI - Substance Dependence[1]	DSM-IV Criteria					
	Male %	Female %	TOTAL %	X^2	df	*p*
CRITERIA						
1. Tolerance**	28.7	17.1	22.1	25.04	(1, 1305)	.001
2. Withdrawal**	23.8	17.3	20.1	8.36	(1, 1301)	.004
3. Use more than intended**	34.3	19.9	26.0	33.76	(1, 1272)	.001
4. Cannot cut down**	36.7	25.3	30.2	19.50	(1, 1299)	.001
5. Time obtaining & recovering from substances**	20.1	9.4	13.9	30.41	(1, 1298)	.001
6. Reduced activities**	17.4	8.0	12.0	26.35	(1, 1297)	.001
7. Psych/physical problems*	9.3	5.9	7.3	5.26	(1, 1297)	.022
Substance dependence diagnosis**	26.5	13.7	19.2	33.69	(1, 1310)	.001

[1] Substance dependence is the continued use of substances despite significant substance related problems.
* $p < .05$ ** $p < .001$.

Comorbidity of Substance Use Problems and Gambling

Given the empirical findings regarding the considerable overlap between different types of addictions, chi-square analyses were conducted in order to investigate the relationship between excessive gambling and substance misuse. As depicted in Table 8, a significant difference across gambling group was found with respect to substance abuse symptoms. A significantly greater percentage of pathological gamblers and at-risk gamblers met the criteria for substance abuse compared to social gamblers and non-gamblers (see Table 8).

Table 8

Endorsed Substance Abuse and Dependence Criteria: Gambling Severity

ADI - Substance Use	Gambling Group						
	NG° %	SG[1] %	At-Risk[2] %	PG [3] %	χ^2	df	*P*
Substance Abuse Criteria							
1. Role impairment**	13.6	28.1	38.9	42.9	33.60	(3, 1309)	.001
2. Hazardous use**	8.7	22.2	33.3	32.1	33.76	(3, 1294)	.001
3. Legal problems**	5.4	11.9	20.4	17.9	16.07	(3, 1307)	.001
4. Social problems**	13.6	24.8	53.7	35.7	45.46	(3, 1305)	.001
Substance Abuse Dx*	13.9	22.6	29.6	32.1	14.28	(3, 1308)	.003
Substance Dependence Criteria							
1. Tolerance**	14.3	23.4	33.3	35.7	17.65	(3, 1301)	.001
2. Withdrawal**	13.3	21.3	35.8	17.9	17.11	(3, 1297)	.001
3. Use more than intended**	15.6	27.8	44.2	42.3	25.59	(3, 1268)	.001
4. Cannot cut down**	21.2	32.4	42.3	17.9	18.53	(3, 1295)	.001
5. Time obtain/recover from substances**	8.2	14.5	26.9	25.0	18.02	(3, 1294)	.001
6. Reduced activities**	7.2	12.4	21.6	28.6	18.03	(3, 1293)	.001
7. Psych/physical problems*	6.1	6.6	19.2	21.4	20.28	(3, 1293)	.025
Substance Dependence Dx*	10.8	20.5	35.2	28.6	24.37	(3, 1306)	.001

° Non-gambler, [1] Social gambler (DSM-IV score 0-2), [2] At-risk gambler (score 3-4), and [3] Pathological gambler (score ≥ 5).
* $p < .05$ ** $p < .001$.

Similar to the increase of substance abuse diagnoses with excessive gambling behavior, the frequency of participants with gambling problems who endorsed substance dependence criteria was significantly higher compared to participants without gambling problems (Table 8). The only criteria for which a greater frequency of non-gamblers reported having difficulty compared to pathological gamblers was "cannot cut down" using substances.

A new variable was created in order to determine the proportion of the sample that was experiencing no addiction problems, substance use problems (collapsed substance abuse and dependence), gambling problems (collapsed at-risk and pathological gambling), and both (comorbid gambling and substance use problems). As seen in Table 9, slightly more than half of the sample (57.4%) did not endorse any problems with addictive related behaviors. Of those individuals that endorsed having an addiction related behaviors, substance use symptoms (combined substance abuse and dependency) was most often endorsed, followed by individuals experiencing problems with gambling and substance use (comorbid group). Males were more likely to meet the criteria for all three addiction groups compared to females. Furthermore, males were 7 times more likely to be experiencing difficulty with both substance use and gambling (comorbid group) than females.

Table 9

Combined Addiction Groups

		GENDER		
ADDICTION GROUPS[a]		Male	Female	TOTAL
No addiction problems	749	45.2	66.4	57.4
Substance abuse/dependence	475	43.7	30.9	36.5
Problem gamblers	30	3.2	1.6	2.1
Comorbid[1]	52	7.9	1.1	4.0
N =	1306			

[a] Percentage. [1] Comorbid group is defined as the participants who endorsed significant problems with both gambling and substance use.

Childhood Maltreatment

The *Childhood Trauma Questionnaire* (CTQ) consists of five subscales and measures different types of maltreatment experienced during childhood. The total maltreatment subscale scores were computed by summing the items for each subscale. As suggested by the technical manual, participants' subscale scores were grouped into four levels of maltreatment based on cut scores (none/minimal, low/moderate, moderate/severe, and severe/extreme) (see Table 10 for details regarding maltreatment types and severity).

Table 10

Severity of Childhood Maltreatment by Gender[a]

CTQ Subscales[1]	Degree of Maltreatment (MT) [2]				
	None or minimal	Low-moderate	Moderate-severe	Severe-extreme	Total MT Endorsement
*Emotional Abuse**					
Male	68.6	20.7	5.6	5.1	31.4
Female	61.0	25.0	7.5	6.5	39.0
Total	64.3	23.1	6.7	5.9	35.7
Physical Abuse					
Male	79.0	10.8	4.9	5.3	21.0
Female	82.2	7.9	4.5	5.4	17.8
Total	80.8	9.1	4.7	5.4	19.2
Sexual Abuse					
Male	89.4	4.9	4.2	1.4	10.5
Female	85.4	4.6	5.8	4.1	14.5
Total	87.2	4.8	5.1	2.9	12.8
*Emotional Neglect**					
Male	56.3	29.4	8.7	5.6	43.7
Female	64.5	26.0	5.4	4.1	35.5
Total	61.0	27.4	6.8	4.8	39.0
Physical Neglect					
Male	66.1	19.8	9.2	4.9	33.9
Female	75.7	14.1	6.5	3.7	24.3
Total	71.6	16.6	7.6	4.2	28.4

[a] Percentage. [1] CTQ = Childhood Trauma Questionnaire. [2] Severity of maltreatment based on standardized cut scores.
*$p < .05$.

Overall, of those individuals that reported any type of maltreatment (combining low/moderate, moderate/severe, severe/extreme in order to determine total maltreatment), emotional neglect emerged as the most frequently endorsed form of maltreatment followed by emotional abuse, physical neglect, physical abuse, and sexual abuse.

With respect to gender differences amongst types of childhood maltreatment, significant differences were found for emotional abuse, χ^2 (3, N = 1324) = 8.26, p = .041, emotional neglect, χ^2 (3, N = 1320) = 11.58, p = .009, and physical neglect, χ^2 (3, N = 1323) = 14.75, p = .002. Females were more likely than males to report emotional and sexual abuse for both the moderate to severe and the severe to extreme groups; whereas, males were more likely than females to report physical abuse, emotional neglect, and physical neglect on both the moderate to severe and the severe to extreme groups.

Maltreatment as a risk factor for excessive gambling

Chi-square analyses were used to examine the relationship between gambling problems and severity of maltreatment. Significant differences across the gambling groups was found for all types of maltreatment; emotional abuse, χ^2 (9, N = 1320) = 29.30, p = .001; physical abuse, χ^2 (9, N = 1320) = 50.92, p = .001; sexual abuse, χ^2 (9, N = 1319) = 24.74, p = .003; emotional neglect, χ^2 (3, N = 1316) = 32.76, p = .001; and physical neglect, χ^2 (9, N = 1319) = 36.92, p = .001 (Table 11). Pathological gamblers reported emotional and physical neglect to be the most commonly experienced form of maltreatment independent of severity, whereas, at-risk gamblers reported emotional abuse and emotional neglect as the most commonly experienced form of maltreatment. As illustrated in Table 11, at-risk gamblers and pathological gamblers reported sexual abuse, emotional neglect, and physical neglect at the moderate to severe degree more frequently than non-gamblers and social gamblers, whereas the endorsement of emotional abuse

was similar between the non-gamblers and pathological gamblers. At the severe to extreme level of maltreatment, at-risk gamblers and pathological gamblers reported experiencing more severe forms of all types of maltreatment compared to non-gamblers and social gamblers.

Table 11

Severity of Childhood Maltreatment by Gambling Severity[a]

CTQ subscale[1]	Degree of Maltreatment [2]				
	None or minimal	Low-moderate	Moderate-severe	Severe-extreme	Total MT Endorsement
*Emotional Abuse***					
Non gambler	62.5	21.2	8.1	8.1	37.4
Social gambler	66.8	22.6	5.9	4.7	33.2
At-risk gambler	38.2	36.4	14.5	10.9	61.8
Pathological gambler	53.6	25.0	7.1	14.3	46.4
					N = 1320
*Physical Abuse***					
Non gambler	84.8	6.0	3.9	5.3	15.2
Social gambler	81.9	8.7	4.8	4.6	18.1
At-risk gambler	50.9	29.1	7.3	12.7	49.1
Pathological gambler	67.9	10.7	3.6	17.9	32.2
					N = 1320
*Sexual Abuse***					
Non gambler	84.8	4.2	6.4	4.6	15.2
Social gambler	89.0	4.7	4.1	2.2	11.0
At-risk gambler	72.7	7.3	14.5	5.5	27.3
Pathological gambler	75.0	7.1	10.7	7.1	24.9
					N = 1319
*Emotional Neglect***					
Non gambler	61.5	24.4	8.5	5.7	38.6
Social gambler	62.6	27.7	5.8	3.9	37.4
At-risk gambler	43.6	34.5	9.1	12.7	56.3
Pathological gambler	32.1	35.7	21.4	10.7	67.8
					N = 1316
*Physical Neglect***					
Non gambler	74.9	14.1	6.4	4.6	25.1
Social gambler	72.0	16.8	7.7	3.6	28.1
At-risk gambler	63.6	18.2	12.7	5.5	36.4
Pathological gambler	33.3	33.3	11.1	22.2	66.6
					N = 1325

[a] Percentage [1] CTQ = Childhood Trauma Questionnaire. [2] Severity of maltreatment based on standardized cut scores. *$p < .05$. **$p < .001$.

The previous analyses examined gambling group by severity of maltreatment history based on the CTQ cut scores. In order to investigate the most severe maltreatment experiences with excessive gambling participation, severity of maltreatment was combined to form only two categories to examine the impact of serious maltreatment upon excessive gambling. The none/minimal and low/moderate categories were combined to examine no or a minimal degree of maltreatment and the moderate/severe and severe/extreme groups. Chi-square analyses performed on the gambling groups by level of maltreatment revealed significant differences for all five types of maltreatment; emotional abuse, χ^2 (3, N = 1320) = 17.11, p = .001; physical abuse, χ^2 (3, N = 1320) = 10.64, p = .014; sexual abuse, χ^2 (3, N = 1319) = 21.28, p = .001; emotional neglect, χ^2 (3, N = 1316) = 22.25, p = .001; and physical neglect, χ^2 (3, N = 1320) = 17.79, p = .001. As seen in Figure 1, at-risk and pathological gamblers were significantly more likely than non-gamblers and social gamblers to report a severe history of maltreatment, independent of maltreatment type.

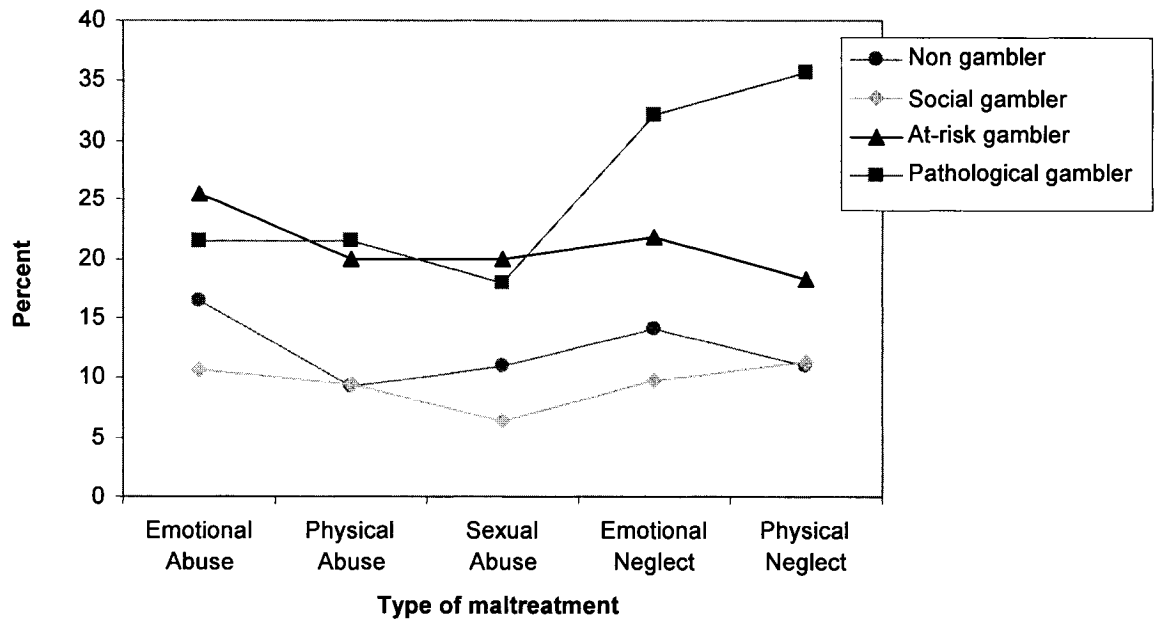

Figure 1: Moderate to extreme maltreatment by gambling severity

In order to examine the interaction effects of gender, problematic gambling, and childhood maltreatment, several 2 X 3 univariate factorial analyses were conducted (gender by three levels of gambling behavior for each interaction). The at-risk and pathological gambling groups were combined, given no statistically significant differences were found amongst these two groups on the preliminary MANOVA and based upon the significant commonalities between at-risk and probable pathological gambling groups. For all types of maltreatment, the level of gambling problems increased with reported childhood maltreatment, with problem gamblers reporting the highest maltreatment scores. Significant differences across gambling groups were found for all types of reported maltreatment. A significant main effect of gambling group was found for emotional abuse, $F(2, 1317) = 9.151, p = .001$; physical abuse, $F(2, 1318) = 15.49, p = .001$; sexual abuse, $F(2, 1317) = 5.09, p = .006$; and emotional neglect, $F(2, 1317) = 7.78, p = .001$ (see Table 12). Physical neglect was the only CTQ subscale where both a significant main effect of gender, $F(1, 1319) = 6.04, p = .014$, and a significant main effect of gambling group, $F(2, 1319) = 8.47, p = .001$ were found. Examination of Tukey's post hoc analyses revealed that non-gamblers ($p = .008$) and social gamblers ($p = .001$) differed significantly from the problem gamblers with respect to the amount of emotional abuse, physical abuse, emotional neglect, and physical neglect experienced. With regards to sexual abuse, non-gamblers differed significantly ($p = .035$) from social gamblers, and social gamblers significantly differed ($p = .003$) from problem gamblers, however, problem gamblers and non-gamblers did not significantly differ from one another. In this sample, compared to non-gamblers and pathological gamblers, social gamblers reported the lowest sexual abuse scores. Interestingly, while pathological

gamblers reported that highest rates of all types of childhood maltreatment compared to the other gambling groups, non-gamblers reports of childhood maltreatment exceeded that of the social gamblers.

Table 12

Childhood Maltreatment by Gender and Gambling Severity

CTQ subscales[a]	Gambling Group						
		Non Gambler		Social Gambler[1]		Problem Gambler[2]	
	N	M	SD	M	SD	M	SD
*Emotional Abuse***							
Male	564	8.24	3.77	7.66	3.12	9.89	4.98
Female	753	8.75	4.24	8.37	3.74	10.10	3.11
Total	1317	8.57	4.08	8.07	3.51	9.94	4.59
*Physical Abuse***							
Male	565	6.33	2.14	6.45	2.63	7.95	4.38
Female	754	6.54	3.36	6.31	2.63	9.00	4.61
Total	1318	6.47	2.97	6.37	2.63	8.20	4.43
*Sexual Abuse**							
Male	565	5.35	1.52	5.27	1.16	6.54	3.88
Female	753	6.31	3.65	5.73	2.66	6.30	2.58
Total	1317	5.96	3.08	5.54	2.18	6.48	3.59
*Emotional Neglect***							
Male	565	9.88	4.04	9.49	4.09	11.51	5.33
Female	753	8.93	4.46	8.73	3.94	11.00	4.38
Total	1317	9.27	4.33	9.05	4.02	11.39	5.10
*Physical Neglect***							
Male	565	6.95	2.41	6.83	2.40	8.51	4.06
Female	755	6.43	2.45	6.53	2.35	7.55	2.37
Total	1329	6.62	2.45	6.65	2.38	8.28	3.74

[a] CTQ = Childhood Trauma Questionnaire. [1] DSM-IV score (0-2). [2] Combined at-risk and probable pathological gambling group (DSM-IV score ≥ 3). $*p < .05$. $**p < .001$.

An Independent Sample t-test was conducted in order to examine gender differences by gambling group on the CTQ subscales. With respect to non-gamblers, females were found to have significantly higher mean scores on the sexual abuse subscale, t (261.62) = -2.53, $p = .012$, than males. Of the social gamblers, females were found to have higher mean scores on the emotional abuse subscale, t (928.36) = 3.19, $p = .001$, and on the sexual abuse subscale,

[t (803.59) = -3.62, p = .001], while males reported higher mean scores on the emotional neglect subscale, [t (839.53) = 2.86, p = .004], and on the physical neglect subscale, [t (847.17) = 1.95, p = .050]. While no significant gender differences were found amongst the problem gamblers, female problem gamblers reported slightly higher mean scores on the emotional abuse and physical abuse subscales and male problem gamblers reported higher mean scores on the sexual abuse, emotional neglect, and physical neglect subscales (see Table 12).

Independent of the CTQ measure, participants were asked to indicate whether they believe the maltreatment experience has impacted their lives. Of those who reported a history of childhood maltreatment, 3.9% of non-gamblers, 2.2% of social gamblers, 10.9% of at-risk gamblers, and 14.8% of pathological gamblers reported that it has affected everything they do and feel in their daily life.

Maltreatment as a risk factor for excessive substance use

In order to make the comparison between problem gamblers and substance users with respect to childhood maltreatment, chi-square analyses were conducted to examine the relationship between maltreatment history and subsequent substance use problems. Significant differences among the substance groups was found for the following types of maltreatment; emotional abuse, χ^2 (6, N = 1308) = 17.92, p = .006; physical abuse, χ^2 (6, N = 1308) = 19.47, p = .003; emotional neglect, χ^2 (6, N = 1304) = 22.59; p = .001; and physical neglect, χ^2 (6, N = 1308) = 16.52, p = .011. As illustrated in Table 13, the percentage of participants who reported any type of maltreatment increased as their level of substance problems increased. A higher proportion of participants with a substance abuse and substance dependence diagnosis reported a history of childhood maltreatment compared to individuals with no substance use problems.

Table 13

Severity of Childhood Maltreatment by Substance Group[a]

CTQ subscale[1]	Degree of Maltreatment[2]				
	None/ minimal	Low-moderate	Moderate-severe	Severe-extreme	Total MT Endorsement
*Emotional Abuse**					
No substance problems	68.2	20.9	6.2	4.7	31.8
Substance abuse	61.9	23.4	6.5	8.3	38.2
Substance dependence	55.2	28.8	9.2	6.8	44.8
					N = 1308
*Physical Abuse**					
No substance problems	84.7	7.4	3.6	4.2	15.2
Substance abuse	76.6	12.2	5.0	6.1	23.3
Substance dependence	74.4	10.8	6.8	8.0	25.6
					N = 1308
Sexual Abuse					
No substance problems	89.0	4.6	4.5	1.9	11.0
Substance abuse	86.3	4.0	6.1	3.6	13.7
Substance dependence	83.6	6.0	5.6	4.8	16.4
					N = 1304
*Emotional Neglect***					
No substance problems	66.3	24.2	5.5	4.0	33.7
Substance abuse	55.8	30.2	7.9	6.1	44.2
Substance dependence	51.8	33.3	9.6	5.2	48.1
					N = 1304
*Physical Neglect**					
No substance problems	74.7	15.9	5.9	3.5	25.3
Substance abuse	69.8	14.7	9.4	6.1	30.2
Substance dependence	64.4	21.1	10.0	4.4	35.5
					N = 1308

[a] Percentage. [1] CTQ = Childhood Trauma Questionnaire. [2]Severity of maltreatment based on standardized cut scores.
*$p < .05$. **$p < .001$.

Similar to the analyses conducted with the gambling groups, maltreatment severity was re-combined to create no/minimal and moderate/extreme maltreatment groups to examine severity of maltreatment with respect to substance use problems. Significant differences for severity of maltreatment was found among the groups for physical abuse, χ^2 (2, N = 1308) = 11.03, p = .004; emotional neglect, χ^2 (2, N = 1304) = 7.48, p = .024; and physical neglect, χ^2 (2,

$N = 1308) = 9.77, p = .008$. Individuals with a substance abuse and substance dependence diagnosis reported more severe forms of maltreatment, regardless of type, compared to individuals with no substance use problems. Participants with a substance dependence diagnosis reported more severe forms of all types of maltreatment (except physical neglect) than both the substance abuse and no substance use groups (see Figure 2).

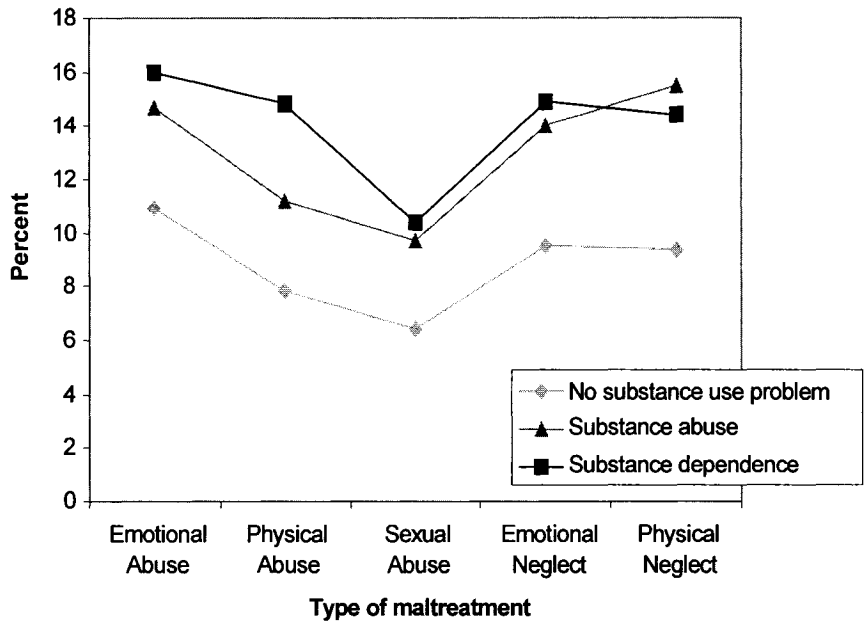

Figure 2: Moderate to extreme maltreatment by substance group

Given the goal of this study was to compare substance use problems with gambling problems and the role of childhood victimization and its relationship to addiction, univariate analyses with maltreatment subtypes and level of substance use was performed. For all types of maltreatment, the level of substance use problems increased with reported childhood maltreatment. Individuals with no substance use problems reported the lowest maltreatment scores, whereas, those who met the criteria for substance dependence reported the highest maltreatment scores. As seen in Table 14, a significant main effect of gender was found on four

of the five maltreatment subscales; emotional abuse, [$F(1, 1305) = 12.60, p = .001$]; sexual abuse, [$F(1, 1307) = 17.85, p = .001$]; emotional neglect, [$F(1, 1306) = 5.81, p = .016$]; and physical neglect, [$F(1, 1308) = 8.08, p = .005$]. A significant main effect of substance group was found for all five types of maltreatment; emotional abuse, [$F(2, 1305) = 13.12, p = .001$]; physical abuse, [$F(2, 1307) = 8.94, p = .001$]; sexual abuse, [$F(2, 1307) = 5.68, p = .003$]; emotional neglect, [$F(2, 1306) = 7.08, p = .001$]; and physical neglect, [$F(2, 1308) = 4.58, p = .010$].

Table 14

Childhood Maltreatment by Gender and Substance Group

CTQ subscales[1]		Substance Groups					
		No Substance Use Problems		Substance Abuse		Substance Dependence	
	N	M	SD	M	SD	M	SD
*Emotional Abuse***							
Male	559	7.65	3.18	8.23	4.14	8.55	3.60
Female	746	8.07	3.68	9.08	4.11	9.80	3.93
Total	1305	7.92	3.52	8.65	4.14	9.07	3.78
*Physical Abuse***							
Male	560	6.21	2.15	6.66	2.89	7.28	3.69
Female	747	6.21	2.65	6.83	3.19	6.78	3.24
Total	1307	6.21	2.49	6.74	3.04	7.08	3.52
*Sexual Abuse**							
Male	560	5.34	1.43	5.32	1.35	5.69	2.58
Female	747	5.60	2.30	6.34	3.66	6.39	3.79
Total	1307	5.51	2.04	5.83	2.79	5.98	3.14
*Emotional Neglect***							
Male	560	9.49	4.23	9.80	4.41	10.30	4.24
Female	746	8.44	3.92	9.41	4.22	9.82	4.37
Total	1306	8.81	4.07	9.61	4.31	10.10	4.29
*Physical Neglect**							
Male	560	6.80	2.32	6.90	2.79	7.57	3.09
Female	748	6.36	2.24	6.97	2.72	6.59	2.27
Total	1308	6.51	2.28	6.93	2.75	7.16	2.82

[1] CTQ = Childhood Trauma Questionnaire. *$p < .05$. **$p < .001$.

Results of Tukey's post hoc analyses revealed significant differences among individuals with no substance use problems and those with substance related problems with respect to emotional abuse, physical abuse, emotional neglect, and physical neglect. With regards to sexual abuse, individuals with no substance use problems differed significantly only from those individuals classified as substance dependent but not from those identified with a substance abuse disorder.

The data set was divided by substance use group and Independent Samples t-tests were performed on the maltreatment subscales (CTQ) to test for gender differences. Males with no substance problems reported significantly higher emotional neglect mean scores, [t (522.13) = 3.41, p =.001], and higher physical neglect mean scores, [t (538.69) = 2.56, p = .011] than females. Of the individuals with a substance use problem, female substance abusers reported significantly higher mean scores on the sexual abuse subscale, [t (172.99) = -3.07, p = .001], than males. Moreover, females diagnosed with substance dependence were significantly more likely than males, [t (205.03) = -2.55, p = 0.12], to report emotional abuse; whereas, males with substance dependence problems were significantly more likely than females, [t (247.46) = 2.88, p = .004], to report physical neglect (see Table 14).

Participants were asked whether they believe the maltreatment experience has impacted their lives. A significant difference between substance groups was found, χ^2 (6, N = 1294) = 21.64, p = .001. Approximately 15% of participants with no substance use problems, 21.3% of substance abusers, and 23.9% classified as substance dependent reported that the past victimization affects their life, but not everything they do or feel. Moreover, compared to 2.8% of participants with no substance use problems, 3.6% of substance abusers and 3.7% of those classified as substance dependent reported that their past victimization experiences affects everything they do.

Psychological Problems

The *Brief Symptom Inventory* (BSI) was used to measure current, point-in-time, psychological symptom status. Raw scores for each of the nine subscales and three global dimensions were summed and divided by using the actual number of responses (rather than the total possible number of responses) for the denominator in the division of summed scores. The total for each scale was transformed into T-Scores ($M = 50$, $SD = 10$) according to the test manual (T-Scores were covaried for age and gender). In order to determine the proportion of participants who scored in the clinical range on each of the nine primary symptom dimensions and three global indices, scores were divided into normal ($T \leq 59$), borderline range (1 *SD* above the mean) ($T = 60 - 69$), and clinical range (≥ 2 *SD* above the mean) ($T \geq 70$). These cutoffs are frequently used in psychological self-report measures (Briere, 1996).

The Global Severity Index (GSI) was used as an indicator of the respondents' distress level, combining information about numbers of symptoms and intensity of distress. Overall, 40.3% of the respondents indicated psychological distress in the clinical range. The Positive Symptom Distress Index (PSDI) provided information about the average level of distress the respondent experienced, with 37.6% indicating distress in the clinical range. Finally, the Positive Symptom Total (PST) was used as an indicator of psychological symptoms endorsed. Forty-one percent of participants reported positive psychological symptoms (see Table 15).

Table 15

Psychological Symptoms: Total Sample[a]

BSI Subscale°	Clinical Cutoffs		
	Normal (≤ 59)	Borderline (60-69)[1]	Clinical (≥ 70)[2]
Somatization	71.6	21.6	6.8
OCD	60.4	25.5	14.1
Interpersonal Sensitivity	58.2	28.9	12.8
Depression	57.3	27.6	15.2
Anxiety	71.1	18.7	9.7
Hostility	58.5	24.6	16.9
Phobic Anxiety	68.4	24.4	7.2
Paranoid Ideation	60.5	23.7	15.9
Psychoticism	54.0	26.9	19.1
Global Severity Index	59.7	23.4	16.9
Positive Symptom Total	58.7	26.6	14.7
Positive Symptom Distress	62.4	29.7	7.9

[a] Percentage. ° BSI = Brief Symptom Inventory. [1] Borderline range (T-scores between 60 - 69). [2] Clinical range (T-scores ≥ 70).

Chi-square analyses were conducted to assess the relationship between psychological problems and gender differences. Significant gender differences were observed for depression, [χ^2 (2, N = 1287) = 16.80, p = .001]; somatization, [χ^2 (2, N = 1287) = 15.19, p = .001]; OCD, [χ^2 (2, N = 1287) = 18.36, p = .001]; interpersonal sensitivity, [χ^2 (2, N = 1287) = 58.80, p = .001]; anxiety, [χ^2 (2, N = 1287) = 18.76, p = .001]; hostility, [χ^2 (2, N = 1287) = 8.11, p = .017]; phobic anxiety, [χ^2 (2, N = 1287) = 24.73, p = .001]; and psychoticism, [χ^2 (2, N = 1287) = 6.29, p = .043]. With the exception of the hostility subscale, females exhibited more psychopathology in the borderline range than the clinical range than males. Males on the other hand, endorsed more psychological problems in the clinical range than females on almost every subscale; somatization, OCD, interpersonal sensitivity, depression, anxiety, phobic anxiety, and psychotisicm. Moreover, males exhibited significantly, χ^2 (2, N = 1287) = 6.35, p = .042 greater overall psychological problems than females on the global severity index (see Table 16).

Table 16

Psychological Symptoms: Gambling Severity

BSI Subscales°	Clinical Cutoffs						
	Normal[1] %	Borderline[2] %	Clinical[3] %	Total %	χ^2	df	*p*
*Somatization**					14.03	(6, 1283)	.030
Non-gambler	73.6	21.4	5.1	26.5			
Social gambler	71.7	21.9	6.5	28.4			
At-risk gambler	60.8	21.6	17.6	39.2			
Pathological gambler	66.7	18.5	14.8	33.3			
*OCD**					14.28	(6, 1283)	.027
Non-gambler	62.2	24.0	13.8	37.8			
Social gambler	60.1	26.7	13.2	39.9			
At-risk gambler	56.9	13.7	29.4	43.1			
Pathological gambler	51.9	25.9	22.2	48.1			
Interpersonal Sensitivity					7.64	(6, 1282)	.265
Non-gambler	56.4	30.9	12.7	43.6			
Social gambler	58.9	28.9	12.2	41.1			
At-risk gambler	52.0	24.0	24.0	48.0			
Pathological gambler	59.3	22.2	18.5	40.7			
Depression					6.97	(6, 1283)	.323
Non-gambler	55.3	28.4	16.4	44.8			
Social gambler	58.4	27.5	14.1	41.6			
At-risk gambler	47.1	27.5	25.5	53.0			
Pathological gambler	51.9	25.9	22.2	48.1			
*Anxiety***					26.67	(6, 1280)	.001
Non-gambler	71.8	17.6	10.6	28.2			
Social gambler	72.6	19.4	8.1	27.5			
At-risk gambler	58.8	13.7	27.5	41.2			
Pathological gambler	59.3	18.5	22.2	40.7			
*Hostility***					23.94	(6, 1283)	.001
Non-gambler	65.5	22.9	11.6	34.5			
Social gambler	57.4	25.5	17.1	42.6			
At-risk gambler	41.2	25.5	33.3	58.8			
Pathological gambler	51.9	14.8	33.3	48.1			
*Phobic Anxiety***					43.33	(6, 1283)	.001
Non-gambler	66.5	24.7	8.7	33.4			
Social gambler	69.9	24.6	5.5	30.1			
At-risk gambler	54.9	27.5	17.6	45.1			
Pathological gambler	59.3	7.4	33.3	40.7			
Paranoid Ideation					10.70	(6, 1283)	098
Non-gambler	65.1	22.9	12.0	34.9			
Social gambler	59.9	23.9	16.2	40.1			
At-risk gambler	47.1	27.5	25.5	53.0			
Pathological gambler	55.6	18.5	25.9	44.4			

Psychoticism					7.33	(6, 1282)	.292
Non-gambler	50.9	26.2	22.9	49.1			
Social gambler	55.4	27.1	17.5	44.6			
At-risk gambler	44.0	30.0	26.0	56.0			
Pathological gambler	48.1	25.9	25.9	51.8			
Global Severity Index					7.99	(6, 1286)	.238
Non-gambler	60.5	23.6	15.9	39.5			
Social gambler	60.2	23.5	16.3	39.8			
At-risk gambler	47.1	25.5	27.5	53.0			
Pathological gambler	53.6	17.9	28.6	46.5			
Pos. Symptom Tot					12.34	(6, 1297)	.055
Non-gambler	58.9	27.9	13.2	42.9			
Social gambler	59.1	26.7	14.2	40.9			
At-risk gambler	46.2	28.8	25.0	53.8			
Pathological gambler	60.7	10.7	28.6	39.3			
Pos. Symptom Distress					6.77	(6, 1228)	.343
Non-gambler	62.3	28.5	9.2	37.7			
Social gambler	63.2	29.8	7.1	36.9			
At-risk gambler	51.0	36.7	12.2	48.9			
Pathological gambler	53.8	30.8	15.4§	46.2			

° BSI = Brief Symptom Inventory. [1] T scores ≤ 59; [2] T scores between 60-69; and [3] T scores ≥ 70.
*$p < .05$. **$p < .001$.

Crosstabulations were conducted to investigate the relationship between gambling severity and psychological functioning. Across all of the psychological subscales, the at-risk and pathological gamblers reported more clinically significant problems (≥ 2 SD above the mean) than non-gamblers and social gamblers. As illustrated in Table 16, pathological gamblers reported hostility and phobic anxiety to be the most common problem, whereas, at-risk gamblers reported clinically significant problems on the hostility subscale. Overall, levels of global psychological problems and positive symptom distress were found to be higher among at-risk and pathological gamblers than among non-gamblers and social gamblers.

In order to determine the mean score differences across the gambling groups, univariate analyses was conducted using the three BSI global scales (Global Severity Index, Positive Psychological Symptoms Index, and the Positive Symptom Distress Index) as the dependent variables and gambling group and gender as the grouping variables.

A significant main effect of gender, [$F(1, 1286) = 11.20, p = .001$], and a significant main effect for gambling severity, [$F(2, 1286) = 7.42, p = .001$], was found on BSI global severity index. Tukey HSD post hoc analyses revealed that problem gamblers endorsed significantly more overall psychological problems than non-gamblers ($p = .018$) and social gamblers ($p = .07$). Non-gamblers and social gamblers did not differ significantly from one another with respect to psychological problems. Significant main effects for gender, [$F(1, 1296) = 11.44, p = .001$], and gambling severity, [$F(2, 1297) = 5.27, p = .005$], were found for the number of positive psychological symptoms endorsed. Individuals with excessive gambling problems reported poorer psychological well being compared to non-gamblers and social gamblers. Moreover, significant main effects for gender, [$F(1, 1294) = 9.04, p = .003$], and gambling severity, [$F(2, 1293) = 4.40, p = .012$], were found on the positive symptom distress index (Table 17).

Table 17

Psychological Symptoms by Gender and Gambling Group

BSI[a]	Gambling Groups						
		Non Gambler		Social Gambler[1]		Problem Gambler[2]	
	N	M	SD	M	SD	M	SD
*Global Severity Index***							
Male	544	.54	.55	.51	.52	.74	.80
Female	742	.65	.69	.67	.64	1.08	.89
Total	1286	.62	.65	.61	.61	.83	.83
*Positive Symptom Total**							
Male	553	17.11	14.15	16.26	12.96	19.85	16.29
Female	744	18.61	13.67	20.14	14.06	28.20	14.87
Total	1297	18.05	13.84	18.53	13.74	21.94	16.27
*Positive Symptom Distress**							
Male	552	1.39	.68	1.43	.60	1.56	.79
Female	742	1.55	.75	1.51	.63	1.89	.77
Total	1294	1.49	.72	1.49	.62	1.64	.79

[a] BSI = Brief Symptom Inventory. [1] DSM-IV score (0 - 2). [2] Combined at-risk and probable pathological gambling group (DSM-IV score ≥ 3). *$p < .05$. **$p < .001$.

The data set was divided by gambling group and an Independent Samples t-test was computed to assess for gender differences. Compared to non-gamblers and social gamblers, male and female problem gamblers reported the highest mean scores on all psychological measures. Regardless of gambling severity, females reported higher mean scores than males on the global severity index, the positive symptom index, and the positive symptom distress index. Amongst the non-gamblers, no significant gender differences were found on the three BSI global scales; however, significant gender differences were found amongst the social gamblers. Female social gamblers reported significantly higher mean scores than males on the BSI global severity index, [t (907.51) = -4.20, p = .001]; on the mean number of positive symptoms endorsed, [t (874.31) = -4.36, p = .001]; and on the positive symptom distress index, [t (856.09) = -2.15, p = .001]. Female problem gamblers reported significantly higher mean scores on the total number of positive symptoms endorsed than males, [t (35.44) = -2.12, p = .041]. The results suggest that the females in this sample were experiencing greater psychological problems, particularly amongst females who gamble.

The same analyses that were performed with the gambling groups were conducted using substance group classification. A significant main effect for gender, [F(1, 1288) = 45.58, p = .001]; substance group, [F(2, 1288) = 69.47, p = .001]; and a significant interaction between gender and substance group, [F(2, 1287) = 5.81, p = .003], was found on the BSI global severity index. With regards to the number of positive symptoms endorsed, a main effect of gender, F(1, 1298) = 42.18, p = .001, and substance group, F(2, 1298) = 64.58, p = .001, was observed. Tukey post hoc analyses revealed that individuals with no substance problems differed significantly from substance abusers (p = .001) and substance dependent (p = .001), with individuals classified with a substance abuse problem being significantly different from the substance dependent (p =

.001) in their level of overall psychological problems and number of positive psychological symptoms endorsed. As can be seen in Table 18, as the participants' level of substance problems increased so did their level of psychological problems. Moreover, a significant main effect for gender, [$F(1, 1295) = 23.58, p = .001$], and substance group, [$F(2, 1295) = 37.97, p = .001$, was found for degree of stress caused by psychological symptoms. Post hoc analyses revealed that participants with no substance problems differed significantly from substance abusers ($p = .014$) and individuals classified as substance dependent ($p = .001$) with all problem substance groups differing significantly from one another ($p = .001$). On all three of the psychological problem indices, a linear increase with substance use severity was observed. Similar to individuals with gambling problems, these results suggest that participants with substance use problems were more likely to experience psychological problems.

Table 18

Psychological Problems by Gender and Substance Use

BSI[a]	Substance Groups						
		No Substance Use Problems		Substance Abuse		Substance Dependence	
	N	M	SD	M	SD	M	SD
*Global Severity Index***							
Male	546	.40	.42	.57	.66	.78	.63
Female	742	.55	.58	.75	.68	1.22	.74
Total	1288	.50	.53	.66	.67	.96	.71
*Positive Symptom Total***							
Male	554	13.52	11.64	16.8	14.03	22.93	14.46
Female	744	17.32	13.18	22.32	14.19	30.15	12.98
Total	1298	15.99	12.78	19.57	14.35	25.90	14.29
*Positive Symptom Distress***							
Male	553	1.33	.57	1.47	.67	1.59	.68
Female	742	1.42	.63	1.57	.68	1.99	.63
Total	1295	1.39	.61	1.52	.67	1.75	.68

[a] BSI = Brief Symptom Inventory. **$p < .001$.

The data set was divided by substance group and an Independent Samples t-test assessing for gender differences was performed on the BSI subscales. Amongst the non problem substance users, females reported significantly higher scores on the BSI global severity index, t (705.58) = -4.08, p = .001, and on the BSI positive symptom total, t (616.50) = -4.14, p = .001. Female substance abusers were also found to have significantly higher scores than male substance abusers on the BSI global seventy index, t (266.99) = -2.18, p = .030, and on the BSI positive symptom total, t (269.96) = -3.21, p = .001.

Current Levels of Stress

The *Perceived Stress Scale* (PSS) measures the degree to which situations in one's life are appraised as stressful. Overall, 23.3% of the students reported a low degree of stress, 49.7% reported a moderate degree of stress, and 27.0% reported experiencing a high degree of stress on the PSS. Chi-square analyses revealed significant gender differences, χ^2 (2, N = 1317) = 27.56, p = .001, with degree of reported stress. Moreover, a greater percentage of females (32.1%) reported experiencing higher levels of stress compared to males (20.3%); whereas, moderate levels of stress was similar for males (51.4%) and females (48.3%).

Univariate analyses revealed a significant main effect for gender, F(1, 1312) = 14.86, p = .001, and gambling group, F(2, 1312) = 7.01, p = .001, on the PSS total mean score. Post hoc comparisons using the Tukey HSD test revealed that problem gamblers differed significantly from non-gamblers (p = .010) and social gamblers (p = .010) in their current level of perceived stress. Moreover, social gamblers (p = .010) differed significantly from non-gamblers. Non-gamblers reported the lowest overall level of stress, followed by social gamblers, with problem gamblers reporting the highest stress (Table 19).

Independent Samples t-tests revealed that female non-gamblers, t (231.40) = -5.84, p = .015, and social gamblers, t (880.80) = -1.62, p = .001, reported a significantly greater degree of stress than male non-gamblers and social gamblers. Although non significant, female problem gamblers reported more stress than male problem gamblers.

Table 19

Stress by Gender and Gambling Group

PSS[a]		Gambling Groups					
		Non Gambler		Social Gambler		Problem Gambler[2]	
	N	M	SD	M	SD	M	SD
Male	560	15.89	6.84	15.98	6.42	19.02	6.15
Female	752	18.06	7.60	18.53	6.89	22.02	7.49
Total	1312	17.27	7.40	17.47	6.82	19.74	6.57

[a] PSS = Perceived Stress Scale. [1] DSM-IV score (0-2). [2] Combined at-risk and probable pathological gambling group (DSM-IV score ≥ 3).

Univariate analyses were conducted to investigate the relationship between gender and substance use by level of stress. Significant main effects for gender, $F(1, 1307) = 53.56$, p =.001, and group, $F(2, 1307) = 34.81$, p = .001, were found between the substance groups on the PSS total stress score. As indicated in Table 20, individuals with substance use problems reported higher levels of stress compared to individuals without substance use problems. Tukey post hoc comparisons revealed that non problem substance users were significantly different than substance abusers (p = .036) and individuals classified as substance dependent (p =.001). Not only did the participants without substance use problems differ from the substance abusers and those classified as substance dependent, the two problem substance groups differed significantly from one another (p = .001). Both problem gamblers and individuals with substance related problems reported the overall highest levels of stress compared with individuals' not experiencing addiction-related problems.

The data set was divided by substance group and an Independent Sample t-test for gender was performed on the current level of stress. Non problem substance using females reported significantly higher scores on the total PSS, t (603.29) = -5.03, p = .001, than males. Female substance abusers, t (274.69) = -3.61, p = .001, and those who met the criteria for substance dependence, t (193.79) = -4.46, p = .001, were found to also have significantly higher scores than males with substance problems (Table 20).

Table 20

Stress by Gender and Substance Groups

PSS[a]**		Substance Groups						
			No Substance Problems		Substance Abuse		Substance Dependence	
		N	M	SD	M	SD	M	SD
Male		559	15.07	6.29	16.43	672	18.38	6.37
Female		748	17.52	6.91	19.27	6.36	22.48	7.64
	Total	1307	16.67	6.79	17.83	6.68	20.07	7.19

[a] PSS = Perceived Stress Scale. ** $P < .001$.

Resilience

Resilience research has shown that individuals who were considered better able to cope with stressful life events were academically competent. As such, participants were asked about their academic history including past and current academic problems. Overall, 13.9% of the sample reported currently experiencing some academic problems and 7.9% reported that they had received professional help for a learning disability. With respect to current academic problems, males (18.0%) were significantly more likely than females (11.9%) to be experiencing academic problems, χ^2 (1, N = 1278) = 9.19, p = .002. In addition to academic problems, 18.2% of the sample reported having sought professional help for an emotional/psychological problem,

with females (24.0%), χ^2 (1, N = 1275) = 30.09, p = .001, reporting having sought professional help significantly more than males (11.9%).

As depicted in Table 21, no significant differences were found amongst the gambling groups on questions regarding professional help for an emotional or academic problems. Interestingly, a trend was observed where the percentage of individuals who reported receiving professional help for emotional/psychological problems deceased as problems with excessive gambling behavior increased. While a decrease across gambling severity was observed for receiving psychological help, an increase was observed across gambling severity for receiving professional help for learning and academic difficulties. Although statistically non-significant, pathological gamblers were more likely to report receiving help for a learning disability and experiencing academic problems compared to the three other gambling groups.

Table 21

Academic Problems and Professional Help Sought: Gambling Severity

Personal Problems	Gambling Group[a]			
	Non-Gambler	Social Gambler[1]	At-risk Gambler[2]	Pathological Gambler[3]
Help for Psychological Problems	22.6	18.5	14.0	7.7
Help for Learning Disability	5.8	8.9	8.0	11.5
Experiencing Academic Problems	13.5	14.2	22.0	23.1

[a] Percentage. [1] DSM-IV score (0 - 2). [2] DSM-IV score (3 - 4). [3] DSM-IV score (≥ 5).

The *Personal Style Inventory* (PSI) provides a broad-spectrum assessment of the personal factors that mediate reactions to stressful events. The concept of resilience was examined in order to be better able to understand why some individuals with excessive gambling problems, substance use problems, and childhood maltreatment are at greater risk for psychological problems. The level of resilience reported by gambling group can be found in Table 22. Problem gamblers reported the lowest resilience across both the total subscale score and the three

subscales. Although not significant, non-gamblers reported the highest level of resilience across all scales, followed by social gamblers, and problem gamblers. The results suggest that participants with gambling problems were less likely to have the skills and resources to cope with stress.

Table 22

Degree of Resilience and Gambling Group

PSI[a]	Level of Resilience					
	Low[1] %	Medium[2] %	High[3] %	χ^2	Df	*p*
*Positive Attitude***				15.45	(4, 1314)	.004
Non gambler	21.9	59.4	18.7			
Social gambler	26.4	54.1	19.5			
Problem gambler	38.6	55.4	6.0			
Hypersensitivity				8.36	(4, 1214)	.079
Non gambler	22.6	56.5	20.8			
Social gambler	25.7	57.0	17.3			
Problem gambler	32.5	59.0	8.4			
Communication				3.19	(4, 1317)	.525
Non gambler	28.6	64.7	6.7			
Social gambler	29.0	65.4	5.6			
Problem gambler	34.9	62.7	2.4			
TOTAL PSI**				14.88	(4, 1315)	.005
Non gambler	27.9	47.3	24.7			
Social gambler	32.1	44.6	23.3			
Problem gambler	45.8	45.8	8.4			

[a] PSI = Personal Style Inventory. [1] Scores ≥ 28; [2] Scores of 14-27; [3] Scores of 1-13. ** $p < .001$.
Note: The higher the score the higher the level of resilience.

Univariate analyses revealed significant differences amongst the gambling groups on the PSI resilience total score [$F(2, 1315) = 7.25, p = .001$]. Post hoc comparisons using Tukey's HSD test indicated significant differences with regards to stress resiliency between problem gamblers ($p = .001$) and the two other groups. A linear trend across the gambling groups was found, with problem gamblers reporting significantly lower levels of resilience than non-

gamblers and social gamblers. Non-gamblers and social gamblers did not differ significantly from each other on their level of stress resiliency (Table 23).

Table 23

Level of Resilience by Gender and Gambling Group

PSI[a]		Gambling Groups						
		Non Gambler			Social Gambler[1]		Problem Gambler[2]	
		N	M	SD	M	SD	M	SD
Male		563	20.99	9.64	20.27	8.89	24.34	8.76
Female		752	20.58	9.49	21.87	10.09	27.20	9.96
	Total	1315	20.73	9.53	21.20	9.63	25.03	9.08

[a] PSI = Personal Style Inventory. [1] DSM-IV score (0-2). [2] Combined at-risk and probable pathological gambling group (DSM-IV score ≥ 3). *Note:* Higher mean scores indicate lower levels of resilience.

With respect to gender differences, an Independent Sample t-test revealed significant gender differences on level of resiliency only amongst social gamblers. Female social gamblers reported significantly lower levels of resilience than male social gamblers. Although non significant, female problem gamblers reported lower levels of stress resiliency than male problem gamblers, (t (909.05) = -2.58, p = .010) (see Table 24).

As seen in Table 24, participants with severe substance use problems, like those with gambling problems, reported lower levels of resilience across all subscales of the PSI and on the global resilience score compared to individuals with no substance use problems. Significant differences among the substance use groups for the total PSI score was observed, χ^2 (4, N = 1303) = 36.62, p = .001. These results suggest that individuals who met the criteria for substance abuse and substance dependence were less likely to have the emotional resources to cope with stress. Not only was a significant difference across substance groups found on the total PSI score, but on the individual subscales as well. Substance groups differed significantly, χ^2 (4, N = 1302) = 46.68, p = .001, on the PSI attitude subscale and were marginally different on the communication/expressiveness subscale, χ^2 (4, N = 1303) = 9.49, p = .050.

Table 24

Level of Resilience and Substance Group

PSI[a]	Level of Resilience					
	Low[1] %	Medium[2] %	High[3] %	χ^2	df	P
*Positive Attitude***				46.68	(4, 1302)	.001
No substance problems	21.4	54.9	23.7			
Substance abuse	29.5	57.9	12.6			
Substance dependence	37.1	53.2	9.7			
Hypersensitivity				5.39	(4, 1302)	.250
No substance problems	23.6	57.2	19.2			
Substance abuse	27.4	56.7	15.9			
Substance dependence	29.3	55.4	15.3			
*Communication**				9.49	(4, 1303)	.050
No substance problems	27.1	66.1	6.8			
Substance abuse	31.8	63.2	5.1			
Substance dependence	33.9	63.3	2.8			
TOTAL PSI**				36.62	(4, 1303)	.001
No substance problems	27.2	45.7	27.2			
Substance abuse	36.1	43.0	20.9			
Substance dependence	42.6	45.8	11.6			

[a] PSI = Personal Style Inventory. *$p < .05$. **$p < .001$. [1] Scores ≥ 28; [2] Scores of 14-27; [3] Scores of 1-13.

Univariate analyses were conducted in order to examine the relationship between substance use, gender, and resilience. Main effects were found for gender, $F(1, 1303) = 13.85$, $p = .001$, group, $F(2, 1303) = 21.61$, $p = .001$, and an interaction effect of gender by group, $F(2, 1305) = 21.61$, $p = .032$, were found for the PSI resilience total score (see Table 25). Post hoc comparisons of the PSI resilience scale total indicated that those with no substance use problems were significantly different from individuals with substance abuse problems ($p = .001$) compared to substance dependent individuals ($p = .001$). The problem substance groups did not differ significantly from one another.

Table 25

Level of Resilience by Gender and Substance Group

PSI[a]		Substance Groups						
		No Substance Problems			Substance Abuse		Substance Dependence	
		N	M	SD	M	SD	M	SD
Male		557	19.75	8.80	21.23	9.74	22.39	8.92
Female		746	20.20	9.51	23.51	10.06	26.42	10.53
	Total	1303	20.04	9.27	22.37	9.95	24.06	9.80

[a] PSI = Personal Style Inventory. *Note:* Higher mean scores indicate lower levels of resilience.

No gender differences were found on level of resilience amongst the non substance users. Marginally significant differences, t (274.57) = -1.91, p = .057, were found amongst individuals classified with substance abuse problems, with females indicating lower levels of stress resilience than males. Moreover, females who met the criteria for substance dependence differed significantly from males, t (196.14) = -3.16, p = .002. These females with substance dependence problems indicated significantly lower levels of stress resiliency than males (Table 25).

Hypothesis Testing

Several logistic regressions were conducted to identify predictors of addiction group membership. First, individuals with no addiction problems were compared to individuals experiencing addiction problems in order to investigate the factors contributing to general addiction. Second, a multinomial logistic regression was conducted to determine which independent variables contribute to gambling problems, substance use problems, and those who experience both substance use and gambling problems (comorbid group). Given that the original contribution of this study was to better understand the etiology of problematic gambling, logistic regression was conducted in order to determine the factors predictive of gambling problem group membership versus the non problem gambling groups. For each of the three sections, two

regressions were conducted, once with the global scales and once with the specific subscales to determine whether any of the subscales would make a significant contribution to problem group membership.

Binary logistic regression was selected for these analyses given the dependent measure was dichotomous and the independent variables were continuous, categorical, and both. Logistic regression was selected as it does not assume linearity of relationships between the independent variables and the dependent measure, normally distributed variables, non-homeoscedasticity, and assumes generally less stringent requirements (Tabachnick & Fidel, 2001). Prior to performing the regression analyses, each variable was examined for outliers and scores above or below three standard deviations from the mean were omitted from analyses to avoid biasing the results (Tabachnick & Fidel, 2001).

A new variable was created to investigate participants with no addiction problems (no gambling or substance use problems), gambling problems (participants who endorsed only problematic gambling behavior), substance use problems (participants who endorsed only problematic substance use) and a comorbid group (participants who endorsed experiencing clinically significant problems with gambling and substance use). This was done to examine differences and/or similarities amongst participants with gambling and substance use problems. A series of 2 X 4 ANOVAs were conducted with gender and the four addiction groups (no addiction problems, substance abuse problems, gambling problems, and comorbid) in order to investigate gender differences for each category of addiction group on the predictor variables. As indicated in Table 26, a significant main effect of addiction group was found for all four measures (BSI- psychological symptomology; CTQ- childhood maltreatment; PSI- resilience, and PSS-stress); a significant main effect for gender was found for the PSI and the PSS; and a

group by gender interaction was found for the PSI. These results suggest that the four addiction groups (no addiction problems, substance use problems, gambling problems, and comorbid group) were significantly different on all predictor variables.

Table 26

Analysis of Variance for the Predictor Variables

Source	*Df*	*F*	*p*
BSI°			
Gender	1	1.95	.163
Group**	3	27.94	.000
Group X Gender	3	1.52	.208
S within-group error	1276	(140.31)	
CTQ[1]			
Gender	1	.398	.528
Group**	3	15.77	.000
Group X Gender	3	1.584	.191
S within-group error	1296	(121.14)	
PSI SUM[2]			
Gender*	1	4.04	.045
Group**	3	13.68	.000
Group X Gender**	3	4.19	.006
S within-group error	1291	(89.03)	
PSS SUM[3]			
Gender*	1	9.65	.002
Group**	3	20.45	.000
Group X Gender	3	1.12	.340
S within-group error	1295	(45.10)	

° BSI = Brief Symptom Inventory; [1] CTQ = Childhood Trauma Questionnaire; [2] PSI = Personal Style Inventory; [3] PSS = Perceived Stress Scale. *Note:* Values enclosed in parentheses represent mean square errors. S = subjects. $^{**}p < .05$. $^{***}p < .001$.

Several 2 X 3 ANOVAs were conducted omitting the non problem group in order to determine whether the significant differences in the previous 2 X 4 ANOVAs were actually due to differences among the non addiction group and the addiction groups, or amongst the various

categories of addiction (problem gamblers, substance users, and comorbid). After removing the non addiction group, fewer group differences on the predictor variables was observed. The only group difference amongst the participants who endorsed addiction problems was found for the childhood maltreatment (CTQ) measure (Table 27). Moreover, a gender difference among the addiction groups was found on the measure of stress (PSS). These results highlight that the addiction groups differed significantly from the non addiction group on the predictor variables, but that participants with gambling, substance use, and comobid addiction problems were similar on measures of psychological symptomology, resilience, and stress.

Table 27

Analysis of Variance of Predictors Amongst the Addiction Groups

Source	*Df*	*F*	*p*
BSI°			
Gender	1	1.87	.172
Group	2	.703	.496
Group X Gender	2	1.39	.249
S within-group error	538	(149.56)	
CTQ[1]			
Gender	1	.46	.499
Group**	2	6.97	.001
Group X Gender	2	.194	.823
S within-group error	551	(149.39)	
PSI SUM[2]			
Gender	1	3.74	.054
Group	2	1.20	.301
Group X Gender	2	1.54	.216
S within-group error	549	(92.46)	
PSS SUM[3]			
Gender*	1	5.91	.015
Group	2	1.63	.198
Group X Gender	2	.930	.395
S within-group error	549	(45.41)	

° BSI = Brief Symptom Inventory; [1] CTQ = Childhood Trauma Questionnaire; [2] PSI = Personal Style Inventory; [3] PSS = Perceived Stress Scale. *Note:* Values enclosed in parentheses represent mean square errors. S = subjects. $^{**}p < .05$. $^{***}p < .001$.

A General Model of Addiction

Logistic regression models were performed to investigate which predictors would contribute to the addiction group and the no addiction group. Since approximately 475 participants met the criteria for substance use problems, 30 met the criteria for gambling problems, and 52 endorsed having difficulty with both gambling and substances, the creation of equally proportionate groups was required. Of the 475 participants who endorsed substance use problems, 48 were randomly selected in order to be proportional with the 30 problem gambling group and 52 comorbid group. The resulting analyses were conducted with a subsample of 130 addiction group participants (individuals endorsing problems with substance use, gambling, and both) and 130 randomly selected non-addicted participants. In addition to selecting a proportional number of addiction versus non addiction group participants, the participants were randomly selected with an equal proportion of males and females in each group to ensure that the small sample was representative of the larger sample with respect to gender. A forward logistic regression was performed using the global scores (the total scores of the CTQ, BSI, PSI, and PSS) as the covariates and gender was entered as a categorical covariate. The dependent variable was addiction group, which was coded 1, and the non addiction group was coded as 0. To determine the effects of gender upon addiction group membership, the logistic regression analysis was conducted twice (with gender forced in and put in at the same level as the other variables). When gender was forced in, a three step model was found with each added variable improving upon the last step (at the third step the Nagelkerke $R^2 = 27\%$). Results generated a good model fit on the basis of the BSI positive symptom total (PST), PSS sum (stress), and the CTQ sum, predicting overall group membership at 69.2%. With regards to predicting addiction group membership, this three step model was able to correctly classify 66.9% of individuals

experiencing addiction problems. The omnibus test of model coefficients is a chi-square test, which tests the null hypothesis that all population logistic coefficients, except the constants, are zero. For the current model, the null hypothesis was rejected, χ^2 (1, N = 259) = 25.06, p = .001, indicating that the coefficients were significantly different from zero. The model was judged to be adequate to predict the dependent variable based upon the independent variables selected (Table 28).

Table 28

Logistic Regression: Prediction of Addiction Membership Accounting for Gender (3 variable model)

Variable	B	S.E.	Wald	*df*	*p*	Exp (β)
BSI PST°	.031	.014	4.98	1	.026	1.031
PSS[1]	.051	.024	4.45	1	.035	1.053
CTQ[2]	.023	.012	3.60	1	.058	1.023
Gender	-1.542	.301	26.19	1	.000	.214

° BSI = Brief Symptom Inventory Positive Symptom Total; [1] Perceived Stress Scale; [2] CTQ = Childhood Trauma Questionnaire. *Note:* β = Parameters, Exp (β) = odds ratio. $^{**}p < .05$. $^{***}p < .001$.

As indicated in Table 28, the variables that achieved significance were psychological symptoms (BSI), level of stress (PSS), and overall endorsement of childhood maltreatment (CTQ). More specifically, male, increased levels of stress, and reported childhood maltreatment contributed to addiction group membership. In this instance, the level of resilience did not contribute to the prediction of addiction.

This model was rerun using forward logistic regression without forcing gender (allowing gender to enter the model simultaneously with the other predictors) into the model to investigate its contribution to addiction[3]. As depicted in Table 29, the results generated a four step model.

[3] The analyses were conducted twice, forcing in gender and put in simultaneously with the other variables to investigate the impact of gender upon addiction and whether its contribution would vary depending on the method used.

Gender was the first variable entered into the model and contributed 13% of the variance. Despite the strong contribution of gender, adding the subsequent variable (positive symptom total) contributed another 10% of the variance to the model. These results suggest that above and beyond gender, the other three variables add a significant contribution to the model. The overall prediction rate based on the set of four predictors [gender, psychological symptoms (BSI), stress (PSS) and childhood maltreatment (CTQ)] was good at 69.2%. More specifically, 71.3% of the no addiction participants and 66.9% of the addiction group were correctly classified. The omnibus test of model coefficients with all four predictors was statistically reliable, χ^2 (4, N = 259) = 57.02, p = .001. These results indicated that a four factor model was good at predicting the dependent variable based upon the independent variables

Table 29

Logistic Regression: Prediction of Addiction Membership using Global Scores (4 variable model)

Variable	β	S.E.	Wald	*df*	*P*	Exp (β)
Gender	-1.292	.265	23.79	1	.000	.275
BSI PST°	.051	.012	19.59	1	.000	1.052
PSS[1]	.058	.024	5.724	1	.017	1.060
CTQ[2]	.023	.012	3.602	1	.058	1.023

° BSI = Brief Symptom Inventory Positive Symptom Total; [1] Perceived Stress Scale; [2] CTQ = Childhood Trauma Questionnaire. *$p < .05$. ** $p < .001$. *Note:* β = Parameters, Exp (β) = odds ratio.

The Receiver Operating Characteristics (ROC) Curve is often used with logistic regression models as an indication of the capability of the model to predict future outcomes and has become a popular tool for evaluating the accuracy of prediction models (Stead & MacDonald, 1997). The ROC curve gives an indication of how well a test performs when classifying a person and is a graphical representation of how well the test performs with respect to sensitivity and specificity (the trade off between false negative and false positive rates). The area under the curve is an arbitrary scale indicating a rater's strength of conviction that an

individual falls into one category or another. The closer the ROC Curve is to the upper left hand corner of the graph and the larger the area under the curve, the better the results[4]. The area under the curve is important for determining the ability to predict future outcomes and for the four variable model the area was equal to 73.3%. Depicted below is the contribution of the four variable model; psychological symptoms (BSI), stress (PSS), child maltreatment (CTQ), and gender in predicting addiction group membership (Figure 3).

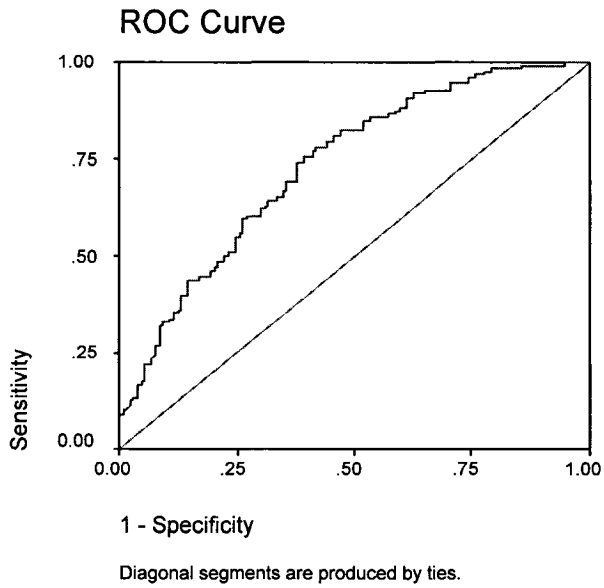

Figure 3: ROC Curve: Contribution of the global scores in predicting a general model of addiction

Third, a forward logistic regression analysis was performed to assess the degree of variance accounted for by subscales. Again, a forward logistic regression was performed with 130 addiction group participants and the same 130 randomly selected individuals who did not endorse having a problem with addiction. While the general logistic regression model indicated that psychological symptoms, child maltreatment, stress, and gender predicted outcome to

[4] The accuracy of the ROC curve depends on how well the test classifies participants. Using the most stringent criteria an area of 1.0 presents a perfect test (100% specificity and 100% sensitivity); .90-1.0 is considered excellent; .70-.90 is good; .60-.69 is poor; and .50-.59 suggests random chance that a participant belongs in one group versus the other.

addiction, out of the 18 possible subscales the overall prediction rate based on three variables was good at 72.1%. Using this three step model, 75% of the non addiction group and 68.9% of the addiction group were accurately classified. The variance accounted for with this model was moderate, Nagelkerke $R^2 = 31.4\%$. The omnibus test of model coefficients suggested that the null hypothesis could be rejected, χ^2 (4, N = 259) = 66.36, p =.001. The best predictors of addiction group membership included the hostility subscale of the BSI, the sexual abuse scale of the CTQ, the attitude/coping subscale of the PSI, and gender. Physical abuse, sexual abuse, physical neglect, and stress were originally included in the model at Step 1 but were removed when the attitude/coping subscale was entered because the attitude/coping subscale is highly correlated with the other variables, accounting for much of the variance explained by the other variables. The level of accurate prediction increased with each added variable (Table 30). The results of this model suggest that being male, increased levels of hostility, poor attitude/coping (stress resiliency), and sexual abuse all predicted addiction problems. In this model the level of perceived stress was not a contributing factor for addiction.

Table 30

Logistic Regression: Prediction of Addiction Group Membership using Subscales

Variable	B	S.E.	Wald	*df*	*P*	Exp (β)
Gender	-1.579	.299	27.83	1	.000	.206
BSI[1] – Hostility	.065	.013	26.03	1	.000	1.067
PSI[2] – Attitude/coping	.085	.034	6.213	1	.013	1.088
CTQ[3] – sexual abuse	.117	.067	3.000	1	.083	1.124

[1] BSI = Brief Symptom Inventory; [2] PSI = Personal Style Inventory; [3] CTQ = Childhood Trauma Questionnaire. *$p < .05$. ** $p < .001$. *Note:* β = Parameters, Exp (β) = odds ratio.

A ROC curve was calculated to determine the capability of the model to predict future outcomes. The area under the curve is a graphical representation of gender, hostility (BSI

subscale), attitude/coping (PSI subscale), and sexual abuse (CTQ subscale) in accurately classifying individuals with addiction problems. This model predicted 76% of the area under the curve (Figure 4).

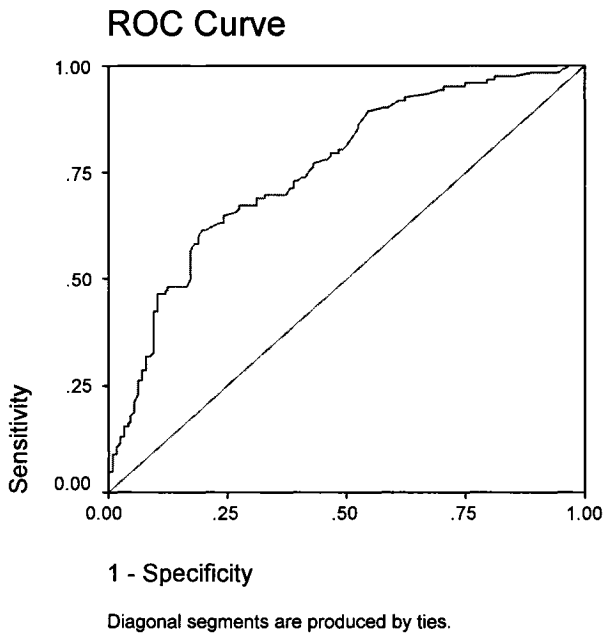

Figure 4: ROC Curve: Contribution of subscales towards a general model of addiction

Given that childhood maltreatment was a predictor for addiction problems in the previous analyses, two logistic regressions were conducted to determine whether factors related to maltreatment experiences (e.g., frequency, recency of last maltreatment incident, and severity) would further predict addiction problems. In order to examine the impact of childhood maltreatment, only the 411 individuals who reported experiencing some type of maltreatment were included in the analysis (195 individuals with no addiction problems (47.4%); and 216 individuals with some addiction problems (52.6%). A forward logistic regression was performed with only the three additional maltreatment variables as the covariates to investigate which variables may contribute to addiction group membership (dependent variable). None of the

additional maltreatment variables (frequency, time of maltreatment, and impact of the maltreatment experiences) predicted addiction group membership. This logistic regression model was rerun using the forward and backward stepwise method to ensure the findings were not an artifact of the method employed. The global measures were added in addition to the maltreatment factors in order to determine whether the maltreatment factors would have a greater contribution to the model in conjunction with the other measures. Regardless of the logistic regression method (e.g., forward or backward), general psychological problems (BSI) was the only significant predictor of addiction problems when the three additional factors were included in the regression, with a 65.9% classification rate. The variance accounted for by this one step model was 7%. An Independent Samples t-test was conducted in order to verify the results of this logistic regression. No significant differences between the addiction and non addiction group were observed for frequency [t (407) = -1.17, p = .243], recency [t (409) = .980, p = .328], and impact of maltreatment [t (406) = -.055, p = .956]. The results suggest that, for this sample, being maltreated was sufficient for addiction group membership, regardless of the frequency, recency, or impact of the maltreatment experience. In other words, childhood maltreatment in and of itself was an important contributing factor for addiction group membership.

Addiction Group Differences

Based on Jacobs' *General Theory of Addictions*, it was hypothesized that the etiological factors underlying gambling problems would be similar to those underlying substance use problems (e.g., alcohol/drugs). This prediction was predicated upon the fact that gambling problems share at least some similar properties to substance use disorders. A forward multinomial regression was performed using the global scores (the total scores of the CTQ, BSI, PSI, and PSS) as the covariates and gender as a categorical covariate. The dependent variable

was gambling group (coded as a 1), substance use group (coded as a 2), and comorbid group (coded as a 3). This analysis was performed to examine the contributing factors for the development of substance use problems, gambling problems, and those who endorse experiencing both problems (comorbid group). Participants not experiencing addiction problems were removed from the analyses to compare the similarities and differences amongst the various addiction groups (gambling, substance use, and comorbid).

Similar to the previous analyses, participants reporting substance use problems were randomly selected to create a relatively proportional addiction group (30 gamblers, 45 substance abusers, and 49 individuals who endorsed experiencing both problems). The results of the analysis were similar regardless of whether gender was entered into the model as a factor or as a covariate. The results indicated that the multinomial model accounted for 31.7% of the variance. Overall, gender made the greatest contribution to the model, followed by maltreatment (CTQ) and stress (PSS sum) (Table 31).

Table 31

Likelihood Ratio Test for Multinomial Regression Using the Global Scores as Predictors

Effect (N = 130)	χ^2	*df*	*p*
Gender	16.92	2	.000
CTQ sum°	8.23	2	.016
PSS sum[1]	6.55	2	0.38
PSI sum[2]	3.44	2	.179
BSI sum[3]	2.07	2	.356

° CTQ = Childhood Trauma Questionnaire; [1] PSS = Perceived Stress Scale; [2] PSI = Personal Style Inventory; and [3] BSI = Brief Symptom Inventory. $*p < .05$. $** p < .001$.

Examination of the parameter estimates revealed that increased stress (PSS) and gender (being male) predicted membership in the gambling group; whereas, child maltreatment (CTQ), stress (PSS), resilience (PSI), and gender predicted membership in the substance abuse group (Table 32). When prediction into gambling group was analyzed in contrast to the substance use

group and comorbid group, the prediction of gambling group membership (23.3%) and the problem substance use (62.2%) was poor. The classification of the comorbid group using this model was good (71.4%). Despite the poor classification rate of problem gamblers, results from the omnibus test enabled a rejection of the null hypothesis, χ^2 (14, N = 129) = 40.81, p =. 001.

Table 32

Multinomial Logistic Regression of Global Measures

Variable	B	S.E.	Wald	*df*	*p*	Exp (β)
GAMBLING PROBLEMS						
Gender	-1.520	.637	5.696	1	.017	.219
PSS sum°	.133	.056	5.560	1	.018	1.142
BSI sum[1]	-.047	.080	.355	1	.551	.954
BSI Positive symptoms	-.014	.066	.045	1	.832	.986
CTQ sum[2]	-.024	.019	1.705	1	.192	.976
PSI sum[3]	-.030	.037	.640	1	.424	.971
SUBSTANCE USE PROBLEMS						
Gender	-2.209	.596	13.737	1	.000	.110
PSS sum	.094	.052	.3264	1	.071	1.099
CTQ sum	-.054	.021	6.850	1	.009	.947
PSI sum	-.063	.035	3.325	1	.068	.939
BSI sum	.048	.080	.352	1	.553	1.049
BSI Positive symptoms	-.057	.065	.759	1	.384	.945

° PSS = Perceived Stress Scaled; [1] BSI = Brief Symptom Inventory; [2] CTQ = Childhood Trauma Questionnaire; and PSI = Personal Style Inventory. [3]*$p < .05$. ** $p < .001$. *Note:* β = Parameters, Exp (β) = odds ratio.

The same multinomial regression analysis was rerun using the specific subscales for each of the measures. For the first model, physical abuse (CTQ), physical neglect (CTQ), emotional neglect (CTQ), interpersonal sensitivity (BSI), depression (BSI), anxiety (BSI), somatization (BSI), phobic anxiety (BSI), psychoticism (BSI), hypersensivity/criticism (PSI), stress (PSS), and gender were found to contribute to the prediction of gambling or substance use problems. Given the large number of predictors (18 variables) for 130 subjects, the variance of this model

was quite high (Nagelkerke $R^2 = 57.2\%$). The model was re-run five times using only the significant variables in order to derive a succinct model and reduce spurious results due to the large number of predictors. The paired down model provided a better estimate of true risk factors for gambling problems and substance use. The final multinomial model examining gambling and substance use membership included five variables, one from each of the measures; physical neglect (CTQ), depression (BSI), hypersensitivity/criticism (PSI), stress (PSS), and gender. The variance (38.9%) accounted for by these variables provided a more accurate estimate given the small sample size. Similar to the results of the multinomial regression with the global scores, the ability to correctly classify substance users (75%) and the comorbid group (66.7%) was good, whereas, the ability to correctly classify gamblers was relatively poor (36.7%). The omnibus test enabled a rejection of the null hypothesis, χ^2 (10, N = 129) = 51.51, p =.001 (Table 33).

Table 33

Multinomial Logistic Regression of Specific Factors on the Subscales

Variable	B	S.E.	Wald	*df*	*p*	Exp (β)
GAMBLING PROBLEMS						
Gender	-1.715	.644	7.094	1	.008	.180
PSS°	.168	.060	7.795	1	.005	1.183
BSI[1] – depression	-.096	.031	9.401	1	.002	.908
CTQ[2] – physical neglect	-.063	.072	.753	1	.386	.939
PSI[3] – hypersensitivity	-.099	.087	1.302	1	.254	.906
SUBSTANCE USE PROBLEMS						
Gender	-2.136	.586	13.291	1	.000	.118
CTQ – physical neglect	.-383	.125	9.409	1	.002	.682
PSI – hypersensitivity	-.191	.083	5.310	1	.021	.826
PSS – stress	0.91	.055	2.683	1	.101	1.095
BSI – depression	-.016	.031	.280	1	.597	.984

° PSS = Perceived Stress Scale; [1] BSI = Brief Symptom Inventory; [2] CTQ = Childhood Trauma Questionnaire; and [3] PSI = Personal Style Inventory. * p <. 05 ** p < .001. *Note:* β = Parameters, Exp (β) = odds ratio.

Males, increased stress, and depression were found to predict gambling problems; whereas, being male, physical neglect, and hypersensitivity/criticism were found to predict substance use problems. When comparing substance users and gamblers, the results from this exploratory multinomial regression indicated that the model poorly predicted gamblers. The area under the curve was 63% (Figure 5).

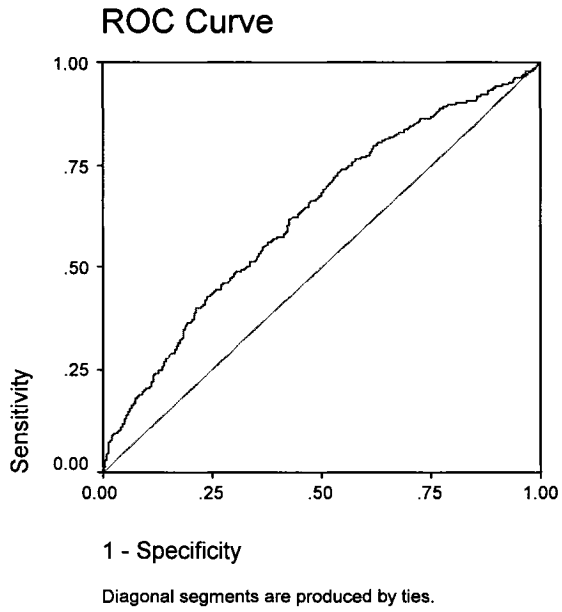

Figure 5: ROC Curve: Contribution of specific subscale for substance abuse and problem gamblers

When the multinomial analysis was performed, results were obtained predicting differences only amongst the gambling and substance use group. Results were not available for the comorbid group because it is considered a redundant variable. As such a binary logistic regression was performed using an equal number of problem gamblers (n = 30), and randomly chosen individuals with substance use problems (n = 30). When the number of participants was paired down to an equal proportion of problems gamblers (n = 30) and substance users (n = 30),

none of the global variables predicted significant differences, χ^2 (1, N = 60) = .607, p = .436, between these two addiction groups and a ROC Curve could not be reliably computed. Thus, the previous significant differences were likely due to uneven sample sizes. Another logistic regression was performed to investigate whether specific subscales would predict differences among the subsample of gamblers (n = 30) and individuals with substance use problems (n = 30). This two step model accounted for 23.1% of the variance, with an overall prediction rate of 70.0%. This is the only analysis in which gender did not emerge as a significant predictor, whereas in the previous analyses, male gender emerged as a significant predictor of gambling and substance use problems. This finding suggests that gender discriminates between individuals with addiction problems from those without addiction problems, but not among those who are experiencing addiction related problems. For the model, the null hypothesis was rejected, χ^2 (3, N = 60) = 11.395, p = .01, indicating that the coefficients were significantly different from zero. Emotional neglect (CTQ) emerged as a predictor of gambling problems and hostility subscale (BSI) predicted substance use problems.

A Model of Pathological Gambling

Given that the prediction of problem gambling group membership was poor when compared to substance abusers and substance dependent, and the original contribution of this study was to examine the factors that contribute to problem gambling, a forward binary logistic regression was conducted in order to determine which factors contribute to excessive gambling problems. This sample consisted of 30 problem gamblers (no substance use problems) and a randomly selected subsample of 30 non problem participants (no addiction problems). An equal proportion of males to females were used in order to represent the larger sample.

First, a binary logistic regression was run using the global scores to predict problem gambling group membership. Approximately 44% of the variance was accounted for by using a two factor model. As with the previous analyses, gender was entered into the model first, further confirming the important effects of gender. Stress (PSS) contributed approximately 39.6% of the variance at the first step and childhood maltreatment contributed another 4.3% of the variance at the second step (Table 34). Overall, the ability of this model to accurately classify problem and non problem gamblers was 73.3%, with the accuracy in predicting gambling problems (76.7%) being greater than the accuracy of predicting non gamblers (70%). A full test of the model with both predictors was statistically reliable, χ^2 (3, N = 60) = 23.99, p = .001, indicating that the predictors, as a set, reliably distinguished between problem gamblers and non problem gamblers. Gender (male), increased stress (PSS), and childhood maltreatment (CTQ) predicted problem gambling group membership.

Table 34

Binary Logistic Regression: Classification of Gambling and Non Gambling Groups Using Global Scores

Variable	B	S.E.	Wald	*df*	*P*	Exp (β)
Gender	-1.940	.701	7.645	1	.006	.144
PSS sum[1]	.275	.086	10.149	1	.001	1.316
CTQ sum[2]	.048	.029	2.717	1	.099	1.049

[1] PSS = Perceived Stress Scale; [2]CTQ = Childhood Trauma Questionnair.e *p < .01. ** p < .001.
Note: β = Parameters, Exp (β) = odds ratio.

A ROC Curve was conducted to determine the ability to predict future outcome for excessive gambling using this two step, three factor model (gender, stress, and childhood maltreatment). The area under the curve accounted for by this model was high at 82% (Figure 6).

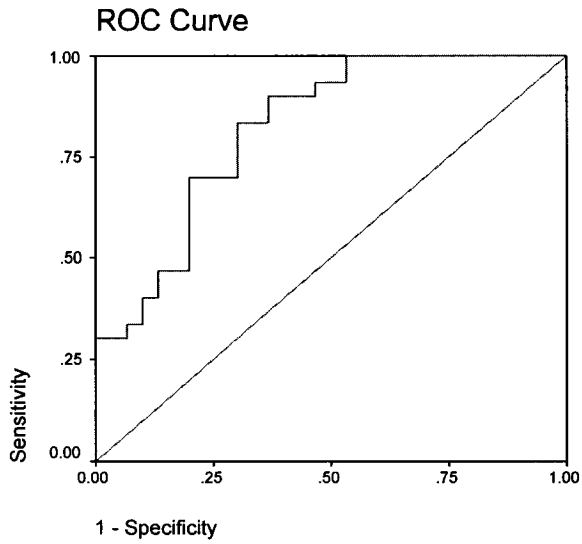

Figure 6: ROC Curve: Contribution of global scores for problem gambling

A forward binary logistic regression was conducted using the 18 subscales in order to investigate which specific factors if any, contribute to problem gambling. Results of this analysis indicated that a two step model was the most likely to predict problem gamblers and non gamblers. Stress (PSS) was the first step in the model predicting 39.6% of the variance and the attitude/coping subscale contributed another 6% of the variance, for a total of 45.7% of the variance accounted for with a two step model. Overall, the model was able to correctly classify 78.3% of the subjects, with an 80% classification rate for non gamblers and 76.7% accurate classification rate for problem gamblers (Table 35). For the current model, the null hypothesis was rejected, χ^2 (3, N = 60) = 25.19, p = .001, indicating that the coefficients were significantly different from zero.

Table 35

Binary Logistic Regression: Classification of Gambling and Non Gambling Groups Using Subscales

Variable	B	S.E.	Wald	*df*	*p*	Exp (β)
Gender	-1.940	.701	7.645	1	.006	.144
PSS[1] – stress	.275	.086	10.149	1	.001	1.316
PSI[2]- attitude/coping	.194	.101	3.640	1	.056	1.213

[1]PSS = Perceived Stress Scale; [2]PSI = Personal Style Inventory. $*p < .05$. $** p < .001$.
Note: β = Parameters, Exp (β) = odds ratio.

As can be seen in Figure 7, gender (male), increased levels of stress, and lower competency for resisting stress (PSI – attitude/coping) predicted membership into the problem gambling group. A ROC Curve was computed to assess the predictive strength of this three factor model (gender, stress, and attitude/coping). The area under the curve accounted for by this model was high at 81.7%.

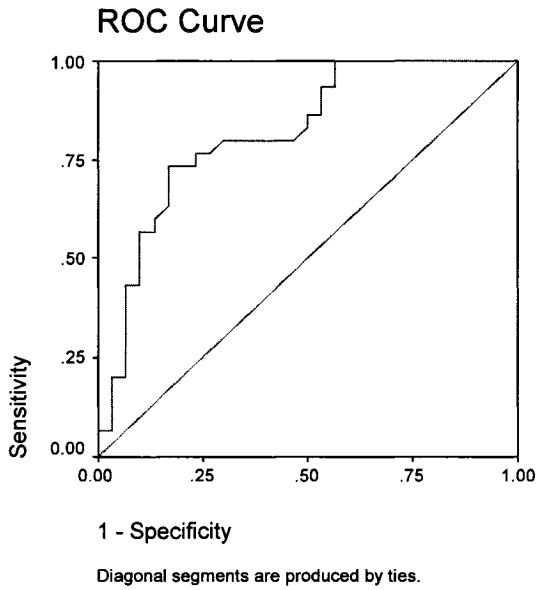

Figure 7: ROC Curve: Contribution of the subscales for problem gambling

CHAPTER V

DISCUSSION

The present study empirically examined childhood maltreatment as a potential risk factor in the development of problem gambling among young adults. Given that childhood maltreatment is not necessarily a direct risk factor for adjustment problems in adulthood, other potential contributing psychological factors such as stress and psychological symptoms were investigated. The goal was to better understand the complex interaction between psychological, psychosocial, and environmental characteristics that mediate the impact of adverse life events and adult adjustment. The discussion is presented in five parts: (1) prevalence and classification of problem gambling, (2) prevalence of substance use, (3) comorbidity of problem gambling and substance use, (4) risk factors associated with gambling and substance use problems, and (5) the role of emotional vulnerability amongst individuals with gambling and substance use problems, including a general model of addiction, a model of problem gambling, and a comparison of the risk factors predicting gambling and substance use.

Problematic Gambling

Gambling Prevalence

Overall, 78.1% of young adults reported gambling within the past year, and almost 20% engaged in these activities on a regular basis. These results are consistent with previous findings (Byrne, 2004; Felsher et al., 2003; 2004; Gupta & Derevensky, 1998a). A large percentage of Males (81.3%) and females (75.8%) reported engaging in gambling activities. Government sponsored lottery tickets (both lottery draws and scratch tickets) and playing cards for money were the most popular form of occasional and regular gambling.

The current results suggest that 2.1% of young adults were found to have severe gambling problems (pathological gamblers) and 4.2% were classified as at-risk gamblers. While these findings are lower than those reported in the youth gambling research (Adalf & Ialomiteanu, 2000; Kaufaman, 2002; Shaffer & Korn, 2002), they are in line with several other studies conducted with Montreal CEGEP students (Byrne, 2004) and with adult prevalence studies (Cox et al., 2005; Kairouz, Nadeau, & Lo Siou, 2005). The variability among prevalence rates may reflect the fact that DSM-IV criteria were used rather than another gambling screen in addition to the older mean age of a college sample. The DSM-IV criteria are typically used to diagnose clinical populations and are considered to provide a conservative estimate of gambling problems in comparison to gambling screens. As such, the conservative prevalence rates found in this study likely reflect the fact that clinical diagnostic criteria were used to estimate the prevalence of gambling within a college sample of young adults.

Gambling Classification

The issue of classification and the nosology used to categorize participants within the four categories (non-gambler, social gambler, at-risk gambler, and pathological gambler) of gambling participation has been hotly debated, with many calling for a revision of the current classification scheme (Stinchfield, 2000). Some researchers have argued that at-risk gamblers are actually in transition to being classified as pathological gamblers and have a number of similar difficulties as those whose gambling behaviors have already progressed to a higher severity level (Derevensky, Gupta, & Winters, 2003; Stinchfield, 2000). Not only may at-risk gamblers be in transition towards more problematic gambling behavior, pathological gamblers may similarly be in transition towards fewer gambling problems. A revision of the current classification scheme has been proposed, combining the at-risk and pathological gambling groups to better reflect

problems experienced by these groups. Analyses conducted in this study failed to find significant differences between the at-risk and pathological gambling groups on measures of maltreatment, psychological symptomology, stress, and resilience. When combined forming a problem gambler group, consistent with some other studies (Gupta & Derevensky, 1998a; Jacobs, 2000), males were 6 times more likely to be classified as pathological gamblers and 3.5 times more likely to be classified as at-risk gamblers than females.

Substance Use

Prevalence of Substance Use

The Adolescent Diagnostic Interview (self-report format) (Winters & Henly, 1993; Winters et al., 1993) was used to assess the DSM-IV criteria for psychoactive substance use disorders. While this is not a clinical diagnostic measure, it was selected to compare the DSM-IV criteria for problem gambling with the DSM-IV criteria for substance use problems (APA, 2000). Based on endorsed symptomology, participants in this study fell into one of three classification criteria: (a) no substance use problems, (b) substance abusers, (c) and substance dependent.

The results of the current study revealed that 19.2% of the sample exhibited symptoms of substance dependence, while 21.3% had symptoms consistent with substance abuse. In contrast, Kairouz et al. (2005), using a subsample of 5332 Quebec respondents aged 15 and over reported the rate of illicit drug dependence to be 0.9% and alcohol dependence to be 1.9%. The Canadian Addiction Survey (CAS) (2004), a collaborative initiative with Health Canada and other agencies throughout Canada reported that 79.3% of college students were past year drinkers with 44% reporting drinking weekly. Adalf, Gliksman, Demers, and Newton-Taylor (2003) analyzed the 1998 Canadian Campus Survey data of 5,954 undergraduate students and reported that 29.6%

used some form of psychoactive drug within the past 12 months. While the results of the current study may appear overinflated or alarmingly high, several differences between this study and others must be noted. First, it is difficult to compare the current substance use rates with other studies as the aforementioned studies used short screening measures to monitor population prevalence, whereas, the ADI provides diagnostic decisions for substance use categories (no diagnosis, abuse, or dependence). Moreover, the majority of substance use studies examine alcohol, cannabis, and illicit drug use independently providing prevalence rates for each form of substance use. For the purposes of this study, items were grouped to obtain an overall rating of substance abuse and dependence, without differentiating between alcohol, cannabis, and illicit drug use. Moreover, the lower mean age of the current sample (18.66) and the special population of CEGEP students may have accounted for the higher rates. Most studies utilize undergraduate students who may be more resilient given the stringent criteria and financial demands required to enter a university setting. CEGEP constitutes an intermediary level between compulsory secondary education and university education and is offered free of charge, as such the current participants may represent a less advantaged population. Despite these differences, the current rates are similar to those reported by Sussman, Dent, and Galaif (1997) who specifically examined substance abuse and dependence symptoms. They reported 36.7% of their sample as classified with a substance abuse disorder and 19.1% classified with a substance dependence disorder. Moreover, results of the Canadian Campus Survey (2004) revealed that 16.1% of participants were considered to be heavy frequent drinkers and 31.6% had 1 or more dependence symptoms. While the rate of young adult CEGEP students experiencing substance use problems is not a trivial matter, it is not entirely surprising given that substance use rates peak among

youth 18 to 24 years of age, upon transition from high school to freshman year of college (Baer, Kivlahan & Marlatt, 1995).

Similar to the gender differences found among gambling groups, males were significantly more likely to have symptoms of substance abuse (25.1%) and substance dependence (26.5%) compared to females (21.3% and 13.7%, respectively). Males were found to have endorsed every criteria for both substance abuse and substance dependence significantly more often than females. In line with the gambling and substance use literature, males were more than twice as likely to be at-risk for gambling and substance problems, as well as being classified as pathological gamblers and substance dependent.

Comorbidity of Gambling and Substance Use Problems

Within the addiction literature considerable overlap between the different types of addictions has been found (Cookson, 1994; Graham, 1990; Jacobs, 1988; Winters & Anderson, 2000). This study investigated the comorbidity between the different addictive behaviors to gain a better understanding of the multiple pathways that may influence vulnerable individuals. Despite the fact that pathological gambling does not require the ingestion of an addictive substance, it presents with similar psychological problems. A high rate of lifetime prevalence of substance abuse problems amongst pathological gamblers has been previously reported, however when comorbidity between disorders occurs it is often difficult to determine which disorder precedes the other (Crockford & El-Guebaly, 1998; Ciarrocchi & Richardson, 1989; Gupta & Derevensky, 1998a; Hardoon et al., 2002).

Similar to other studies of problem gambling and problem substance use, a significant difference across gambling groups was found with respect to substance abuse and substance dependence symptoms. At-risk gamblers (29.6%) and pathological gamblers (32.1%) were

significantly more likely to endorse substance abuse symptoms compared with non gamblers (13.9%) and social gamblers (22.6%). Furthermore, at-risk gamblers (35.2%) and pathological gamblers (25.6%) were significantly more likely than non gamblers (10.8%) and social gamblers (20.5%) to be report symptoms of substance dependence. At-risk and pathological gamblers endorsed every criteria for substance abuse and substance dependence problems significantly more than participants without gambling problems. The only criteria endorsed by non gamblers more than individuals with gambling problems was *difficulty controlling their substance use*. This difference may be due to the fact that pathological gamblers have not actually attempted to control their substance use.

As predicted, males were seven times more likely than females to be experiencing both substance use and gambling problems. The finding that young adults with serious gambling problems are also experiencing substance use problems replicates previous findings. Hardoon et al. (2002) and Kaufman (2002) reported that 50% of probable pathological gamblers consumed alcohol on a regular basis. Moreover, Winters and Anderson (2000) reported that students were 3.8 times more likely to be a weekly/daily gambler if they were also a weekly/daily drug-user. These findings also confirm past research linking problem gambling to alcohol, tobacco, and illicit drug use (Griffiths & Sutherland, 1998; Potenza, Steinberg, McLaughlin, Wu, Rounsaville, & O'Malley, 2000) and provide evidence that among young adults, the likelihood of gambling involvement increases as a function of drug use.

Slightly more than half of the sample did not endorse any problems with addictive behaviors (57.4%). Of those individuals endorsing some addictive behaviors, the majority (36.4%) met the criteria for substance use problems; 4.0% meet the criteria for both gambling and substance abuse problems, and 2.1% of the sample met the criteria for problematic gambling

only. While the findings of this study suggest a conservative estimate of problem gambling amongst young college age students, the current situation may change with accessibility, the promotion of gambling activities directed at college students (e.g., Texas Hold'em Poker on college campuses) and the proliferation of Internet gambling. Prevalence rates of gambling problems are typically related to the availability and accessibility of gambling venues (Jacobs, 2004). Should venues continue to increase, the rates may very well increase. It also should be noted that pathological gambling is a progressive disorder, such that individuals may rapidly progressed to more severe gambling related behaviors.

Risk Factors Associated With Excessive Gambling Problems and Substance Use

Childhood Trauma

Research studies using treatment (Mancini et al., 1995; Sullivan et al., 1995; Portegijs et al., 1996) and community samples (Fergusson et al., 1996; Oakley-Browne et al., 1995; Romans et al., 1995; Mullen et al., 1996) consistently report that adults who suffer from current psychiatric disorders are significantly more likely to report exposure to childhood adversities. While these studies are limited by retrospective reports and accounts which are subject to recall bias, they provide preliminary information to target modifiable risk factors. Jacobs' *General Theory of Addictions* provides a framework for understanding the biological and psychosocial basis for the development and maintenance of addictions. The premise of Jacobs' theory is that certain individuals are more vulnerable to the development of an addiction. While Jacobs' theory consists of two primary assumptions, the second assumption suggests that individuals' emotional vulnerability would be exacerbated from chronic trauma (e.g., abuse and neglect). Establishing a link between gambling severity and early childhood adverse events was the focus of the current study and is essential to examine etiological explanations for psychiatric disorders.

The *Childhood Trauma Questionnaire* (CTQ) was selected for this study to address the need to differentiate between different forms of maltreatment (Briere & Runtz, 1988, 1990; Claussen & Crittenden, 1991; Egeland et al., 1983; Higgins & McCrabe, 2000a, 2000b; Moran et al., 2004; Silverman et al., 1996; Werkerle et al., 2006). Of those individuals that reported any type of maltreatment (combining all degrees of maltreatment from minimal to extreme), emotional neglect (39.0%) emerged as the most frequently endorsed type of maltreatment followed by emotional abuse (35.7%), physical neglect (28.4%), physical abuse (19.2%), and sexual abuse (12.8%). The prevalence rates from the Canadian Incidence Study of Reported Child Abuse and Neglect (Trocmé et al., 2003a; 2003b) are consistent with the current results, with neglect being the most commonly endorsed type of maltreatment. In the general population, per one thousand substantiated cases, there were 6.38 cases of neglect, 3.23 investigations of emotional maltreatment, 5.31 investigations of physical abuse, and 0.62 investigations of sexual abuse.[5] Not only do the results of this study identify neglect as the most common form of childhood maltreatment, but these results correspond with empirical findings that emotional neglect/abuse may underlie other forms of abuse (Belsky, 1993; Briere & Runtz, 1988; 1990; Claussen & Crittenden, 1991). With regards to extreme maltreatment, females reported experiencing emotional abuse and sexual abuse significantly more often than males; whereas, males were more likely to report physical abuse, physical neglect, and emotional neglect.

Based on Jacobs' maltreatment protocol, participants were asked to what extent they believe the maltreatment experience had impacted their lives. The premise underlying this question was based upon the fact that psychological interpretation of childhood maltreatment influences coping ability. Of those individuals who reported childhood maltreatment, 10.9% of

[5] These prevalence rates exclude the province of Quebec and include only substantiated cases. The incidence rate does not include investigations that were closed or incidents that have not come to the attention of the authorities.

at-risk gamblers and 14.8% of the pathological gamblers reported that the maltreatment experience affected everything they do and feel compared to 3.9% of non-gamblers and 2.2% of social gamblers. Similar results were obtained amongst individuals with substance use problems. Substance abusers and individuals classified as substance dependent were more likely to report that the maltreatment experience affects their daily lives compared with individuals with no substance problems (2.8%). According to Jacobs (1986), Blaszczynski and Nower (2002), and Gupta and Derevensky (2004), many individuals with excessive gambling problems gamble in order to escape or to modulate affective states. These results suggested that it is not only the act of the maltreatment experience itself that impacts future psychological problems, but the manner in which the past victimization experience is perceived. Because at-risk and probable pathological gamblers report that the effects of their maltreatment is pervasive and affects their daily behavior, they may be gambling as a means to cope with current psychological problems and to escape from their past victimization.

Childhood Trauma and Gambling Problems

The severity of gambling problems increased with reported childhood maltreatment, with problem gamblers reporting the highest maltreatment scores. Of those in the at-risk gambling category that reported childhood maltreatment, independent of maltreatment severity, emotional abuse and emotional neglect was most commonly endorsed; whereas, pathological gamblers reported emotional neglect and physical neglect as the most common form of maltreatment. At the severe to extreme levels of maltreatment, at-risk gamblers and pathological gamblers reported more severe forms of all types of maltreatment than non-gamblers and social gamblers, specifically emotional and physical neglect. All participants reported sexual abuse to be the least common form of maltreatment independent of gambling severity. When the variables were

recombined in order to examine severity of maltreatment experiences, a noticeable increase was observed among problem gamblers, with the at-risk and pathological gambling groups indicating childhood victimization in the most severe/extreme ranges. It has been suggested that neglect may be more harmful to certain aspects of development since it involves a lack of mutual interaction between the child and caregiver. Gauthier et al. (1996) reported that neglected children experienced a greater number of and more severe psychological problems than those who had reported other forms of abuse. The finding that pathological gamblers experienced a significantly greater degree of neglect compared to the other gambling groups suggested that neglect can significantly detrimental to development and overall adjustment. The fact that no significant gender differences were found with respect to maltreatment and problem gambling may have been due to the small number of female pathological gamblers in this study. Nonetheless, female problem gamblers reported slightly higher mean scores on the emotional and physical abuse subscales. Interestingly, male problem gamblers reported slightly higher mean scores than females on the sexual abuse subscale. While the design of this study was cross-sectional and cannot support any causal or temporal explanations of the relationship between childhood maltreatment and problem gambling, it does provide evidence suggesting such an association may exist. The hypothesis that problem gamblers would report significantly more childhood maltreatment was well supported and further supports Jacobs' theory.

Childhood Trauma and Substance Use

The relationship between childhood maltreatment and risk of alcohol misuse and abuse in adulthood has been previously documented (deGraff et al., 2002; Johnson & Leff, 1999; Kunitz et al., 1998; Langeland et al., 2004; Malinosky-Rummel & Hansen, 1993; Moran et al., 2004; Wekerle et al., 2006; Widom et al., 1999). In this study, severity of substance abuse problems

increased significantly across all types of childhood maltreatment. Individuals with no substance use problems reported the lowest maltreatment scores; whereas, those with substance dependence problems had the highest maltreatment scores independent of maltreatment type. Compared to the no problem and substance abuse groups, the substance dependent group endorsed moderate to severe emotional abuse, physical abuse, emotional neglect, and physical neglect. They were also significantly more likely to report severe to extreme emotional abuse, physical abuse, and sexual abuse. These results are consistent with the findings from Roy's (1999) study of childhood trauma, depression, and alcoholism. Roy found that depressed alcoholics had significantly higher scores on the CTQ for childhood emotional abuse, physical abuse, sexual abuse, and emotional neglect. With respect to gender differences, in the current study, female substance abusers reported significantly more sexual abuse than males and substance dependent females reported significantly more emotional abuse. Similar to the previous findings that pathological gamblers reported more neglect than the other groups, substance dependent males reported significantly more physical neglect. The finding that individuals with substance abuse and substance dependence problems have experienced greater maltreatment is consistent with the empirical literature (Johnson & Leff, 1999; Kunitz et al., 1998; Malinosky-Rummel & Hansen, 1993).

The hypothesis regarding the relationship between addiction and maltreatment was supported. Findings from descriptive statistics, suggested that maltreatment was an influential risk factor and created vulnerability for the development of substance and gambling problems. It is difficult to determine which factors would lead one to towards an addiction preference. Individuals with a comorbid addiction may be a subgroup of vulnerable individuals who lack the necessary coping and adaptive skills to deal with past traumatic experiences.

Psychological Problems

A considerable body of research has accumulated suggesting the relevance of early forms of trauma on adult mental health and on subsequent psychological functioning (Browne & Finkelhor, 1986; Edwards et al., 2003; Egeland et al.1983; Fergusson et al., 1996; Gibb et al., 2001; Kaplan et al., 1999; MacMillan et al., 2001a; 2001b; Malinosky-Rummell & Hansen, 1993; Silverman et al., 1996; Yama et al. 1993). Turner and Lloyd's (1995) community study of lifetime trauma and mental health found that childhood adversity represents a significant dimension of risk for the onset of psychiatric and substance abuse disorders. Reported short and long-term impairments of childhood maltreatment include anxiety, fear, low self-esteem, depressive symptomology, aggressive behavior, and psychiatric disorders (Briere & Runtz, 1988, 1990; deGraff et al., 2002; Edwards et al., 2003; Fergusson et al., 1996; Macmillan et al., 2001a; 2001b; Malinosky-Rummell & Hansen, 1993; Moran et al., 2004). Not only are psychological problems highly correlated with childhood maltreatment, but individuals with gambling problems and substance problems are more likely to suffer from low self-esteem (Gupta & Derevensky, 1998b), high rates of depression (Getty et al., 2000; Gupta & Derevensky, 1998a; 1998b; Hovens, Cantwell, & Kiriakos, 1994; Kaufman, 2002; Marget et al., 1999; Nower et al., 2000), high rates of anxiety (Lewinsohn, Rhode, & Seeley, 1995; Ste-Marie et al., 2002), and suicidal ideation and attempts (Gupta & Derevensky, 1998a; Ladouceur, Dubé, & Bujold, 1994; Nower et al., 2003) (See Derevensky and Gupta, 2004 for a comprehensive discussion of the risk factors associated with youth problem gambling).

The *Brief Symptom Inventory* Global Severity Index (GSI) was used as an indicator of the respondents' distress level, combining information about the number of symptoms and intensity of distress. Overall, 40.3% of the sample reported psychological distress in the clinical level.

Approximately, 37.6% of the sample reported symptom distress (PSDI) in the clinical range and 41% endorsed a variety of psychological symptoms. Females reported higher mean scores than males on the global severity index, the positive symptom index, and the positive symptom distress index of the BSI.

Across all of the psychological symptom subscales, at-risk and pathological gamblers endorsed more severe psychological symptoms than non gamblers and social gamblers. With respect to the specific psychological symptoms endorsed, at-risk and pathological gamblers reported higher somatization, OCD, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism symptoms compared to non gamblers and social gamblers. Specifically, both groups reported hostility (33%) as the most prominent psychological problem, followed by phobic anxiety (33% of pathological gamblers and 29.4% of at-risk gamblers). Overall, the at-risk and pathological gambling groups reported similar rates and types of psychological problems. Given that at-risk and pathological gamblers endorsed more psychological problems on all of the subscales, it is not surprising that global psychological problem score was found to be significantly higher among the at-risk and pathological gamblers compared to the non gamblers and social gamblers. Female problem gamblers reported significantly higher mean scores than males on the number of psychological symptoms endorsed.

As with problematic gambling, the relationship between substance use and psychiatric disorders is well founded. Lewinsohn et al. (1995) reported that 66% of adolescents who met the criteria for a substance use disorder also met the criteria for at least one other Axis I disorder. Likewise, in this study, the severity of psychological symptoms increased with substance use problems. Keller, Lavori, Beardslee, Wunder, and Haskin (1992) found even higher rates of comorbidity between Axis I disorders and substance use disorders, with 90% of adolescents

meeting the criteria for both disorders. Kandel, Chen, Warner, Kessler, and Grant (1997) reported that 85% of females and 56% of males who used illicit drugs three or more times in the past year met the criteria for at least one psychiatric disorder. The current results are consistent with these studies. Although females reported less problem gambling and fewer problems with substances, those females with substance use or gambling problems were more likely than males to report psychological problems. Results from the analyses of gambling and substance use problems revealed that individuals with an addiction were at much greater risk for psychopathology than those not experiencing gambling or substance use/dependency problems. Several researchers have suggested that psychiatric disorders precede substance use disorders (Hovens et al., 1994; Kessler et al., 1997). Individuals who develop alcohol and other substance use problems may have a preexisting vulnerability to psychopathology, which in turn intensifies the risk of substance use disorders. Substance use or gambling may be initiated as a means of coping with negative affect, consistent with a self-medication model.

Stress

Stress has been regarded as a risk factor for several psychological disorders. Moreover, stress has been shown to be a precipitating and perpetuating factor in the etiology and maintenance of problem gambling (Comans et al., 1997; Kaufman, 2002) and substance use disorders (Hoffman & Su, 1997). Comans et al. (1997) and Hoffman and Su (1997) suggested that substance use and gambling act as a maladaptive coping response for adolescents to attenuate the negative effects of stressful life events. Gamblers and substance users come to learn that the tension generated by other stresses can be reduced by engaging in addictive behaviors, such that negative emotional states of anger, frustration, or anxiety act as cues for further gambling or substance use (Copper et al., 1992).

Overall, 27% of the sample reported high levels of stress. Problem gamblers and individuals with substance related problems reported the overall highest levels of stress compared to those with no appreciable problems. As predicted, non gamblers and individuals without substance abuse problems reported the lowest overall levels of stress, followed by social gamblers and substance abusers. At-risk, pathological gamblers, and individuals classified as substance dependent reported the highest degree of stress. Moreover, 32.1% of females compared to 20.3% of males reported high stress levels, independent of their gambling or substance use classification. These results confirm previous findings that individuals with excessive gambling problems experience high levels of stress (Kaufman, 2002). Researchers have yet to determine whether stress typically associated with problematic gambling is the result of excessive debts incurred while gambling or whether individuals began gambling as a way to alleviate stress.

Resilience and Coping

A number of researchers have argued that the presence of personal variables (e.g., coping style, level of resilience) may lessen or buffer the deleterious effects of stress on mental health. Rutter (1987) suggested that resilience acts as a buffering factor in light of adversity, protecting individuals from psychiatric disorders. Individuals considered less resilient typically utilize less adaptive coping strategies such as emotionally focused coping, avoidance, and rumination (Kaufman, 2002; Lussier, Derevensky, & Gupta, 2005). It has been postulated that the difference between individuals that can control their gambling or substance use employ different, albeit not effective coping skills than individuals who develop addiction problems.

As predicted, problem gamblers and those meeting the criteria for substance use problems reported significantly lower levels of resilience than those without gambling or

substance problems. Specifically, problem gamblers reported lower levels of resilience than non gamblers and social gamblers. Moreover, 38.6% of the problem gamblers reported poor positive attitude/coping skills compared to non-gamblers (21.1%) and social gamblers (26.4%). With respect to gender differences, female non gamblers and social gamblers reported significantly lower levels of resilience than their male counterparts; whereas, male and female problem gamblers reported similarly low levels of resilience in comparison to the other gambling groups. With respect to substance use, no significant gender differences were found between individuals with no substance use problems and those classified as substance abusers. Unlike the problem gambling groups where males and females reported similarly low levels of resilience, females who met the criteria for substance dependence reported significantly lower resilience than males. These results suggest that those who meet the criteria for problematic gambling and substance use are less likely to have the emotional resources, affective skills, and adaptive behaviors to cope with stress.

The Role of Emotional Vulnerability Among Addicts

The following section is divided into three main areas of discussion. An examination of risk factors predictive of addiction is addressed. Second, a discussion of the risk factors predictive of problem gamblers is provided. Finally, a discussion of the risk factors is presented to accurately differentiate between problem gambling and substance use problems. While the previous section focused on the relationship between problem gambling or problem substance use and potential risk factors (e.g., stress, childhood maltreatment, psychological problems, and resilience), the following section reviews the cumulative effects of these risk factors for excessive gambling and substance use.

A Model of General Addiction

Jacobs (1986) has suggested that certain individuals are inherently vulnerable to the development of addiction. As previously indicated, chronic trauma experiences during childhood creates a sense of worthlessness and inferiority. These already vulnerable individuals may then turn to any number of addictive behaviors as a means to regulate their affective states and arousal. Although childhood maltreatment is a risk factor for the development of substance use problems, not all maltreated individuals develop such problems and vice versa. It was proposed that childhood trauma in conjunction with a number of other risk factors would likely increase the risk for excessive gambling and/or substance use. It has been previously suggested that maltreatment is associated with a host of other psychosocial adjustment problems, including the development of ineffective coping strategies, difficulty regulating stress, and psychological disorders. Given that most studies have examined these risk factors sequentially, we know very little about the cumulative effects of these adversities in predicting addictive behaviors. Gender (being male), psychological/psychiatric symptomology, high levels of stress, and childhood maltreatment emerged as significant predictors for addictive behaviors and the models ability to correctly classify those experiencing addiction related problems was good. The findings from this analysis support Jacobs (1986), Kunitz et al. (1998), Harmer et al. (1999), and Grant and Won Kim's (2002) notion regarding the important role of childhood maltreatment in the development of an addiction. Not only did childhood maltreatment emerge as a significant predictor of addictive behaviors, psychological stress was also important. The contribution of stress in the development of addictive behavior has been previously found in other studies (e.g., Comans et al., 1997; Kaufman, 2002; Ste-Marie et al., in press). Kaufman's community sample study with youth found that at-risk and pathological gamblers reported more major and minor

traumatic events than social and non gamblers. Moreover, it was found that the level of perceived stress distinguished between gambling groups, with problem gamblers reporting higher levels of perceived stressful life events. According to Jacobs, addictive behavior including excessive gambling or substance use offers a temporary escape from a stressful reality. Wills and Filer (1996) have proposed that life stress is a general risk factor predisposing individuals to later problems. Individuals with high levels stress are more likely to report accompanying psychological problems and individuals with psychological symptoms typically report experiencing greater stress. The fact that psychological problems added a significant contribution to the general model in this study supported the current thinking that excessive substance use and gambling may be engaged in to relieve psychological problems such as depression, anxiety, and low self-esteem (Gibb et al., 2001; Gupta & Derevensky, 2000; Hardoon et al., 2004; Ohtsuka et al., 1997).

In examining specific aspects of risk factors, a four predictor model emerged with 72.1% accuracy. Variables found to accurately predict 'addiction' group membership were gender (being male), hostility (thoughts, feelings, or actions that are characteristic of the negative affective state of anger), poor attitude/coping skills, and sexual abuse. This model predicted approximately 76% of the area under the curve suggesting that the ability to predict future outcomes using these four variables was good. The finding that sexual abuse emerged as a predictor was surprising, considering the higher prevalence rate of childhood neglect and psychological forms of abuse in this study and within the general population. Research by Cole and Putnam (1992) have argued that sexual abuse tends to compromise ongoing development in the areas of social functioning and that adults molested as children are at elevated risk for several psychological problems (e.g., borderline personality disorder, somatization disorders, and

substance use). Research has shown that adults with histories of early trauma (e.g., sexual abuse) remain at higher risk for chronic stress. Further, childhood trauma adversely affects the acquisition of coping skills reliant on the resolution of such stressors (Turner & Lloyd, 1995). The finding of lower resilience and poor coping fits with these empirical findings.

Gender emerged as a significant factor in the development of addiction problems and merits further discussion. While being male was predictive of addiction problems, results of the independent analyses revealed that females were significantly more likely to have psychological problems, the highest stress levels, and the lowest levels of resilience. These gender differences may be due to the fact that males are more likely to externalize problems, whereas, females are socialized to internalize their feelings. Being male has been one of the most consistently identified demographic factors associated with pathological gambling and substance use (Canadian Addiction Survey, 2004; Gupta & Derevensky, 1998; Stinchfield, 2000). Similar to findings by Winters and Anderson (1997), the Canadian Addiction Survey (2004), Adalf et al. (2003), Kairouz et al. (2005) males in this study tended to report more gambling and substance use and abuse than females, although this gender disparity was relatively larger for gambling than substance use.

In examining severity, frequency, and recency of the maltreatment experience related to the maltreatment experience, these additional variables did not significantly predict addictive behaviors when considered in the models that also included psychological problems, stress, and resilience as predictors. To verify that this lack of effect was not an artifact of having other variables in the model, the model was retested with these factors related to child maltreatment entered as separate variables. No significant findings emerged in these analyses. Previous findings have suggested that the severity of the abuse (Lynskey & Fergusson, 1997; Wolfe, Sas,

& Werekele, 1994), number of different types of maltreatment experiences (Mullen et al., 1996), duration of abuse (Wolfe et al., 1994), frequency of abuse (Ruggiero et al., 2000), and the developmental period when the maltreatment occurred were related to poorer outcomes. The current findings contradict the idea that child abuse occurring during specific developmental periods increases the risk of psychological problems (Katerndahl, Burge, & Kellogg, 2005). These differences may be due to the differences in the wording of the maltreatment questions, as a result of the methodology (e.g., self report versus interview), or to the fact that the sample of college students utilized in this study may be somewhat more functional than participants in clinical samples. Harter, Alexander, and Neimeyer (1995) suggested that even relatively mild incidents of abuse can result in long standing psychosocial problems independent of duration, frequency, and number of maltreatment experiences. These results confirm Harter et al.'s (1995) findings and suggest that for this sample, the perception of maltreatment severity, frequency of occurrence, and developmental time frame (e.g., when the maltreatment experience occurred) were not predictive of addictive behaviors and problems. While this may be an artifact of the sample, these results suggest that experiencing child victimization however minimal or distal, may be sufficient to contribute to patterns of addictive behaviors.

A Model of Problem Gambling

Based upon empirical findings that individuals with substance use problems experience more childhood maltreatment than the general population and Jacobs' *General Theory of Addictions*, it was hypothesized that problem gamblers would be more likely to have a history of child abuse than individuals not reporting excessive gambling behavior. Furthermore, life stress, psychological symptomatology (e.g., anxiety), coping, and resilience were predicted to interact with adverse childhood experiences to contribute to difficulty in regulating affective states and

lending to excessive gambling behavior. The results support this hypothesis. Gender (being male), the perception of significant life stress, and childhood maltreatment accurately (76.7%) predicted gambling group membership. The importance of childhood maltreatment as a risk factor in conjunction with other variables (e.g., stress and gender) supported the hypothesis regarding the cumulative effects of adversity and was well able to predict future outcomes (82%). These results suggest that childhood maltreatment in and of itself was not necessarily a contributing factor for gambling problems, but that the cumulative effects of childhood maltreatment experiences in combination with stress increased the risk for excessive gambling behavior. Individuals who have experienced trauma are often considered to be more vulnerable than those who have not experienced child trauma. The analyses to investigate specific risk factors suggested that three factors predicted gambling problems; gender, stress, and, stress resiliency (attitude/coping). The ability of this model to differentiate gamblers from non gamblers was very good with a prediction rate of 81.7%. This model underlined the important role of stress in gambling problems. The attitude/coping subscale encompasses concepts found to be important in the stress resilience literature including coping skills, social competence, and self-efficacy. While general childhood maltreatment was a risk factor for gambling in the first analysis, specific types of maltreatment (e.g., emotional neglect) did not emerge as predictors of problem gambling.

It has been suggested that at-risk and pathological gamblers experience significantly more depression and negative emotional affective states than individuals without gambling related problems (Derevensky & Gupta; 2004; Griffiths & Wood, 2000; Gupta & Derevensky, 1998a; Kaufman, 2002; Stinchfield & Winters, 1998; Winters & Anderson, 2000). In this study, depression was not a *predictor* of gambling problems. Stinchfield (2000) conducted a similar

study and suggested that while depression was correlated with the frequency of youth gambling, it did not account for a significant amount of variance when other predictors were entered simultaneously into the regression equation. Similarly, when stress and childhood maltreatment were entered into the current model depression no longer accounted for a significant amount of the variance.

A Comparison of Problem Gamblers and Substance Users

It was hypothesized that the factors predicting outcome to problem gambling would be similar to those that would predict substance use problems. This prediction was based upon the fact that gambling problems share similar properties to substance abuse disorders. Moreover, in community studies it has been found that pathological gamblers are similar to other addicted populations (Hardoon et al., 2002; Horodecki, 1992; Schwartz & Lindner, 1992; Winters & Anderson, 2000). Despite the fact that gambling does not involve the ingestion of a substance, it presents with similar effects including dissociative states, tolerance, and altered physiological arousal (APA, 2000). While pathological gambling is identified as an impulse control disorder rather than an addiction in the DSM-IV, pathological gambling is generally seen by the scientific and clinical communities as an addictive disorder (Ciarrocchi & Kirschner, 1991; Custer, 1982; Jacobs, 1986).

In comparing problem gambling, substance use, and comorbid groups, a three factor model emerged in which gender and stress predicted problem gamblers and gender, childhood maltreatment, stress, and low resiliency predicted substance use problems. While the model was accurately able to classify problem substance users, the ability to predict problem gamblers was poor. As such, a binary logistic regression was conducted to compare gamblers and individuals with substance use disorders. Since problem gamblers and substance users share several similar

risk factors, it was hypothesized that they may share common underlying etiological processes. The fact that no single risk factor differentiated the problem gamblers from the problem substance users, supported the hypothesis that gamblers and substance share similar properties. It may be that the link between gambling and substance use can partially be explained by common antecedent risk factors. When the regression was rerun using the subscales, emotional neglect (CTQ) was found to predict problem gambling; whereas, hostility (BSI) predicted substance use problems. Gender did not contribute to model. The fact that gender differentiated between group membership and problem/no problem gambling group membership but did not differentiate between gamblers and substance users further confirms previous findings that gender acts as a risk factor for addiction problems but does not differentiate among groups of addicts.

The relationship between hostility and substance use is interesting. A study conducted by Roy (1999) found a significant correlation between adult hostility scores using the Hostility and Direction Questionnaire and CTQ scores for childhood emotional neglect, physical neglect, sexual abuse, and total childhood trauma. The relationship between hostility and child maltreatment may be due to the fact that hostile traits have distorted participant's perceptions of past childhood relationships lending to a greater endorsement of childhood maltreatment; however, childhood trauma may have also contributed to a hostile personality. Moreover, Sussman et al. (1997) examined this relationship between hostility and substance abuse and found that anger and anger coping predicted substance use problems among adolescents. They suggested that individuals with substance use problems may be socialized to cope with problems by exerting anger. Given these two findings it may be that a hostile personality dimension acts as a mediating variable between childhood trauma and substance use. Further examination

regarding the relationship between child maltreatment, anger, and addiction warrants further study.

Summary and Conclusions

The present study has important implications regarding the etiology of gambling and substance use problems. The results of this study elucidate the importance of addressing gambling and substance abuse problems from a global perspective. As such, its concurrent links with other adjustment problems (stress) should be acknowledged. The current study partially supports the utility of using Jacobs' (1986) *General Theory of Addictions* as a model to predict gambling and substance use problems. Childhood adversities such as maltreatment may establish enduring psychological vulnerabilities that later create a heightened emotional reactivity to adult stress. Kessler et al. (1997) found a positive pattern of association between prior adversities and subsequent disorders. It may be that childhood maltreatment is related to first onset but not to course of young adult disorders. The current results highlight the importance of recognizing that addiction problems and the pathways leading to them are heterogeneous. There are multiple determinants in addition to multiple patterns of abuse, dependence, comorbidity, and dysfunction that lead to the development of addiction. More importantly, there is no simple or invariant cause. As such, the complexity of addiction necessitates a dynamic and interactive developmental approach in order to clarify these complex relationships and patterns. The examination of participants with addictive behaviors versus non-addictive behaviors and gambling versus non gambling problem groups revealed that being male, psychological symptomology, stress, and childhood maltreatment predicted general addiction group membership (including pathological gambling); whereas being male, stress, and childhood maltreatment accurately predicted problem gamblers. The lack of significant differences between

problem gamblers and problem substance users lends support to Jacobs' *General Theory of Addictions* and is in line with some of the current thinking that while problem gambling is listed as an impulsive control disorder in the DSM-IV, both groups likely present with similar underlying etiological causes. Moreover, the results of the current study highlight the substantial relationship between childhood abuse and other negative circumstances (e.g., stress) that increase the risk for general addition group and problem group membership.

Gambling and substance use problems develop in the context of developmental transition, with person-environment interactions a critical part toward understanding the etiology of addiction. The person side of the equation includes individual characteristics (e.g., coping skills, attitude), whereas, the environment side includes risk and protective factors (e.g., parenting). Individuals vulnerable to gambling and substance use problems by virtue of having a predisposing psychopathological condition may also have the requisite gambling or substance use exposure. This study attempted to move beyond the often used simple linear risk factor model to a more interactive and developmental psychopathology perspective incorporating both predispositional and environmental risk factors.

Statement of Original Contribution

The relationship between childhood maltreatment history, poor psychological adjustment in adulthood and mental health has been well established. Moreover, it has been well documented that a substantial proportion of individuals exhibiting problems with substances (e.g., alcohol and drugs) report experiencing trauma and abuse as children. Since problem gambling has similar properties to other addictive behaviors, the original contribution of this study was to evaluate whether problem gamblers would endorse a history of childhood maltreatment. This research contributes to a better understanding of the underlying causal factors

in the development of gambling problems. Studies in the field of maltreatment and substance abuse disorders typically focus on one type of maltreatment (e.g., sexual abuse) and outcome to one type of addiction (e.g., alcohol abuse). Information about multiple forms of maltreatment history as well as outcome to problem gambling was investigated. The goal of this study was to contribute to the empirical addiction literature as well as to contribute to clinical knowledge, allowing for a better understanding and therefore to better develop clinical screening and interventions.

In addition to the desire to better understand those afflicted with gambling problems, the aim of this study was to investigate the interactional relationship between risk factors and their contribution towards problematic gambling behavior. Researchers have concluded that outcome to excessive gambling, substance use or other psychological problems may not simply be a function of maltreatment history. Numerous variables and factors contribute to psychological problems and influence adjustment. Glantz and Pickens (1992) suggested that the risk factors for substance use lie more with social and emotional realms; whereas, those individuals whose initial substance use progresses to an abuse or dependence syndrome appear to be influenced more by psychological and biological (individual level) factors. A further original contribution of this study was to clarify the relationship between childhood maltreatment and addictive behavior by investigating the cumulative effects of a number of psychological and individual level risk factors. While some reliable psychosocial variables have emerged as potential vulnerability factors for gambling, it is still not clear how these constructs are related and contribute to the onset and maintenance of problem gambling behavior. This study enhances our understanding of the etiological factors involved in gambling in order to construct a coherent picture of gambling problems.

Although there is evidence that different types of maltreatment are associated with differential sequelae, few investigations have examined the long-term consequences of different types of child abuse in a single population. Researchers tend to compartmentalize maltreatment into distinct types and study each one independently of the other, drawing from separate clinical and empirical literatures. This approach may be an oversimplification since maltreatment rarely exists in pure forms, for in a given abuse incident children and adolescents usually experience multiple types of abuse (Briere & Runtz, 1990; Edwards et al., 2003; Kairys & Johnson, 2002). Individuals reporting more than one form of childhood maltreatment may demonstrate more alcohol, drug, or gambling related problems and more emotional problems than do victims of one form of maltreatment. The contribution of this study was the ability to discriminate among the different types of maltreatment and the impact of these various forms in the development of addiction. Most maltreatment studies omit critical information related to trauma experience. A further contribution of this study was that information was accounted for by examining the length of time since the last maltreatment incident occurred as well as additional characteristics of the abuse incident (e.g., duration, frequency, and severity) in order to determine the association with long-term consequences and outcome to addiction. Another pitfall in the maltreatment literature is the inconsistent and multiple definitions of abuse. Most studies do not use well-operationalized definitions of maltreatment or psychiatric disorders. Such inconsistencies make it difficult to compare the prevalence rates obtained in this study with other studies. In an attempt to account for this potential limitation, the standard definition of maltreatment as outlined by the CTQ and the Canadian Incident Study of Reported Child Abuse and Neglect was used.

Limitations of the Current Study

In addition the potential contributions offered by this study, included are also several limitations. The primary limitation is the reliance upon participants' self-reported recall of childhood maltreatment. It has been suggested that it is difficult to rely on retrospective accounts as valid reports of childhood experiences and that the extent of agreement between prospective and retrospective measures is poor. Belsky (1993) argued that participants may deny, distort, or forget painful experiences when responding to questionnaires. Moreover, it is possible that respondents forgot or redefined their own behaviors in accordance with later circumstances and in light of their current situation. Widom and Shepard (1996) suggested that the problem with retrospective reports lies with the *under-reporting* not the over-reporting of childhood maltreatment. They found that 40% of individuals with documented histories of physical abuse failed to report these experiences 20 years later. Widom and Shepard (1996) interpreted such under-reporting of childhood physical abuse as due to the fact that these individuals may have been too young at the time of the abuse experience to remember it accurately. In contrast, Berger, Knutson, Mehm, and Perkins (1988), using university undergraduates, reported that individuals were able to remember and willing to report highly punitive childhood experiences. In an attempt to minimize recall biases, the measure of childhood maltreatment used in this study was based on the recall of specific instances of maltreatment rather than on the global recall of maltreatment. A review of the literature suggests that methodological issues regarding prospective and retrospective methodologies have yet to be resolved. While it was beyond the scope of this study, Brewin et al. (1993) suggested that the reliability of information obtained retrospectively can be improved by obtaining accounts of collateral information (e.g., documented court reports) and through the use of structured investigative methods. Additionally,

while the CTQ has been proposed to be one of the better instruments to measure childhood maltreatment, it is not without its flaws. For example, one of the items on the measure, "someone made me do sexual things" may be problematic since it may be interpreted within the context of an intimate adult relationship that is ongoing. While the wording of the items presumes childhood maltreatment, the instructions do not specify that participants should respond with familial maltreatment in mind. This issue arose during data collection and required clarification.

Given that the research strategy for this study was retrospective in that the data was collected after the maltreatment took place it was not possible to establish a casual relationship between maltreatment and later outcomes. Utilization of prospective methodology has been largely limited to at-risk populations because of the large numbers of subjects and/or long follow up periods required to obtain an adequate number of cases. Despite this limitation, researchers should consider conducting studies prospectively in order to control for this methodological limitation. Moreover, longitudinal research is needed in order to determine the temporal and causal nature of these associations. Another potential limitation is the use of cross sectional data which does not allow for conclusions about mediators, primarily because one cannot confidently ascertain the direction of effects. A related limitation is that the use of self-report inventories may result in a social desirability response set. It is conceivable that some reported adversities are due to false memories. However, as there was no apparent secondary gain associated with these responses, it is likely that adversities were under-reported due to recall failure and perhaps an unwillingness to disclose potentially embarrassing and painful memories. Given that self-report methodology was utilized, future studies should make an attempt to include multiple sources of information in order to validate these reports with additional and preferably more objective measures, such as child protective services records and court reports.

A frequently cited limitation in psychological research is the use of college samples. Particularly relevant to the current study was the fact that individuals who engage in problem gambling often miss class or withdraw from school; as such, the upper range of problem gambling behavior may have been underrepresented, skewing or otherwise affecting results. Caution will need to be exercised in generalizing the results beyond a college student sample. It has been argued that such a sample represents more advantaged participants because these participants have continued on into college. While this may be the case, CEGEP education is considered to be equivalent to grade 12 and 13 in other provinces and the United States. Since the age range of CEGEP students is similar to students in grades 12 and 13 and is offered free of charge to Quebec residents, the notion of this being an advantaged population is questionable. That being said, the phenomenology of substance use and gambling problems may differ from samples of people of a similar age who do not attend college. Despite arguments against the use of college samples in research, Berger et al. (1988) and Gauthier et al. (1996) have suggested that studies utilizing university populations permit the exploration of abuse in a wider sample of individuals, rather than focusing solely on clinical samples. Given the arguments regarding conducting research with a university sample and the fact that this was a preliminary investigation, it was decided to examine the impact of maltreatment on seemingly adjusted individuals (e.g., college students) in order to avoid the tendency to focus only on the impact of overtly abusive interactions, such as seen in clinical studies.

A related conceptual issue and limitation was the classification of maltreatment variables. Maltreatment research typically dichotomously divides the sample into maltreated versus non maltreated individuals. Theoretically, this may be problematic since dichotomously classifying participants into two distinct groups implies that maltreatment is an all or nothing event, when in

reality there are different degrees of severity. An option that is theoretically sounder is to calculate a participant's level of maltreatment along a continuum. This approach may be a more sensitive method of assessment for maltreatment. For example, a person whose experiences of childhood emotional maltreatment that was limited to a certain form (e.g., humiliation) or minimal severity may be very different and is expected to have a more positive long term outcome than an individual who experienced many different forms of childhood emotional maltreatment (e.g., humiliation, rejection, teasing etc.). In an attempt to account for this methodological limitation, Gauthier et al. (1996) measured physical abuse and emotional neglect on continuous subscale and assigned cut off points for childhood abuse and neglect. The arbitrary nature of the cut points reflects ambiguity in the literature, where it was unclear at which point discipline becomes "abusive" (Weiss, Dodge, Bates, & Petit, 1992) or at which point a lack of attention and interaction becomes neglectful. In an attempt to deal with this issue, Weiss et al. (1992) conducted distinct analyses and examined maltreatment as a continuous and categorical variable. They found that both types of analyses yielded essentially the same results. Conceptually, it may be more useful to understand neglect and physical abuse as psychological phenomena that fall along a continuum from mild to extreme. Whether maltreatment is better operationally defined as a continuous or categorical variable, unfortunately, was beyond the scope of this study and remains an unanswered question.

Another conceptual limitation is that the construct of resilience presupposes exposure to significant risk (Luthar, Cicchetti, & Becker, 2000). Given the lack of clarity in risk measurement, it was difficult to determine whether in a given study all individuals viewed as resilient experience comparable levels of adversity. Moreover, in this study it was unclear whether it was reasonable to assume that those at-risk have in fact experienced comparable levels

of risk. This is important because the consequences of childhood maltreatment may vary by the type of maltreatment, severity, and chronicity of the event. Children who have been maltreated have a greater likelihood of manifesting negative developmental outcomes and psychopathology, however, not all maltreated children are similarly affected and despite maltreatment experience some children do not experience negative developmental consequences (Cicchetti & Toth, 2004). It may be individuals who did not develop addiction problems had less exposure to risk or traumatic events. Another important issue related to resilience is that the domains investigated in this study did not capture all possible domains of functioning. While the list of risk factors presented was greatly expanded and more comprehensive than in previous studies of adults, it is still incomplete. While the current study attempted to cover a broad range of domains of behavior it is important to realize that due to time constraints a limited number of psychological factors related to healthy functioning and outcome were included.

Future Research Directions

Despite limitations inherent to the study, several clinical implications can be drawn from these findings. While problem gamblers represented a small percentage of the sample, this group clearly differed from the remaining participants on several variables. As such, treatment for gambling and comorbid substance use problems is warranted. Moreover, clinical follow up studies could contribute to our understanding of the course and development of these comorbid disorders. Studies on the impact and risk for addiction among adolescent and young adult mental health interventions may be important to clarify the etiological role of child psychopathology. Longitudinal research examining the course of problem gambling and substance use across the different groups is needed to identify which individuals escalate in their addictive behavior and

require treatment, as opposed to those college aged students that have isolated difficulties and may 'mature out of future' problems.

The majority of studies have failed to consider the extent to which the association between exposure to child abuse and later outcomes may have arisen from contextual factors. Evidence of the risk factors associated with child maltreatment suggest that those exposed to child maltreatment tend to come from family environments characterized by multiple disadvantages, including poverty, impaired parenting skills, stress, amongst many other factors (Katerndahl et al., 2005; Mullen et al., 1996). Such families with multiple disadvantages are less likely to provide responsive care, a factor which that has been shown to contribute to children's difficulties in emotion regulation (Eisenberg, Cumberland, & Spinrad, 1998). As such, the association between childhood maltreatment and later adjustment may be more reflective of the family context within which the abuse occurred rather than as the direct effect of traumatic experience on individual adjustment. Future studies should not only examine the impact of early traumatic experiences on later outcome, but the familial and social context within which the abuse occurred.

While the rate of gambling and substance use problems was found to increase with reported childhood maltreatment, other familial factors such parental psychopathology, gambling problems and substance use disorders may have led to this increased risk for gambling problems. Substance use and parental psychopathology has been strongly implicated child maltreatment (Kelleher, Chaffin, Hollenberg, & Fischer, 1994; Murphy, Jellinek, Quinn, Smith, Poitrast, & Goshiko, 1991). It has been well established that children of substance abusers suffer from a heightened risk of drug and alcohol use via psychosocial pathways and genetic transmission (Chassin et al., 1996). Moreover, adolescents with comorbid substance use and psychiatric

disorders often come from families that also have high rates of psychopathology. Parental psychopathology and substance use increases the risk for maltreatment; however, being raised in an environment with a substance abusing parent or a parent suffering from psychological problems may also pose a risk for adult adjustment difficulties. Families with a parent suffering with a substance use disorder experience higher stress, disrupted parenting practices, parental unavailability, and poorer family cohesion (Chassin et al., 1996). While research points to the detrimental effects of childhood maltreatment on development, parental psychopathology and substance use problems are unique risk factors. As previously mentioned, the examination of family context outside of child maltreatment experiences was beyond the scope of this study. Future studies should consider a broader range of environmental family variables as risk factors for gambling problems.

Most studies have examined the association between only one or a small number of adversities and only one or a small number of outcomes. It was found that the effect of exposure to childhood adversity and subsequent risk factors (e.g., stress) are additive. The relationship between childhood maltreatment and subsequent risk factors (e.g., stress, psychological problems), suggests that future studies should use a broad assessment of childhood adversities and risk factors rather than a more focused assessment of only a small number of adversities. While the current study attempted to go beyond linear casual models to understand the risk factors involved in problem gambling, other variables may contribute to the initiation and continuation of problem gambling. As previously mentioned, future studies should consider going beyond the examination of individual level risk factors and investigate the impact of the family context and peer group in the development of excessive gambling behavior.

Results from this study underline the importance of a routine assessment for childhood trauma and comorbid mental health problem in individuals presenting for gambling and substance use treatment. In addition to screening during the assessment process, the results of this study should be considered when designing and implementing psychological interventions aimed at treating adolescents and young adults. Many addiction treatment programs focus on the overt behavior with the aim of complete abstinence. These results highlight the importance of a thorough psychological assessment, taking into account not only the overt behavioral manifestations of the disorder but the underlying psychological processes by way of a full developmental history. The self medication hypothesis assumes that gamblers are drawn to gambling as a means of coping with (e.g., treating) emotional distress and/or cognitive dysfunction. As part of the investigation, a battery of psychological tests may be utilized including measures of anxiety, anger, depression, and the presenting symptomology. Given the proposed comprehensive assessment, intervention will need to be equally comprehensive. Treatment approaches for addiction would be best to integrate stress management and relaxation training (e.g., mindfulness), coping skill development, affect regulation, and cognitive behavioral interventions. As observed in this and other studies, the development of effective coping skills is an important component of self-regulation in stressful environments and in achieving positive ways of dealing with social situations and feelings. Education and helping the client to understand the triggers, context, and perceived negative/positive consequences of their substance use and gambling behavior will be an important part of treatment. While the link between child abuse and gambling addiction may not be causal, gamblers who have been maltreated as children may represent a subset of individuals with specific psychological needs. Related to individual treatment paradigms, other interventions such as prevention programs for those with gambling,

alcohol, or other drug problems should assess the possibility of comorbidity, as the presence of more than one of these problems can significantly affect the success of treatment and contribute to relapse.

The current results provide an important contribution to our understanding of problem gambling. Future research will be needed to help clarify a greater breadth of risk factors associated with excessive and problematic gambling behavior, their sequalae, and treatment strategies.

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APPENDIX A

INSTRUMENTS

1. GENDER ○ Male ○ Female

2. YEAR IN CEGEP ○ **Year 1** ○ **Year 2** ○ **Year 3 or more**

3. AGE

16	17	18	19	20	21	22 or older
○	○	○	○	○	○	○

4. Do you live with your parents/legal guardians? ① YES
② NO, how long have you been living independently _____

INSTRUCTIONS: 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
a. Lottery scratch cards/pull tabs	○	○	○	○
b. Lottery draws (e.g. Lotto 6/49)	○	○	○	○
c. Sports betting through the lottery (e.g. "Mise-O-jeu™")	○	○	○	○
d. Sports betting (e.g., sports pools).....	○	○	○	○
e. Bingo	○	○	○	○
f. Casino.....	○	○	○	○
g. Gambling machines/ video lottery terminals (vlt's)	○	○	○	○
h. Internet gambling	○	○	○	○
i. Cards	○	○	○	○
j. Stock market	○	○	○	○
k. Racetrack betting	○	○	○	○
l. Other	○	○	○	○

please specify: _____

INSTRUCTIONS: Gambling refers to betting money on activities (e.g., lottery, vlt's, casino, cards) with a chance of winning money.

DURING THE PAST 12 MONTHS:	**YES**	**NO**
1. Have you been preoccupied with gambling (e.g. thinking about gambling, planning to gamble, or thinking about ways to get money to gamble with)?	○	○
2. Have you needed to gamble with more and more money in order to get the amount of excitement you want?	○	○
3. Have you tried repeatedly to control, cut back or stop gambling, without being able to?	○	○

	YES	NO
4. Have you felt restless or irritable when attempting to cut down or stop gambling?	O	O
5. Have you gambled to escape from problems or when you were feeling bad?	O	O
6. After losing money gambling, have you often returned another day to get even (try to win back money you lost)?	O	O
7. Has your gambling led to lies to family members, your therapist, or other people in order to conceal your involvement with gambling?	O	O
8. Has your gambling led you to commit illegal acts such as forgery, fraud, theft, or embezzlement to finance it?	O	O
9. Has your gambling ever led you to jeopardize or lose a significant relationship, job, or career or educational opportunity?	O	O
10. Have you had to rely on others to provide money to relieve a desperate financial situation caused by gambling?	O	O

INSTRUCTIONS: The items below apply to you **AS YOU ARE NOW.**

	YES	NO
1. I am pretty critical of myself	①	②
2. I generally put other people's needs ahead of my own	①	②
3. I frequently take good care of, calm, and comfort myself	①	②
4. When something bad happens to me, I get angry or critical with myself for having gotten into the situation	①	②
5. My typical reaction to a bad situation is to think and do things that make me feel calmer and better	①	②
6. When something bad happens, I usually think it's due to some flaw or defect in me	①	②
7. I never get angry	①	②
8. When something good happens to me, I am likely to think it's due to my talent or skill, or having worked hard	①	②
9. When I am in a stressful situation, I am likely to "freeze" and do nothing about it	①	②
10. When things bother me, I am likely to hold them in and let them build up inside me	①	②
11. I tend to deal with troubles by ignoring them and seeing if they go away	①	②
12. There are some people I just don't like	①	②
13. Often, when dealing with difficult situations, I do things that end up making things worse for me	①	②
14. Once I have done what I can about a situation, I tend to put it out of my mind until further action is needed	①	②
15. I am likely to deal with trouble by having fantasies of being in a more pleasant situation	①	②
16. I am likely to look at the bright side of troublesome situations	①	②
17. As far as I am concerned, when something is done it's done and I don't worry about it	①	②

	YES	NO
18. I spend a lot of time painfully worrying about things that end up not happening at all	①	②
19. When dealing with problems, I feel confident that there is some form of higher power that will help me	①	②
20. I know some things I can do to make me feel better when I am upset, and I usually do those things when I am under stress	①	②
21. When under stress, I usually talk out my feelings with someone who is likely to understand and care	①	②
22. When I am troubled and talk over my problems with others, I am likely to come away feeling better	①	②
23. When there is a problem I can't do anything about, I am likely to find a way to accept the situation and live a good life in spite of it	①	②
24. I seldom use alcohol, tranquilizers, or other chemical substances in order to deal with feelings of stress and strain	①	②
25. When something goes wrong, I usually add to the upset by thinking how awful it is that it didn't go the way I wanted	①	②
26. My attitude toward mistakes is to figure out how I can avoid them in the future	①	②
27. I can't stand disapproval, even when it comes from someone who isn't very important to me	①	②
28. I commonly see difficult situations as a challenge	①	②
29. I don't feel annoyed when people are disagreeing with me	①	②
30. When I have trouble, most of my energy goes into trying to get away from painful thoughts and feelings	①	②
31. In my heart, I really don't feel I have a close relationship with anybody	①	②
32. I feel that I am good at communicating my feelings to other people	①	②
33. I can usually express my emotions and feel satisfied about it afterwards	①	②
34. I usually feel o.k about asking for what I want	①	②
35. I usually feel o.k about saying how I feel	①	②
36. I have many predictable routines in my life that give me comfort	①	②
37. There are rituals and traditions (e.g. religious and family ones) that I value and take part in regularly	①	②
38. I really care about other people and often do things for their sake	①	②
39. When I talk to people about bad things that have happened to me, I usually feel little sense of relief or comfort afterwards	①	②
40. I feel that I am more anxious than most people about what other people think of me	①	②
41. I often can't get myself to let go of things, such as a bad relationship or job, that I would be probably better off giving up	①	②
42. I typically hold back from doing what I want to do or think should be done because someone important to me might not like it	①	②

	YES	NO
43. I tend to stand on my own two feet and do my own thinking and acting	①	②
44. I tend to think that there is no use trying to improve my life	①	②
45. Somewhere in my upbringing I got a wise perspective on life and the world	①	②
46. In general, my life experiences make sense to me	①	②
47. I see myself as being largely in control of my life	①	②
48. I am the kind of person who tends to think that things will work out as well as can reasonably be expected	①	②
49. I never criticize people unless it is to their face	①	②
50. My responsibilities (e.g. work, school) have little meaning to me, except as a way to get by	①	②
51. I spend a lot of time inwardly criticizing myself (my appearance, skills, what I have done)	①	②
52. I am preoccupied with all-consuming needs for love	①	②
53. I believe in spite of troubles, that life is basically good	①	②
54. In some ways I feel kind of special, and that things will work out ok for me	①	②
55. If a job I do doesn't come out just about perfect, I usually end up critical of myself and/or others	①	②
56. I really can't stand it if I do even the smallest thing to upset another person	①	②
57. It is so hard for me to say "No" to people that I end up wearing myself out doing things I don't want to do	①	②
58. I never hesitate to admit it when I have made a mistake	①	②
59. I tend to be over-involved with other people so much that my happiness depends too much on what happens to them	①	②
60. I sometimes feel annoyed when people are rude	①	②
61. If I have a stressful day, I almost always find ways to recuperate before I have to face the next day	①	②
62. Though I would like for people to live up to my expectations, I know I can get along without that if I have to.	①	②
63. The way I see it, troublesome things just have a way of working themselves out	①	②
64. When someone in authority rebukes me, I accept it without resentment	①	②
65. The way I see it, there is almost always a way to get a job done	①	②
66. When something bothers me, I spend the time and effort it takes to get clear about what is means to me	①	②
67. I usually put myself in a good position to deal with problems before they come along	①	②
68. Sometimes I do things that I don't believe are quite right	①	②
69. The events of my life have largely seemed chaotic and unpredictable	①	②
70. When under stress I am usually focused on looking for creative solutions to the problems	①	②
71. I often get to enjoy myself	①	②

	YES	NO
72. I tend to feel that I must be thoroughly adequate, achieving and good at just about everything or I am not a worthwhile person	①	②
73. I am just as polite and considerate of family members as I am of people I have a more formal relationship with	①	②
74. I have roles (e.g. in job, school, family, or community) where what I do is quite important	①	②
75. Sometimes people really irritate me	①	②

INSTRUCTIONS: These questions ask about some of your experiences growing up as a child and teenager. For each question, darken **ONE** circle for the response that best describes how you feel.

① = *Never True* ② = *Rarely True* ③ = *Sometimes True* ④ = *Often True* ⑤ = *Very Often True*

WHEN I WAS GROWING UP.....

1. I didn't have enough to eat	①	②	③	④	⑤
2. I knew that there was someone to take care and protect me.	①	②	③	④	⑤
3. People in my family called me things like "stupid," "lazy," or "ugly."	①	②	③	④	⑤
4. My parents were too drunk or high to take care of the family.	①	②	③	④	⑤
5. There was someone in my family who helped me feel that I was important or special.	①	②	③	④	⑤
6. I had to wear dirty clothes.	①	②	③	④	⑤
7. I felt loved.	①	②	③	④	⑤
8. I thought that my parents wished I had never been born.	①	②	③	④	⑤
9. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital	①	②	③	④	⑤
10. There was nothing I wanted to change about my family.	①	②	③	④	⑤
11. People in my family hit me so hard that it left me with bruises or marks.	①	②	③	④	⑤
12. I was punished with a belt, a board, a cord, or some other hard object	①	②	③	④	⑤
13. People in my family looked out for each other.	①	②	③	④	⑤
14. People in my family said hurtful or insulting things to me.	①	②	③	④	⑤
15. I believe that I was physically abused.	①	②	③	④	⑤
16. I had the perfect childhood	①	②	③	④	⑤
17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbour, or doctor.	①	②	③	④	⑤
18. I felt that someone in my family hated me.	①	②	③	④	⑤
19. People in my family felt close to each other.	①	②	③	④	⑤
20. Someone tried to touch me in a sexual way, or tried to make me touch them.	①	②	③	④	⑤
21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them ...	①	②	③	④	⑤

① = *Never True* ② = *Rarely True* ③ = *Sometimes True* ④ = *Often True* ⑤ = *Very Often True*

22. I had the best family in the world	①	②	③	④	⑤
23. Someone tried to make me do sexual things or watch sexual things.	①	②	③	④	⑤
24. Someone molested me.	①	②	③	④	⑤
25. I believe that I was emotionally abused.	①	②	③	④	⑤
26. There was someone to take me to the doctor if I needed it.	①	②	③	④	⑤
27. I believe that I was sexually abused.	①	②	③	④	⑤
28. My family was a source of strength and support	①	②	③	④	⑤

29. How long ago has **any** maltreatment (e.g., neglect, sexual/physical/emotional abuse) occurred?

Never	It is still occurring	1-2 years ago	3-7 years ago	8-12 years ago	more than 13 years ago
⓪	①	②	③	④	⑤

30. In general, please indicate the approximate number of times the maltreatment (e.g., neglect, sexual/physical/emotional abuse) occurred?

⓪ Never ① Once or twice ② Several times ③ Frequently

31. To what extent does the maltreatment you experienced as a child (before 18 years of age) presently impact your life?

⓪ I have not been maltreated/abused/neglected
① It does not affect my life or feelings at all
② If affects my life, but not everything I do and feel
③ It affects everything I do and feel

INSTRUCTIONS: The questions in this scale ask you about your feelings and thoughts during the **LAST MONTH.**

⓪ = *Never* ① = *Almost Never* ② = *Sometimes* ③ = *Fairly Often* ④ = *Very Often*

IN THE LAST MONTH.....

1. How often have you been upset because of something that happened expectedly?	⓪	①	②	③	④
2. How often have you felt that you were unable to control the important things in your life?	⓪	①	②	③	④
3. How often have you felt nervous and "stressed"?	⓪	①	②	③	④
4. How often have you felt confident about your ability to handle personal problems?	⓪	①	②	③	④
5. How often have you felt that things were going your way?	⓪	①	②	③	④
6. How often have you found that you could not cope with all the things you had to do?	⓪	①	②	③	④
7. How often have you been able to control irritations in your life?	⓪	①	②	③	④
8. How often have you felt that you were on top of things?	⓪	①	②	③	④
9. How often have you been angered because of things that were outside of your control?	⓪	①	②	③	④
10. How often have you felt difficulties were piling up so high that you could not overcome them?	⓪	①	②	③	④

INSTRUCTIONS: For each item below **darken ONE circle** which reflects how often you have experienced the situation described during the **PAST 12 MONTHS.**

IN THE PAST YEAR.....	**YES**	**NO**
1. Has your use of alcohol/drugs caused you to miss school or work more than once or twice?	①	②
2. Has your use of alcohol/drugs caused your performance at a job to be worse than it could be?	①	②
3. Has your use of alcohol/drugs caused you to be suspended or expelled from school?	①	②
4. Has your use of alcohol/drugs caused you to be fired from a job?	①	②
5. Do you think that your use of alcohol/drugs has caused your grades to drop, and do you still drink/take drugs anyway?	①	②
6. Have you ever used alcohol/drugs at school or on the job?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
7. Have you ever gone to school or to work while drunk/high on alcohol/drugs?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
8. Have you ever driven a car or motorcycle while drunk/high on alcohol/drugs?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
9. *If female,* have you ever been pregnant and continued to use alcohol/drugs even though you knew it was against medical advice?	①	②
10. Have you ever done anything risky, while drunk/high on alcohol/drugs, that could have resulted in danger or physical harm to yourself or someone else?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
11. Have you ever been using a machine (e.g. lawn mower) while drunk/high on alcohol/drugs?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
12. Has your use of alcohol/drugs caused you any legal problems (e.g. DWI, arrested for possession)?	①	②
13. Have you ever committed a crime while under the influence of alcohol/drugs?	①	②
14. Has your use of alcohol/drugs upset any of your friends to the point where they no longer speak to you or associate with you?	①	②
15. Has your use of alcohol/drugs upset anyone you were dating to the point where you had serious arguments or ended the relationship?	①	②
16. Have any problems with your friends or family started or become worse because you used alcohol/drugs?	①	②
17. Have you ever gotten into physical fights when you were using alcohol/drugs?	①	②
18. Have you had frequent arguments with your parents or other adults about your alcohol/drug use?	①	②

19. When you **first started** to use alcohol/drugs, how much did you need to get drunk/high (e.g., # of beverages, pills, joints)?

⓪ N/A ① 0-1 ② 2-3 ③ 4-5 ④ 6-7 ⑤ 8-9 ⑥ 10 or more

20. How many drinks/joints/pills do you **currently need** to get drunk/high?

⓪ N/A ① 0-1 ② 2-3 ③ 4-5 ④ 6-7 ⑤ 8-9 ⑥ 10 or more

	YES	NO
21. Do you find that you now require much larger amounts of alcohol/drugs than you needed previously to get drunk/high?	①	②
22. Have you ever had the shakes or tremors of your hands after stopping or cutting down on drinking/doing drugs, or had that feeling the morning after drinking/doing drugs?	①	②
23. Have you ever had any of the symptoms listed below after you stopped drinking/taking drugs for a period of time, such as a day or so?	①	②

If you responded YES to question #23, please darken the circle for EACH symptom you have experienced.

- ○ Severe confusion
- ○ Rapid heartbeat and breathing
- ○ Fits, convulsions, or seizures
- ○ Weight gain/ loss, or change in appetite
- ○ Running nose or eyes
- ○ Hallucinations: seeing, hearing, smelling, or feeling things that weren't really there
- ○ Fever or chills
- ○ Sweating
- ○ Elevated blood pressure
- ○ Trembling or twitching
- ○ Aches or pains
- ○ Yawning frequently or feeling sleepy
- ○ Depression or feeling slowed down
- ○ Nervousness/ feeling all keyed up
- ○ Thinking or concentration problems
- ○ Sleep disturbances or bad dreams
- ○ Other?

	YES	NO
24. Have you ever drunk alcohol/taken drugs to relieve or reduce a hangover or to relieve withdrawal symptoms?	①	②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

25. Have you ever used alcohol/drugs to prevent withdrawal symptoms from starting up? For instance, have you ever drunk alcohol/taken drugs in order to avoid getting a hangover? ① ②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

26. Have there been occasions when you used larger amounts of alcohol/drugs than you had planned to use? ① ②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

27. Have you ever used alcohol/drugs even though you had planned not to use it? ① ②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

28. Have you ever used alcohol/drugs for a lot more hours than you had planned? ① ②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

29. Have you ever tried by yourself to cut down or stop using alcohol/drugs but could not? ① ②

If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times

	YES	NO
30. Have you ever tried to reduce or control your alcohol/drug use by switching to another drug?	①	②
If yes, How many times? Ⓐ Less than 5 times **OR** Ⓑ 5 or more times		
31. Do you often want to control your alcohol/drug use?	①	②
32. Do you spend a lot of time getting or buying alcohol/drugs (e.g. driving long distances)?	①	②
33. Do you spend a lot of time using alcohol/drugs?	①	②
34. Do you spend a great deal of time recovering from heavy use of alcohol/drugs?	①	②
35. Have you stopped participating in a club, sports team, or other after-school activity because it got in the way of using alcohol/drugs?	①	②
36. Have you ever gone without important things that you wanted or needed, in order to get or pay for alcohol/ drugs?	①	②
37. Have you spent less time in a hobby that was important to you, because it was taking time away from using alcohol/drugs?	①	②
38. Have you stopped doing anything else that used to be important to you, because it interfered with using alcohol/drugs?	①	②
39. Have you continued to drink/take drugs despite being warned that you have a serious physical disability or medical problem that might be made worse by using alcohol/drugs? *(answer yes only if problem is chronic or serious enough to require medical care).*	①	②
40. Have you ever been told by a doctor that your use of alcohol/drugs has caused you a physical disability or medical problem?	①	②
41. Have you continued to drink/take drugs despite being warned that you had a serious emotional problem that might be made worse by using alcohol? *(answer yes only if disorder is chronic or serious enough to require professional treatment).*	①	②
42. Have you ever been told by a doctor that your use of alcohol/drugs has caused you to suffer a serious emotional problem?	①	②

INSTRUCTIONS: Below is a list of problems people sometimes have. Please darken **ONE** circle that best describes how much that problem has distressed or bothered you during the past **7 DAYS** including today.

THIS PAST WEEK, HOW MUCH WERE YOU DISTRESSED BY.....

⓪ = ***Not At All*** ① = ***A Little Bit*** ② = ***Moderately*** ③ = ***Quite A Bit*** ④ = ***Extremely***

1.	Nervousness or shakiness inside	⓪	①	②	③	④
2.	Faintness or dizziness	⓪	①	②	③	④
3.	The idea that someone else can control your thoughts	⓪	①	②	③	④
4.	Feeling others are to blame for most of your troubles	⓪	①	②	③	④
5.	Trouble remembering things	⓪	①	②	③	④

⓪ = *Not At All* ① = *A Little Bit* ② = *Moderately* ③ = *Quite A Bit* ④ = *Extremely*

6. Feeling easily annoyed or irritated	⓪	①	②	③	④
7. Pains in the heart or chest	⓪	①	②	③	④
8. Feeling afraid of open spaces or on the streets	⓪	①	②	③	④
9. Thoughts of ending your life	⓪	①	②	③	④
10. Feeling that most people cannot be trusted	⓪	①	②	③	④
11. Poor appetite	⓪	①	②	③	④
12. Suddenly scared for no reason	⓪	①	②	③	④
13. Temper outburst that you could not control	⓪	①	②	③	④
14. Feeling lonely even when you are with people	⓪	①	②	③	④
15. Feeling blocked in getting things done	⓪	①	②	③	④
16. Feeling lonely	⓪	①	②	③	④
17. Feeling blue	⓪	①	②	③	④
18. Feeling no interest in things	⓪	①	②	③	④
19. Feeling fearful	⓪	①	②	③	④
20. Your feelings being easily hurt	⓪	①	②	③	④
21. Feeling that people are unfriendly or dislike you	⓪	①	②	③	④
22. Feeling inferior to others	⓪	①	②	③	④
23. Nausea or upset stomach	⓪	①	②	③	④
24. Feeling that you are watched or talked about by others	⓪	①	②	③	④
25. Trouble falling asleep	⓪	①	②	③	④
26. Having to check and double-check what you do	⓪	①	②	③	④
27. Difficulty making decisions	⓪	①	②	③	④
28. Feeling afraid to travel on buses, subways or trains	⓪	①	②	③	④
29. Trouble getting your breath	⓪	①	②	③	④
30. Hot or cold spells	⓪	①	②	③	④
31. Having to avoid certain things, places, or activities because they frighten you	⓪	①	②	③	④
32. Your mind going blank	⓪	①	②	③	④
33. Numbness or tingling in parts of your body	⓪	①	②	③	④

⓪ = *Not At All* ① = *A Little Bit* ② = *Moderately* ③ = *Quite A Bit* ④ = *Extremely*

34. The idea that you should be punished for your sins	⓪	①	②	③	④
35. Feeling hopeless about the future	⓪	①	②	③	④
36. Trouble concentrating	⓪	①	②	③	④
37. Feeling weak in parts of your body	⓪	①	②	③	④
38. Feeling tense or keyed up	⓪	①	②	③	④
39. Thoughts of death or dying	⓪	①	②	③	④
40. Having urges to beat, injure, or harm someone	⓪	①	②	③	④
41. Having urges to break or smash things	⓪	①	②	③	④
42. Feeling very self-conscious with others	⓪	①	②	③	④
43. Feeling uneasy in crowds, such as shopping or at a movie	⓪	①	②	③	④
44. Never feeling close to another person	⓪	①	②	③	④
45. Spells of terror or panic	⓪	①	②	③	④
46. Getting into frequent arguments	⓪	①	②	③	④
47. Feeling nervous when you are left alone	⓪	①	②	③	④
48. Others not giving you proper credit for your achievements	⓪	①	②	③	④
49. Feeling so restless you couldn't sit still	⓪	①	②	③	④
50. Feelings of worthlessness	⓪	①	②	③	④
51. Feelings that people will take advantage of you if you let them	⓪	①	②	③	④
52. Feelings of guilt	⓪	①	②	③	④
53. The idea that something is wrong with your mind	⓪	①	②	③	④

Only a Few More To Go.....

1. To your knowledge do any of these people have a gambling problem? *(you may have more than 1 answer)*

⓪ No one ① Mother ② Father ③ Stepmother

④ Stepfather ⑤ Brother ⑥ Sister ⑦ Other relative

2. To your knowledge do any of these people have a drinking/drug problem? *(you may have more than 1 answer)*

⓪ No one ① Mother ② Father ③ Stepmother

④ Stepfather ⑤ Brother ⑥ Sister ⑦ Other relative

3. Please **darken ONE** circle indicating your father's ethnicity?

- ○ Unsure
- ○ Southeast Asian
- ○ African Canadian
- ○ European
- ○ First Nations
- ○ Asian
- ○ Latino
- ○ Middle Eastern
- ○ Canadian

4. Please **darken ONE** circle indicating your mother's ethnicity?

- ○ Unsure
- ○ Southeast Asian
- ○ African Canadian
- ○ European
- ○ First Nations
- ○ Asian
- ○ Latino
- ○ Middle Eastern
- ○ Canadian

5. Have you ever sought professional help for *(you may darken both responses)*:

- ○ an emotional/psychological problem
- ○ a learning problem
- ○ none of the above

6. Are you currently experiencing academic problems? ○ **YES** ○ **NO**

THANK YOU FOR TAKING THE TIME TO FILL OUT THIS SURVEY !!

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
⓪ ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

APPENDIX B

CONSENT FORMS

McGill University

International Centre for Youth Gambling Problems and High-Risk Behaviors
Centre international d'étude sur le jeu et les comportements à risque chez les jeunes

Dear Parent and Student:

We are presently heading a McGill University research team studying a number of different issues related to gambling, substance use, and high-risk behaviors among adolescents and young adults. Some of the issues include familial and parenting variables, and risk and resiliency factors. Considering that gambling and substance use problems are becoming more popular among youth and young adults, your son/daughter's participation is considered extremely valuable in helping us develop better educational and prevention programs.

Individuals who participate in this research will be given a questionnaire to complete. It will take approximately 30 minutes to complete the questionnaire. The remaining time of the class period will be devoted to briefly explaining the study, distributing and collecting the questionnaires, answering questions, and taking comments. All information is highly confidential and only group scores will be reported. Rest assured that no unethical procedures will be involved; your son/daughter will not be forced to do anything that may make him/her feel uncomfortable, and he/she may discontinue his/her participation at any time without penalty. The information gathered in this research will remain confidential at all times.

If you support you son/daughter's participation, and if he/she is interested in participating in this study, please complete the attached consent form and have it returned with your son/daughter to the school. Only students with signed consent forms will be permitted to participate in the study.

Jeffrey L. Derevensky, Ph.D.
Professor, Dept. of Educational & Counselling Psychology
Associate Professor, Dept. of Psychiatry

Rina Gupta, Ph.D.
Assistant Professor (part-time)
Dept. of Educational & Counselling Psychology

-Statement of Consent-

I agree to allow my son/daughter _____ to participate in this research project. I understand that he/she is free to withdraw this consent and discontinue participation in this project at any time without further implications.

I, _____ agree to participate in this research project. I understand that I am free to withdraw this consent and discontinue participation in this project at any time without further implications.

Date: _____

Parent's Name _____
Parent's Signature _____
Student's Name _____

Student's Signature _____

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APPENDIX C

ETHIC CERTIFICATES