

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

ProQuest Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
800-521-0600

UMI[®]

Running head: PSYCHOSOCIAL FACTORS UNDERLYING PROBLEM GAMBLING

The Psychosocial Factors Underlying Adolescent Problem Gambling

Nancy Marget

Department of Educational & Counselling Psychology

McGill University, Montreal

September, 1999

A thesis submitted in partial fulfillment of the requirements for the degree of
Masters of Arts in Educational Psychology
School/Applied Child Psychology

© 1999, Nancy Marget



**National Library
of Canada**

**Acquisitions and
Bibliographic Services**

**395 Wellington Street
Ottawa ON K1A 0N4
Canada**

**Bibliothèque nationale
du Canada**

**Acquisitions et
services bibliographiques**

**395, rue Wellington
Ottawa ON K1A 0N4
Canada**

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-64171-6

Canada

Acknowledgements

My deepest appreciation goes to my thesis supervisor, Dr. Rina Gupta, for her invaluable insight, skillful guidance, and unrelenting encouragement throughout the process of my thesis. She has provided much constructive advice and direction, as well as the benefit of her specialized knowledge and experience throughout the process of this thesis.

My sincerest gratitude goes to Dr. Jeffrey Derevensky who has granted me with constructed advice and the benefit of his wisdom and expertise at all the crucial stages of my thesis. I wish to thank Jodi H., Lisa-Marie L., Jeff P., Daniella S., and Maffi P. for their invaluable assistance in data collection. Thank you to Jodi who has assisted and encouraged me at each stage of this project. I am incredibly grateful to have been part of your research team. Special thanks to L.M. for her help with data entry and for being a constant source of moral support. I would like to express my gratitude to my family for their patience, encouragement, and confidence in me.

I wish to express my appreciation to the administration, staff, and students from the following schools for their participation and cooperation in this study: Sacred Heart, Laval Catholic High School, and Centennial Regional High School.

This research project was partially funded by a grant from the Social Sciences and Humanities Research Council of Canada and by a Loto-Québec grant awarded to Dr. Jeffrey Derevensky.

Table of Contents

Acknowledgements	i
Table of Contents	ii
List of Tables	v
List of Figures	vi
Abstract.....	vii
Résumé	viii
CHAPTER 1 Introduction	2
Chapter 2 Review of the Literature	4
Current State of Knowledge	5
Psychosocial Factors Associated with Gambling Behavior.....	8
Depression and Gambling.....	8
Coping and Gambling.....	14
Locus of Control and Gambling.....	18
Principal Aims	20
Hypotheses	21

CHAPTER 3 Method	23
Participants	23
Measures	23
Gambling Activities Questionnaire (GAQ).....	23
Coping Inventory for Stressful Situations (CISS).	24
Nowicki-Strickland Locus of Control Scale for Children (LOC).....	24
Reynolds Adolescent Depression Scale (RADS).....	25
DSM-IV-J.	25
Procedure.....	26
CHAPTER 4 Results	28
Gambling Classification.....	28
General Findings Pertaining to Gambling Behavior	29
Motives for Gambling.....	30
Clinical Interpretation of the Response Patterns on the DSM-IV-J	32
Gambling and Depression	33
Group Differences on the RADS	34
Gender Differences on the RADS.....	34
Developmental Differences on the RADS.....	35

Gambling and Coping	36
Group Differences on the CISS.	37
Gender Differences on the CISS.....	39
Developmental Differences on the CISS.....	39
Substance Use and Coping.....	39
Locus of Control and Gambling	41
Gambling and Other Addictive Behaviors.....	42
Logistic Regression Analyses.....	45
CHAPTER V Discussion	50
Hypotheses-Driven findings.....	50
General Findings Pertaining to Gambling.....	56
Limitations and Directions for Future Research.....	58
References.....	61
Appendices.....	75
Appendix A: Gambling Activities Questionnaire	75
Appendix B: Coping Inventory for Stressful Situations	80
Appendix C: Nowicki-Strickland Locus of Control Scale for Children.....	84
Appendix D: Reynolds Adolescent Depression Scale	87
Appendix E: DSM-IV-J	88

Appendix F: Ethics Approval Form, Letter of Consent.....	89
--	----

List of Tables

Table 1:	Sample Distribution by Gender and Grade.....	23
Table 2:	Sample Distribution by Gambling Severity.....	28
Table 3:	Reported Reasons for Engaging in Gambling Behavior as a Function of Gambling Involvement.....	31
Table 4:	Percentage of Affirmative Responses Endorsed to Each Question of the DSM-IV-J by Identified Probable Pathological Gamblers.....	33
Table 5:	A Comparison of the Four Gambling Groups on the RADS	35
Table 6:	Multivariate Results: CISS Subscales.....	37
Table 7:	A Comparison of the Four Gambling Groups on the CISS	38
Table 8:	A Comparison of the Three Substance Groups on the CISS.....	40
Table 9:	A Comparison of the Four Gambling Groups on the LOC.....	41
Table 10:	A Comparison of the Four Gambling Groups on the LOC Among Externals.....	42
Table 11:	Frequencies of Drug, Alcohol, and Cigarette Use for Adolescents.....	45
Table 12:	Logistic Regression Results for the Three Models.....	48
Table 13:	Evaluation of Goodness of Fit: Hosmer-Lemeshow Statistic.....	49

List of Figures

<u>Figure 1.</u>	Percentage of Regular Drug, Alcohol, and Cigarette Use Across the Four Levels of Gambling Involvement.....	43
-------------------------	---	-----------

Abstract

The psychosocial correlates of adolescent gambling behavior were assessed among 7th, 9th, and 11th graders. Participants (N = 587) completed questionnaires concerning their gambling behavior, coping skills, locus of control, depression, and substance use.

Adolescents were grouped into 1 of 4 groups based upon their performance on the DSM-IV-J (Fisher, 1992) gambling screen: non-gamblers, social gamblers, problem gamblers, and probable pathological gamblers. This research examined whether individuals belonging to the 4 groups differ with respect to locus of control, coping skills, depression, and substance use. Results indicated that probable pathological gamblers were characterized by an external locus of control and reported higher levels of maladaptive coping styles, depression, and regular substance use than non-gamblers and social gamblers. Logistic regression analyses suggest that coping skills, locus of control, substance use, and depression alone do not adequately predict pathological gambling, but do seem to play an important role in the etiology nonetheless. Implications are discussed.

Résumé

Les facteurs psychosociaux en corrélation avec le jeu pathologique chez les adolescents ont été évalués chez des élèves de 7^e, 9^e et 11^e année. Les participants (N = 587) ont rempli des questionnaires portant sur leurs divers comportements face au jeu, moyens utilisés pour affronter des difficultés, locus de contrôle, dépression et consommation d'alcool et/ou de stupéfiants. Ils ont été disséminés dans un des quatre groupes suivants en fonction de leurs résultats au DMS- IV-J (Fisher, 1992) - un outil de dépistage du jeu: non-joueurs, joueurs sociaux, joueurs à problèmes et joueurs pathologiques probables. Cette étude vise à déterminer si d'un groupe à l'autre, les individus réagissent de la même manière quant au locus de contrôle, aux moyens utilisés pour affronter des difficultés, à la dépression et à l'usage régulier d'alcool et/ou de stupéfiants. Les résultats révèlent que les adolescents aux prises avec le jeu manifestent un locus de contrôle externe, utilisent davantage de moyens problématiques pour faire face à des difficultés et présentent davantage de cas de dépression et d'abus d'alcool et/ou de stupéfiants que les non-joueurs et les joueurs sociaux. Les résultats obtenus par régression logistique permettent d'affirmer qu'en étudiant uniquement les facteurs psychosociaux (moyens de se tirer d'affaire, locus de contrôle et usage de substances diverses), on ne peut prévoir les cas de jeu pathologique chez les adolescents. Cependant, il apparaît que ces facteurs jouent effectivement un rôle prépondérant dans le développement étiologique du jeu pathologique. La portée éventuelle de ces facteurs est discutée.

CHAPTER 1

Introduction

Gambling is a leisure activity which is well entrenched in the North American culture, with lifetime estimates of gambling participation among adolescents ranging between 75% (Ladouceur & Mireault, 1988) and 91% (Lesieur & Klein, 1987). In fact, recent research (Gupta & Derevensky, in press) suggests that gambling is more popular than alcohol and drug use in the secondary school, with rates of regular gambling participation among adolescents surpassing those of any other addictive behaviors.

Much of the past research on youth gambling has been directed at determining the prevalence rates of problem gambling and has concluded that 4.4% to 7.4% of adolescents are pathological gamblers (Gupta & Derevensky, in press; Lesieur & Klein, 1987; Shaffer & Hall, 1996), with another 9.9% to 14.2% being at-risk for the development of serious gambling problems (Shaffer & Hall, 1996).

These findings are worrisome given that problematic gambling amongst youth has been associated with increased delinquency and crime, difficulties in academic performance and work activities, and disruptions in familial and personal relationships (Ladouceur & Mireault, 1988; Lesieur & Klein, 1987; Wynne, Smith, & Jacobs, 1996). Of utmost importance is the need to delineate the factors, among adolescents, which increase an individual's vulnerability to developing and maintaining a gambling problem.

Recent research has focused on the identification of potential risk factors involved in the initiation, development and maintenance of disordered gambling amongst adolescents. The results of such studies suggest the following psychosocial factors as potential correlates of problem gambling: depressed mood (Gupta & Derevensky, 1998),

dissociation (Gupta & Derevensky, 1998), parental gambling involvement (Govoni, Rupcich, & Frisch, 1996; Winters, Stinchfield, & Fulkerson, 1993), early onset of gambling (Fisher, 1993; Gupta & Derevensky, in press), personality factors (i.e., impulsivity, risk-taking, and sensation-seeking) (Gupta & Derevensky, 1997; Powell, Hardoon, Gupta, & Derevensky, 1999), and use of alcohol and drugs (Winters et al.). These findings seem to suggest that gambling, like other addictions, is a multidimensional condition involving biological, psychological, and social determinants.

The present research program aims to increase our knowledge in this domain and investigates potential predictors (i.e., risk factors) of problem gambling through measurement of relevant psychosocial factors. More specifically, the present study seeks to systematically investigate the interplay between coping skills, locus of control, depressive symptoms, substance use, and gambling behavior. It is hoped that information gained from such research will contribute to the development of much needed prevention and clinical intervention programs.

There has been a lack of consensus in the field with respect to the terminology used to describe youth who are experiencing gambling problems. For purposes of this study, the term "addiction" will be used throughout the paper.

CHAPTER 2

Review of the Literature

In recent years, gambling has become a well-established leisure activity among today's youth. Similar to adults, most adolescents gamble responsibly, primarily for purposes of entertainment and recreation without experiencing serious problems. Nevertheless, there is a small but significant proportion of youth gamblers who appear to be over-involved with gambling and for some teenagers, gambling can spiral out of control resulting in serious gambling-related problems. This finding is particularly worrisome given the widespread availability of gambling venues, necessitating more research and prevention work in the field of juvenile gambling behavior.

Conservative estimates place the prevalence of youth pathological gambling at 4% and there are likely multiple factors which may predispose an adolescent to develop a gambling problem. There is reason to believe that disordered gambling, like other addictions, is a multidimensional condition involving biopsychosocial determinants including a physiological predisposition (Jacobs, 1986; 1987), environmental stressors, social and familial influences (Govoni, Rupcich, & Frisch, 1996; Winters, Stinchfield, & Fulkerson, 1993), psychological processes (Gupta & Derevensky, 1998), and individual personality characteristics (Gupta & Derevensky, 1997; Powell, Hardoon, Gupta, & Derevensky, 1999) amongst others. The present study is designed to investigate a constellation of psychosocial variables believed to be involved in the initiation, development, and maintenance of disordered gambling among youth.

Current State of Knowledge

Before providing a description of the psychosocial factors that will be addressed in this research, it is important to first review what is currently known about youth gambling behavior.

Despite the fact that the field of juvenile gambling is still in its infancy, consistent findings with respect to prevalence and gender estimates have been reported across different studies. Pathological gambling, like other patterns of addictive behavior, is not restricted to adults but also exists among the young. In fact, much of the past research on youth gambling has focused on establishing prevalence rates of problem gambling and has concluded that pathological gambling rates for adolescents appear to range between two and eight times that of adults (Gupta & Derevensky, in press; Lesieur, Cross, Frank, Welch, White, Rubenstein, Moseley, & Mark, 1991; Wynne, Smith, & Jacobs, 1996). A recent meta-analysis of prevalence studies conducted in Canada and the United States has indicated that between 4.4% and 7.4% of adolescents exhibit serious patterns of compulsive or pathological gambling and between 9.9% and 14.2% are at-risk for developing or returning to serious gambling problems (Shaffer & Hall, 1996).

Lifetime estimates of gambling participation among high school seniors range between 75% (Ladouceur & Mireault, 1988; Shaffer, 1993) and 91% (Lesieur & Klein, 1987). The prevalence of lifetime gambling among youth appears to be on the rise in some jurisdictions. In 1988, Ladouceur and Mireault found that 76% of high school students in Quebec reported having gambled at least once in their lives, 65% had placed a bet in the previous 12 months, 24% gambled once a week or more, while 1.7% showed signs of pathological gambling. A few years later, Ladouceur, Dubé, and Bujold (1994)

reported that 90% of their sample of Quebec adolescents had gambled once in their lifetime and that 22% gamble once a week or more. Similar findings have been reported by Derevensky, Gupta, and Della-Cioppa (1996) and by Gupta and Derevensky (in press).

The avid participation of juveniles in gambling activities is not confined to North America. Researchers in the U.K. have shown that slot machine (more commonly known as fruit machine) gambling is an extremely popular leisure pursuit among their adolescents (Fisher, 1993; 1995; Griffiths, 1990; 1991; Huxley & Carroll, 1992; Ide-Smith & Lea, 1988).

To date, there has been a clear consensus that gambling is more popular among males than females (Fisher, 1993; Govoni et al., 1996; Griffiths, 1989; Ladouceur et al., 1994), with estimates of pathological gambling at least twice as common among males (Gupta & Derevensky, in press; Lesieur & Klein, 1987; Volberg & Steadman, 1988, Stinchfield, Cassuto, Winters, & Latimer, 1997; Wynne et al., 1996). Moreover, males tend to engage in a variety of different gambling activities more frequently than females (Gupta & Derevensky, in press). However, researchers in the U.K. have failed to confirm the gender bias in adolescent fruit machine gambling (Fisher, 1993; Huxley & Carroll, 1992).

Recent research efforts have concluded that gambling behavior is established early and appears to begin at the same time or earlier than other patterns of addictive behavior such as alcohol or drug use. Retrospective studies reveal that adult probable pathological gamblers report that their gambling behaviors began in late childhood, at approximately 9 or 10 years of age (Dell, Ruzika, & Palisi, 1981; Gupta & Derevensky,

in press; Wynne et al., 1996). As well, research reveals that 20% to 25% of the children of adult gamblers engage in similar behaviors and/or exhibit various addictions (Lesieur & Klein, 1987; Lorenz & Shuttlesworth, 1983). These findings indicate that there may be a relationship between gambling and other addictions as well as a strong social learning component involved in the acquisition of such behaviors (Derevensky et al., 1996). Further, these findings are particularly worrisome given that the existing literature on addictive behaviors has shown that early onset is associated with more severe problems (Bailey, Flewelling & Rachal, 1992; Custer, 1982; Dell et al., 1981; Harrison & Luxenberg, 1995; Wynne et al., 1996).

Gambling involvement amongst adolescents has become a growing problem in today's society. Although not health compromising to the same extent as alcohol or drug addiction, its potential for producing personal and familial problems and social costs associated with problem gambling have been widely acknowledged. Indeed, problematic gambling amongst youth has been associated with many adverse consequences, such as increased rates of delinquency and crime, use of drugs and alcohol, disruption of family and peer relationships, and decreased academic performance (Fisher, 1993; Gupta & Derevensky, in press; Ladouceur & Mireault, 1988; Lesieur & Klien, 1987; Wallisch, 1996; Winters et al., 1993; Wynne et al., 1996).

Preliminary findings suggest that personality factors, including sensation seeking, risk-taking, and impulsivity, also influence the initiation, development, and maintenance of gambling behavior. For example, recent research with high school and college students demonstrated that sensation seeking and risk taking scores increase as the degree of gambling involvement increased (Gupta & Derevensky, 1997; Powell et al., 1999). In

a recent study examining the personality characteristics of teenage gamblers, Gupta and Derevensky (1997) found that problem and probable pathological gamblers deviated from the norm on measures of impulsivity, distractibility, over-activity, self-indulgence, and nonconformity to group standards. As well, these problem gamblers appear to exhibit less self-discipline and lower self-esteem than others.

Although social awareness regarding the problem of juvenile gambling is increasing and prevention efforts are slowly evolving, many issues remain unresolved. For instance, the specific motivations prompting problem gambling and the mechanisms that contribute to the development and maintenance of this behavior are still not clearly delineated. Are they subject to individual differences? Do they differ developmentally? Are they physiological, emotional, cognitive, and/or social? In order to address these issues it is important to understand the relationship between several key variables. This program of research examines the interplay between coping skills, depressive symptomatology, and locus of control among adolescents with different degrees of gambling involvement. This research will serve to provide valuable information that may subsequently be incorporated into effective prevention and clinical treatment programs.

Psychosocial Factors Associated with Gambling Behavior

Depression and Gambling. Depression in children and adolescents has received considerable attention over the past 20 years. Compared with childhood, early adolescence is associated with significant increases in reports of depressed mood and depressive disorders (Fleming & Offord, 1990). By middle to late adolescence, prevalence rates of depressed mood and clinical depression approach levels observed in adult populations (Fleming & Offord, 1990). Compas, Ey, and Grant (1993) propose a

comprehensive model of depressive phenomena to account for gender differences in depression among adolescents. In this model, biological, social, and coping processes are all candidates for being important moderators among depressive mood, syndromes, and disorders. It is hypothesized that these three levels of depression are related in a hierarchical and sequential manner and reflect the progression of depressive phenomena in adolescents.

Many adolescents, perhaps as many as 40% of youth at any given time, experience elevations in depressed mood as a result of daily stressors, normal hormonal fluctuations, and interpersonal interactions (Compas, Eye, & Grant, 1993). For a subset of these adolescents with elevated depressed mood, approximately 5%-6% of the population, the depressed mood exacerbates and develops into a depressive syndrome. Among those adolescents, a smaller subgroup (1%-3% of the population) develop a depressive disorder.

The occurrence of biological/social changes and interpersonal stress are not sufficient however to fully account for the significant divergence in depressive syndromes and disorders observed in adolescent males and females. It is suggested that the ways in which adolescent males and females cope with initial experiences of depressed mood may be essential in explaining the onset, maintenance, severity, and duration of more pervasive depressive outcomes (Compas, Orosan, & Grant, 1993; Nolen-Hoeksema 1987). There is increasing evidence that people who focus chronically on their negative moods, rather than engaging in more active problem-solving or pleasure-seeking activities, are at increased risk for developing prolonged and severe bouts of depression (Musson & Alloy, 1988). Consistent with Nolen-Hoeksema's (1987)

response-set model, adolescent girls are more likely than boys to develop coping styles that involve thoughts and behaviors that focus attention on their depressive symptoms as well as on the cause of the mood and its implication (rumination coping). Examples of ruminative responses include sitting alone thinking about how tired and unmotivated one feels and worrying that one's depression will interfere with one's job. Ruminative responses may prolong and exacerbate depressed mood via at least three mechanisms (Nolen-Hoekema, 1998). First, rumination enhances the negative effects of depressed mood on thinking, making negative interpretations of events and painful memories more accessible. Second, rumination interferes with interpersonal problem solving because it allows a depressive mood to affect concentration and thinking. Furthermore, rumination inhibits problem-focused coping and instrumental behaviors that might increase chances for controlling the environment and receiving positive reinforcement (Carver, Scheier, & Weintraub, 1989; Nolen-Hoeksema, 1987).

Males, on the other hand, may be more immune to depression by their prototypical response-set of turning their attention away from the depressed mood onto more pleasant or neutral activities (distraction coping) (Compas, Orosion, & Grant, 1993; Nolen-Hoeksema 1998). Examples can include engaging in activities with friends or working on a hobby. It is suggested that these distracting responses interrupt the negative effects of mood on thinking by providing the individual with direct positive reinforcement (Nolen-Hoeksema, 1998).

Several researchers have investigated the construct of depression as it relates to gambling involvement. The most consistent findings reported by researchers investigating personality characteristics (Moravec & Munley, 1983) and psychiatric

symptomatology (Blaszczynski & McConaghy, 1988; Linden, Pope, & Jonas, 1986) of adult probable pathological gamblers is the presence of high levels of depression.

Several researchers have found that probable pathological gamblers tend to obtain high scores on the depression and psychopathic deviation scales of the MMPI (Graham & Lowenfeld, 1986; McCormick & Taber, 1988; Moravec & Munley, 1983). Similar findings have been obtained by researchers who have evaluated depression with the Beck Depression Inventory (Becoña, Lorenzo, & Fuentes, 1996; Blaszczynski, McConaghy & Frankova, 1990), the Schedule for Affective Disorders and Schizophrenia (McCormick, Russo, Ramirez, & Taber, 1984), or the Symptom Check List-90 (Blaszczynski & McConaghy, 1988). Other studies have found a high incidence of major affective disorder among patients undergoing treatment for pathological gambling. McCormick, et al. found that 76% of probable pathological gambler inpatients met *Research Diagnostic Criteria* for lifetime diagnosis of a major depressive disorder and that all patients were at serious risk for suicide. Suicidal tendencies were identified in a national survey of 500 Gamblers Anonymous members (Frank, Lester, & Wexler, 1991). Forty-eight percent of respondents reported having contemplated suicide and 13% reported having actually attempted to end their lives. More recently, Gupta and Derevensky (1998) found that problem and pathological adolescent gamblers reported higher levels of dysphoric mood and depressive symptomatology than their peers, with 23% of these adolescents meeting the criteria for clinical depression on the Reynolds Adolescent Depression Scale.

It has been reported that depression frequently emerges in probable pathological gamblers during a period of abstinence (Dell et al., 1981; Wray & Dickerson, 1981). An investigation of 327 patients undergoing abstinence treatment for alcoholism, smoking,

opiate use, compulsive gambling, and uncontrollable eating found that 72% of all relapses occurred in response to negative emotional states, social pressures, and interpersonal conflict. This finding further supports the association between depression and pathological gambling behaviors.

Similarly, numerous studies have demonstrated a significant association between other addictive behaviors and affective disorders (Weiss, Najavits, & Mirin, 1998). For example, Rounsaville and Kleber (1986) found that 54% of their sample of opioid addicts entering treatment met research diagnostic criteria for lifetime diagnosis of a major depressive disorder, and 24% suffered from a current diagnosis of major depression. As well, an investigation of 156 adolescents hospitalized on a dual diagnosis unit for alcohol and drug abusers found that 70% of the adolescents met the criteria for conduct disorder, 51% met criteria for affective disorders, and 14% were diagnosed with both conduct disorder and major depression (Bukstein, Brent, & Kaminer, 1989). Studies of substance abusers in the community have also shown a high incidence of comorbidity with affective disorders, thus arguing against the possibility that the findings reported in the aforementioned studies were a result of sampling bias (Helzer & Pryzbeck, 1988).

Despite the overall agreement among the aforementioned studies, none of them have clearly elucidated the nature of the relationship between depressive symptomatology and pathological gambling. Although the literature consistently supports the contention that probable pathological gamblers exhibit elevated depressive symptoms (Becoña et al., 1996; Blaszczynski & McConahy, 1988; Blaszczynski et al., 1990; Gupta & Derevensky, 1998; Linden et al., 1986; McCormick et al., 1984) the direction of causality remains questionable. It is possible that depression fosters the addiction. Yet, it is equally likely

that depressive symptoms emerge in response to the negative consequences of excessive gambling (e.g., losing jobs, debts, marital discord, and legal problems).

According to Jacobs' (1986) General Theory of Addictions, depression is viewed as an antecedent to an addiction since gambling is perceived as a means of escape from a painful reality. Depression marked by an aversive hypotonic arousal and dysphoric affective states, fulfills two requirements of Jacobs' theory. One of the reinforcing qualities that maintains a gambling addiction is that it enables the depressed individual to escape from a painful existence and to experience dissociative states in which they are important, successful and admired. As such, excessive gambling participation may be conceptualized as a form of self-medicating behavior (Jacobs, 1988).

Consistent with Jacobs' view, Neiss (1993) argues that "the use of a psychoactive substance becomes elevated in an individual's motivational hierarchy to the extent that it replaces dysphoric states with positive ones." In a study examining the motives for opiate use, Zinberg (1984) found that the most frequently reported motive for opiate use by the non-addicted controlled users was "to enjoy the high," followed by "recreation," "relaxation," and "socializing." Conversely, the most frequently reported motive for opiate use by the compulsive users was to "alleviate depression," followed by "to enjoy the high," and "to escape." Similarly, Marlatt (1987) reported differential expectations from alcohol use among moderate drinkers and alcoholics. Alcoholics expected alcohol to serve as a "magic elixir" that solves all problems and relieves all distress. These findings provide further evidence that the function of virtually any addictive pattern of behavior is to provide relief from psychological pain.

However, depression may also play a role in the development of gambling problems other than its link to hypotonic physiological resting states and emotional distress, but rather due to the negative cognitive style typical of depressed individuals (McCormick, 1988). McCormick proposes that addictive gamblers are likely to hold belief patterns consistent with a learned helplessness model. More specifically, it is suggested that probable pathological gamblers explain negative outcomes in terms of their own failure (i.e., internal, stable, and global causes) while, positive events are attributed to causes outside of their control (external, unstable, specific). These belief patterns are likely to affect one's sense of ability to make effective coping choices and to diminish one's self-efficacy, thereby possibly increasing reliance on addictive behavior as a means of coping.

While the link between compulsive gambling and the occurrence of depression has been well established amongst adult gamblers, there is a general lack of studies examining the rates of depression amongst adolescent gamblers in the U.S., Canada, and European countries.

Coping and Gambling. The relationship between stressful experiences and well-being, both psychological and physical, has been the focus of a great deal of research (Higgins & Endler, 1995; Roth & Cohen, 1986). Studies investigating the interplay between adolescent stress and psychopathology have demonstrated that stressful experiences alone are insufficient to explain negative mental health outcomes during adolescence (Compas, Orosan, & Grant, 1993). Clinical evidence from the McGill Youth Gambling Research & Treatment Clinic (Gupta & Derevensky, 1999) supports the contention that adolescent pathological gamblers have poor coping skills. Coping

processes that are used in response to stressful experiences may be particularly important in understanding psychopathology during this developmental period and during later development as well. Lazarus and Folkman (1984) conceptualize coping efforts or strategies as constantly changing cognitive and behavioral actions which are intended to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person. Coping efforts have been delineated into those intended to act on the stressor (*task-oriented or problem-focused coping*) and those intended to regulate emotional states associated with or resulting from stressful life events (*emotion-oriented coping*) (Endler & Parker, 1990; Folkman & Lazarus, 1985). *Emotion-oriented coping* includes strategies such as ruminating, daydreaming, and emotional responses to stress, while *task-oriented coping* refers to active attempts at dealing with stress, either behaviorally or cognitively (Endler & Parker, 1990; Folkman & Lazarus, 1985). Another widely used framework classifies coping efforts according to their focus, either toward or away from the stressful situation (Ebata & Moos, 1991). *Active or approach coping* strategies refers to cognitions (e.g., positive reappraisal) or behaviors (e.g., direct action, support-seeking) that focus on the stressful situation. *Avoidance-oriented coping* involves cognitive or behavioral efforts to either not think about the stressor or to avoid encountering the stressful situation.

There is consistent evidence that dimensions of *active coping* that include problem solving and positive cognitions about a stressful life event are related to lower mental health and substance use problems (Compas, Malcarne, & Fondacaro, 1988; Ebata & Moos, 1991, Sandler, Tein, & West, 1994). Furthermore, the use of *avoidance coping* strategies have been consistently linked to higher mental health problems in children and

adolescents (Ebata & Moos, 1991; Sandler et al., 1994). Similarly, *emotion-oriented coping* strategies have been consistently linked to negative aspects of health, such as anxiety, somatic problems, and depression (Endler & Parker, 1990).

Coping measures usually assess support-seeking and sometimes differentiate whether support is sought from parents or peers. Empirical evidence concerning the relationship between coping via seeking support and adolescent adjustment has been inconsistent. Wills and Vaughn (1989) found that in a sample of adolescents, a supportive relationship with family members was positively associated with self-esteem and negatively associated with substance use, while peer support was positively related to substance use. Sandler et al. (1994) failed to find a significant association between *support coping* and child adjustment in cross sectional analyses, although a positive relationship between *support coping* and depression was noted in a prospective design.

Interventions to enhance coping efforts play an important role in both the prevention and treatment of adolescent psychopathology (Compas, 1998). Examples include interventions to enhance coping with parental divorce by increasing children's skills in coping with divorce-related stressors (Pedro-Carroll & Cowen, 1985), programs to prevent depression in youth by facilitating more effective cognitive and behavioral strategies to cope with stressful experiences (Jaycox, Reivich, Gillham, & Seligman, 1994), and interventions for the treatment of childhood anxiety disorders (Kendell et al., 1997). These interventions teach children and adolescents problem solving and emotion-regulation skills in order to facilitate adaptation to stress (Compas, 1998).

The role of coping in the development of gambling dependence has been speculated but not empirically measured among youth. Blaszczynski and McConaghy

(1989) have argued that pathological gambling can best be conceptualized as a maladaptive coping strategy used to deal with stress and/or depression. Taber, McCormick, and Ramirez (1987) provided evidence, based on a retrospective study of 44 probable pathological gamblers, that depression and anxiety were higher in those who experienced severe life stressors than in those who experienced minor stressors. In 9 of the 10 individuals reporting severe life stressors, the stressors predated the onset of pathological gambling. More recently, McCormick (1994) examined the coping skills of 1129 patients admitted to a treatment center for a substance abuse problem. It was found that patients with both a gambling and substance abuse problem differed from patients with only a substance abuse problem in their coping skills. The comorbid substance abusing gamblers reported significantly more *escape/avoidance* coping strategies, *distancing* coping strategies and *confrontive* coping strategies. *Escape/avoidance* coping strategies are marked by lying, procrastination, leaving town or various means of withdrawing from the situation. They may also include other pathological behaviors, such as the abuse of alcohol or other drugs. *Confrontive* coping strategies are characterized by aggressive efforts to alter the situation, and some degree of hostility and risk taking. *Distancing* strategies refers to efforts to cope by detaching oneself from the situation and downplaying the significance of the situation. McCormick (1994) maintains that all of these coping styles are consistent with a pattern of impulsive, avoidant behavior.

Current models of addiction relapse emphasize the importance of coping and suggest that individuals who lack appropriate coping resources to manage situational demands are at greater risk for returning to their addictive pattern of behavior (Brown,

Vik, Patterson, & Grant, 1995; Marlatt, 1985; Wills & Shiffman, 1985). Investigations examining adolescent relapse support the significant role of coping in addiction relapse. For example, studies examining cognitive and behavioral coping strategies of adolescent drug and alcohol abusers have shown that the use of strategies differs between adolescents with different posttreatment outcomes (Myers & Brown, 1990a; 1990b) and that coping style predicts subsequent drug and alcohol use status (Myers, Brown, & Mott, 1993).

If excessive gambling is in fact a form of maladaptive coping (Blaszczynski & McConaghy, 1989; Gupta & Derevensky, 1999), then these gamblers need particular assistance in developing alternative and adaptive coping strategies, such as seeking emotional support or positive reappraisal. To date, there exists no research investigating the relationship between coping styles and degree of gambling involvement amongst adolescents.

Locus of Control and Gambling. A personality variable that has been shown to influence adolescent psychosocial adjustment is locus of control (Gomez, 1998; Kliwer & Sandler, 1992, McClun & Merrell, 1998). Locus of control refers to an individual's perception concerning the determinants of rewards and punishments (Rotter, 1966). An internal locus of control refers to the belief that one has the ability to control the occurrence of events, while an external locus of control refers to the belief that such events are under the control of extraneous factors such as luck, chance, or other individuals. Studies investigating the relationship between generalized locus of control and adolescent adjustment have found that an external locus of control is associated with

low academic achievement, delinquency, and depression (Gomez, 1998; Kliever & Sandler, 1992; McClun & Merrell, 1998).

Few studies have examined the construct of locus of control as it relates to gambling involvement (Hong & Chiu, 1989; Lester, 1980; Schneider, 1968). Liverant and Scodel (1960) reported that on a dice-rolling task, individuals with an internal locus of control chose significantly more bets of intermediate probability and low pay-off (i.e., cautious bets) than those with an external locus of control. As well, internally oriented individuals wagered more money on bets considered more cautious than those that contained more of an element of risk. Further, externally oriented individuals preferred low probability bets that had high pay-out rates. More recently, in a study examining the predictors of lottery gambling among college students, Browne and Brown (1994) reported that an external locus of control was marginally related to student lottery playing but significantly related to parental gambling behavior.

Recent research highlights the complexity of the relationship between locus of control and gambling behavior. Two hypotheses have been proposed to explain the nature of this association. The self-confirmation hypothesis maintains that locus of control influences gambling involvement directly. In support of this hypothesis, Schneider (1968) argued that externally controlled individuals attempt to confirm their expectancy of external control by engaging in activities that are governed by chance (e.g., gambling). Additional support for this hypothesis comes from Lester (1980), who demonstrated that externally oriented college students were more likely to engage in gambling activities in which chance plays a greater role (e.g., lotteries and slot machines). On the other hand, the mediating hypothesis contends that the association

between locus of control and gambling involvement is mediated by the gamblers' illusion of control. In 1989, Hong and Chiu examined the relationship between gambling involvement and locus of control among adults in Hong Kong. They found support for both hypotheses: Males with an external locus of control were reportedly gambling in part to regain illusory control, whereas female externals gambled in order to confirm their expectancy of external control.

More recently, Derevensky, Gupta, and Émond (1995) investigated the link between locus of control and the gambling behavior of children. Using children from grades 4, 6, and 8, they noted a trend such that the children with an external locus of control tended to take greater monetary risks in a computer simulated game of blackjack and to report higher rates of gambling involvement.

In conclusion, the literature reviewed suggests that internally oriented individuals tend to be more conservative in chance determined situations, whereas externally oriented individuals take considerably more risks when engaging in a gambling task. While the research thus far points to a relationship between locus of control and gambling, be it direct or mediated by other intervening variables, further research is needed to examine this relationship amongst adolescents.

Principal Aims

The purpose of the present study is to examine adolescent gambling behavior from several perspectives: 1) to investigate the role that depression plays in the manifestation of a gambling addiction through its effects on one's ability to cope with problems, 2) to elucidate the relationship between coping style and excessive/problematic gambling involvement, 3) to investigate the association between locus of control and

gambling behavior, 4) to identify the underlying motivational factors which result in gambling involvement, 5) to examine developmental and gender differences in coping skills, locus of control, and depression as they relate to gambling behavior. In sum, the present study seeks to systematically investigate the interplay among the following variables: coping, depression, substance use, locus of control, and gambling behavior among adolescents.

Hypotheses

Based upon the numerous studies with adult probable pathological gamblers and preliminary research with adolescents, it is hypothesized that problem and probable pathological gamblers will obtain higher depression scores than non-problem and social gamblers.

Drawing on clinical reports illustrating the poor/maladaptive coping skills of probable pathological gamblers seeking treatment, it is expected that adolescent problem and probable pathological gamblers will show higher levels of maladaptive coping (i.e., avoidant and/or emotion-oriented coping) than non-problem gamblers and social gamblers. It is also expected that substance users will obtain significantly higher levels of maladaptive coping than non-users.

Based on previous research which has found a significant relationship between locus of control and gambling involvement, it is hypothesized that adolescent probable pathological gamblers will be more likely to have an external locus of control orientation.

It is expected that the problem and probable pathological gamblers will obtain higher rates of comorbidity with regular alcohol and substance use, as previously demonstrated.

It is further hypothesized that coping skills, depression, and locus of control *interact* in such a way as to predispose a person to addiction.

It is hoped that this research will provide valuable information which will serve to identify children and adolescents at greatest risk for the development of a gambling problem. While this research primarily focuses on youth gambling, it is hoped that the findings may provide insights into the developmental course of other addictive behaviors among youth.

There exists a concern over the terminology used to refer to youth who are experiencing serious gambling-related problems. Terms such as *pathological*, *compulsive*, *probable pathological*, and *Level III* gamblers have been used in the literature to refer to individuals who experience academic, social, emotional, and financial problems resulting from their gambling involvement. The terms *pathological gambler* and *addiction* will be used in this paper although the author acknowledges the controversy over this issue.

CHAPTER 3

Method

Participants

Participants included 587 adolescents (220 males and 367 females) from grades 7, 9, and 11. The adolescents were selected from 4 middle-class English schools in the greater Montreal region and ranged in ages from 12 to 17. Socioeconomic status and ethno-cultural information were not obtained due to constraints imposed by ethical review boards. The breakdown of the sample with respect to grade and gender is outlined in Table 1.

Table 1

Sample Distribution by Gender and Grade

Grade	Males	Females	Total
7	59	127	186
9	83	108	191
11	78	132	210

Measures

Gambling Activities Questionnaire (GAQ). The GAQ, developed by Gupta and Derevensky (1996) is designed to assess four general domains related to gambling behavior: *Descriptive information* including prevalence, types of activities, wagers, social milieu; *cognitive perceptions* (not reported here) including participants' perceptions of the amount of skill and luck involved in various gambling and non-gambling tasks (7-point Likert scale); *familial history* such as parental gambling behavior; and *comorbidity*

with other addictive and delinquent behaviors (see Appendix A). The questions within each section domain are discrete, analyzed individually, and no cumulative scores are calculated. The GAQ was selected due to its high face validity. It has been used in a number of research studies (Gupta & Derevensky, 1997; 1998). This questionnaire takes approximately 25 to 30 minutes to complete.

Coping Inventory for Stressful Situations (CISS). The CISS (Endler & Parker, 1990) is a self-report measure designed to assess coping behaviors adolescents engage in when reacting to difficult, stressful, or upsetting situations (see Appendix B). The scale utilizes a 5-point Likert frequency scale ranging from “Not at all” to “Very much.” Sample items include “Focus on the problem and see how I can solve it” and “Take some time off and get away from the situation.” The CISS has 48 items, 16 items for each of the three subscales, which are *task-oriented*, *emotion-oriented*, and *avoidance-oriented* coping. The avoidance scale has two subscales- *distraction* (eight items), and *social diversion* (five items). The normative mean score for each of the CISS subscales is 50, with a standard deviation of 10. The CISS was selected due to its strong internal consistency (coefficient alphas for task, emotion, and avoidance subscales were .90; .87; and .85 for males, respectively, and .90; .88; and .83 for females, respectively) (Endler and Parker, 1990).

Nowicki-Strickland Locus of Control Scale for Children (LOC). This scale (Nowicki & Strickland, 1973) is designed to assess locus of control (see Appendix C). It consists of 40 forced-choice items that describe reinforcement situations across interpersonal and motivational domains, such as affiliation, achievement and dependency. Responses indicating an external orientation to locus of control receive a score of “1” and

items indicating an internal orientation receive a score of “0.” Thus, higher scores on the LOC are indicative of a more external locus of control. Examples of externally oriented items include “Do you believe that most problems will solve themselves if you just don’t fool with them?” and “Do you believe that wishing can make good things happen?” Examples of internally oriented items include “Do you believe that if somebody studies hard enough he or she can pass any subject?” and “Do you believe that whether or not people like you depends on how you act?” The LOC was selected due to its widespread use and established reliability ($r = .68$ to $.81$) and construct validity ($r = .38$ to $.61$ with the Rotter Locus of Control Scale) (Karnes & D’Ilio, 1991; Lamontagne & Hepworth, 1991; Nowicki & Strickland, 1973; Nunn, 1987; Wildstein & Thomson, 1989).

Reynolds Adolescent Depression Scale (RADS). The RADS (Reynolds, 1987) is a widely used measure of depressive symptomatology amongst adolescents (see Appendix D). It consists of 30 items and utilizes a 4-point Likert-type response format. The adolescent is required to indicate whether the symptom-related item has occurred “Almost never,” “Hardly ever,” “Sometimes,” or “Most of the time.” Items are worded in the present tense to tap into present symptom status. Sample items include “I feel like hurting myself” and “I feel like crying.” Responses are weighted from one to four points, so that the total score on the RADS ranges from 30 to 120. The RADS was chosen for its high internal consistency (coefficient alphas ranged from $.90$ to $.96$), high test-retest reliability (reliability coefficient for six weeks was $.80$), well-documented concurrent validity, and validated clinical cutoff score of 77 (Reynolds, 1987).

DSM-IV-J (Fisher, 1992). This 12 item instrument is a screen for pathological gambling during adolescence, modeled after the DSM-IV (APA, 1994) criteria for

diagnosis of adult pathological gambling (see Appendix E). Each item endorsed is given a score of 1, with a score of 4 or greater being the scoring criteria for pathological gambling. This instrument taps into the following dimension of pathological gambling: progression and preoccupation, tolerance, withdrawal and loss of control, escape, chasing, lies and deception, illegal acts and family/school disruption. Fisher (1992) tested the effectiveness of this screen with a population of young fruit machine players, and concluded that the DSM IV-J is an effective discriminator of pathological gambling in adolescents. It has been used in a number of research studies (e.g., Gupta & Derevensky, 1998; Powell et al., 1999).

Procedure

Consent was obtained from three different school boards spanning the region of Montreal (North, South, and Central). One school from each of these school boards was randomly selected. Consent forms and a letter describing the purpose of the study were distributed to parents via the participating schools (see Appendix F). Every child received a consent form and those that gave consent participated in the study. The measures were group administered to the students in classrooms and/or school cafeteria by research assistants. Students were provided the directions for each instrument according to the test manual, and were required to work individually. The participants were informed that all of their responses would remain anonymous and confidential. Each participant was assigned an identification code, which was noted on all forms, and students were not required to provide their names. Teachers were not present during the administration of the questionnaires and research assistants were present at all times to answer questions. The measures were introduced and self-administered in the following

order: the GAQ, CISS, LOC, RADS, and the DSM-IV-J. Students required approximately 45 minutes to complete the instruments. The rate of participation was approximately 62%. This rate is fairly low due to the fact that school board consent was obtained towards the end of school year, and parents and school administrators were concerned that students would be missing important class time prior to the final examination period.

CHAPTER 4

Results

Gambling Classification

A classification system was devised and all adolescents were grouped into one of four groups based upon the severity of the gambling problem. Non-gamblers (NG) ($N = 119$) consisting of adolescents who reported never gambling. Social gamblers (SG) ($N = 415$) includes adolescents who reported a maximum of two gambling-related problems on the DSM-IV-J (score = 0, 1, or 2). Problem gamblers (PG) ($N = 13$) consists of adolescents who report 3 problems related to gambling on the DSM-IV-J (score = 3). Probable pathological gamblers (PPG) ($N = 38$) consists of adolescents meeting the established criteria (≥ 4 problems on the DSM-IV-J) for pathological gambling. The distribution of the total sample by group composition and gender can be found in Table 2.

Table 2

Sample Distribution by Gambling Severity

Group	Grade 7		Grade 9		Grade 11		Total	
	M	F	M	F	M	F	M	F
NG	8	39	9	30	5	28	22	97
SG	43	83	63	75	55	96	161	254
PG	2	2	4	0	3	2	9	4
PPG	6	3	7	3	15	4	28	10
Total	59	127	83	108	78	130	220	365

Note. NG = non-gamblers; SG = social gamblers; PG = problem gamblers; PPG = probable pathological gamblers.

The results are presented in three sections; the first focussing on general findings pertaining to gambling involvement, the second dealing with the specific hypotheses which this study sought to investigate, and the third including the results of a logistic regression.

General Findings Pertaining to Gambling Behavior

Of the total sample, 79.7% reported having gambled in the past year, with 25.7% reportedly gambling at least once per week. The DSM-IV-J criteria for pathological gambling was met by 6.5% of the sample. As well, 3.9% of all adolescent gamblers indicated having stolen money for gambling purposes, whereas 26.3% of probable pathological gamblers reported having stolen money to finance their gambling activities. Further, 10.9% of all adolescent gamblers reported the presence of a learning difficulty/disability, whereas 28.9% of probable pathological gamblers indicated the presence of a learning difficulty/disability.

Males were more likely to gamble than females, with 90% of males and 73% of females reported having gambled in the past year, $\chi^2(1, N = 587) = 22.974, p < .0001$. As well, males (46%) were two times more likely to gamble on a regular basis (a minimum of once per week) than females (22.2%), $\chi^2(1, N = 466) = 29.451, p < .0001$. Further, gender differences are highly evident with respect to pathological gambling, with 12.7% of males and 2.7% of females meeting the criteria for pathological gambling using the DSM-IV-J, $\chi^2(1, N = 587) = 22.450, p < .0001$. Within the group of probable pathological gamblers, 2 of the 10 females (20.0%) and 8 of the 28 males (28.6%) reported stealing money for gambling purposes. A reliable chi-square analysis could not be performed due to one cell size being smaller than 5 ($n = 2$ for females who reporting

stealing). Furthermore, among probable pathological gamblers, males (32.1%) were more likely to report the presence of a learning difficulty/disability than females (20%), although this difference did not reach significance, $\chi^2(1, N = 38) = .528, p > .05$.

Developmentally, rates of gambling involvement show some variability across age groups with 74.7% of grade 7, 79.6% of grade 9, and 84.3% of 11 students reporting having gambled in the past year, $\chi^2(2, N = 587) = 5.575, p > .05$. Similarly, rates of weekly gambling amongst adolescents show little variability across age groups with 24.2% of grade 7, 26.7% of grade 9, and 26.2% of grade 11 students gambling at least once per week, $\chi^2(2, N = 587) = .347, p > .05$. Prevalence rates of pathological gambling, based on the DSM-IV-J criteria, are 4.8% for grade 7, 5.2% for grade 9, and 9.2% for grade 11, $\chi^2(2, N = 587) = 3.787, p > .05$. Stealing for gambling purposes was indicated by 2.2% of grade 7, 4.0% of grade 9, and 5.1% of grade 11 gamblers, $\chi^2(2, N = 454) = 1.776, p > .05$. Among those meeting the criteria for pathological gambling, stealing money for gambling purposes was reported by 11.1% of grade 7, 30% of grade 9, and 31.6% of grade 11 students, $\chi^2(2, N = 38) = 1.414, p > .05$.

Motives for Gambling

Among adolescent gamblers, the most frequently endorsed reasons for engaging in gambling behavior are to make money (76.9%), for enjoyment (76.8%), and for the excitement (62.0%) it provides. Other reported reasons include relaxation (7.6%), social involvement (7.6%), to feel older (3%), to escape daily problems (1.7%), to deal with unhappiness (1.5%), and to deal with loneliness (.9%). Table 3 provides more detailed

information concerning the reported reasons for engaging in gambling behavior across level of gambling involvement.

Table 3

Reported Reasons for Engaging in Gambling Behavior as a Function of Gambling Involvement

Reasons	Social Gamblers $n = 116$	Problem Gamblers $n = 13$	Probable Pathological Gamblers $n = 34$
Make Money	74.7%	100%	91.9%**
Enjoyment	76.6%	84.6%	75.7%
Excitement	59.1%	84.6%	83.8%**
Relaxation	6.8%	7.7%	16.2%
Social Involvement	7.1%	7.7%	13.5%
To Feel Older	2.7%	0%	8.1%
Unhappiness	1.0%	0%	8.1%**
Escape Problems	1.5%	0%	5.6%
Loneliness	1.0%	0%	0%

Note. Chi-squares for each reason across the three levels of gambling involvement.

** $p < .01$.

It is important to note that for probable pathological gamblers, gambling involvement serves multiple purposes. While desire to make money, excitement, and enjoyment continue to be the most popular reasons for engaging in gambling, gambling to deal with unhappiness, escape problems, promote social involvement, relax, and to feel

older occur more frequently amongst probable pathological gamblers as compared to non-probable pathological gamblers.

Clinical Interpretation of the Response Patterns on the DSM-IV-J

An analysis of the items endorsed on the DSM-IV-J by the 38 probable pathological gamblers provides clinically useful information concerning the most frequently reported problems by these youth gamblers (see Table 4). The most frequently endorsed item by the probable pathological gamblers on the DSM-IV-J refers to chasing gambling losses. Preoccupation with gambling activities, spending school lunch or bus money for gambling activities, and gambling in order to escape problems were also highly endorsed. Of particular interest is the finding that almost half of the probable pathological gamblers indicated having missed school for gambling purposes. Thus, the high truancy rate amongst probable pathological gamblers may have deleterious consequences with respect to their academic performance.

Table 4

Percentage of Affirmative Responses Endorsed to Each Question of the DSM-IV-J by
Identified Probable Pathological Gamblers

Question Item on the DSM-IV-J	Group PPG
After spending money on gambling activities do you play again another day to try and win your money back? (More than half the time)	81.6%
Do you often find yourself thinking about gambling activities at odd times of the day and/or planning the next time you will play?	76.3%
In the past year have you spent your school dinner money, or money for bus fares, on gambling activities?	55.3%
Do you ever gamble as a way of escaping problems?	55.3%
Do you lie to your family or friends or hide how much you gamble?	52.6%
In the past year have you taken money from someone you live with, without their knowing, to gamble?	52.6%
Do you find that you need to spend more and more money on gambling activities?	52.6%
Do you become restless, tense, fed up, or bad tempered when trying to cut down or stop gambling?	47.4%
In the past year, have you missed school to participate in gambling experiences? (5 times or more)	44.7%
In the past year have you stolen money from outside the family, or shoplifted, to gamble?	34.2%
In the past year have you gone to someone for help with a serious money worry caused by participation in gambling?	28.9%

Gambling and Depression

In order to test the hypothesis that problem and probable pathological gamblers would obtain higher depression scores than non-gamblers and social gamblers, a 4 x 3 x 2

analysis of variance (ANOVA) was performed, including gambling group, gender, and grade as fixed variables and the RADS as a dependent variable.

Group Differences on the RADS. Univariate analyses reveal a significant main effect of group on total RADS score, $F(3, 562) = 2.78, p < .05$. Overall, among adolescents who gamble, those with the most gambling-related problems obtained significantly higher depression scores. More specifically, Tukey HSD post hoc comparisons indicate that probable pathological gamblers obtained significantly higher RADS scores than the social gamblers. No significant difference was noted between non-gamblers and probable pathological gamblers. Problem gamblers did not differ significantly from Groups NG and SG on the RADS.

Gender Differences on the RADS. A significant univariate gender difference was noted for the RADS, $F(1, 562) = 4.659, p < .05$. More specifically, females obtained higher depression scores ($M = 63.20, SD = 12.75$) than males ($M = 57.84, SD = 12.16$). However, it is important to note that the means for probable pathological gamblers show little differences between males and females. No gender x group interaction was found. Means and standard deviations for the RADS by gender are reported in Table 5.

Table 5

A Comparison of the Four Gambling Groups on the RADS

Group	RADS Total			
	Males		Females	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Non-Gamblers	61.88	12.53	57.36	12.38
Social Gamblers	56.29	11.53	63.47	12.71
Problem Gamblers	59.11	8.57	67.25	15.95
Probable Pathological Gamblers	66.71	13.17	67.50	15.15

Developmental Differences on the RADS. Univariate analyses indicate no significant main effect of grade when examining total RADS scores. As well, no significant grade x gender interaction was noted for the RADS. The three-way interaction of group x grade x gender was also not found to be significant.

In order to determine what percentage of adolescents from each group meet the established criteria for clinical depression (a score of 77 or more on the RADS), frequency counts and chi-square analyses were conducted. The results revealed that 10.9% of non-gamblers, 11.8% of social gamblers, 7.7% of problem gamblers, and 28.9% of probable pathological gamblers met the established criteria for clinical depression, $\chi^2(3, N = 585) = 10.01, p < .05$. It is important to note that among probable pathological gamblers, rates of clinical depression are evenly distributed among males (30.0%) and females (28.6%). A reliable chi-square analysis could not be performed due to one cell size being smaller than 5 ($n = 3$ for females with depression).

Gambling and Coping

In order to test the hypothesis that problem and probable pathological gamblers would obtain significantly higher levels of maladaptive coping than non gamblers and social gamblers, a 4 x 3 x 2 multivariate analysis of variance (MANOVA) was conducted, including gambling group, grade, and gender as fixed variables and the CISS subscales as the dependent variable.

The results of the MANOVA (Univariate results will be reported later) are presented in Table 5. For the CISS, only the group effect was significant. SPSS MANOVA (Version 9.0) was used for the analysis with the Type III sequential adjustment for nonorthogonality. It is important to note that the Box's M statistic is significant ($p < .0001$) thus rejecting the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups. Although this is an indication of a violation of the assumption of equality across groups, it has been argued that the Box's M test is overly sensitive and that the results of the MANOVA are valid in light of the high observed power coefficients (Stevens, 1996; Tabachnick & Fidell, 1996). In the case of a significant Box's M statistic, Tabachnick and Fidell (1996) recommend using the more conservative Pillai's criterion to evaluate multivariate significance in the situation of unequal N's, and these are presented in Table 6.

Table 6

Multivariate Results: CISS Subscales

Source	Value	F	df	Observed Power	p
GROUP					
Pillai's Trace	.05	1.75	(15, 1602)	.93	.04
GRADE					
Pillai's Trace	.03	1.70	(10, 1066)	.02	.08
GENDER					
Pillai's Trace	.01	0.49	(5, 532)	.18	.78
GROUP x GRADE					
Pillai's Trace	.04	0.78	(30, 2680)	.77	.80
GROUP x GENDER					
Pillai's Trace	.02	0.53	(15, 1602)	.35	.93
GRADE x GENDER					
Pillai's Trace	.02	0.92	(10, 1066)	.50	.51
GROUP x GRADE x GENDER					
Pillai's Trace	.050	1.09	(25, 2680)	.88	.35

Group Differences on the CISS. The means and standard deviations for the five subscales of the CISS, as well as the results of the univariate analyses are presented in Table 7.

Table 7

A comparison of the Four Gambling Groups on the CISS

CISS Subscale	Group NG	Group SG	Group PG	Group PPG	Univariate $F(3, 536)$
Task	50.22 (8.06)	49.60 (9.18)	47.62 (9.09)	49.41 (7.77)	0.98
Emotion	48.34 (10.95)	48.50 (10.54)	54.62 (8.43)	57.15 (10.90)	3.49*
Avoidance	46.84 (10.84)	49.01 (11.47)	50.85 (11.22)	58.44 (9.81)	4.29**
Social Diversion	47.30 (10.73)	48.63 (10.22)	49.62 (10.55)	53.38 (9.45)	1.93
Distraction	47.09 (10.22)	49.36 (10.77)	51.23 (10.46)	59.06 (7.92)	5.27***

Note. The normative mean score for each of the CISS subscales is 50, with a standard deviation of 10. Values enclosed in the parentheses represent standard deviations.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Univariate results indicate that there was a significant effect of group on three of the five CISS subscales: Emotion, avoidance, and distraction. Tukey HSD pairwise comparisons are presented for these subscales.

Problem and probable pathological gamblers yielded the highest mean scores on the emotion, avoidance, and distraction subscales. Post hoc analyses indicate that probable pathological gamblers were found to score higher on emotion, avoidance, and distraction-oriented coping than non-gamblers and social gamblers. It is important to note that individuals in the PPG group are slightly higher than the norm on these three

subscales. Problem gamblers did not differ significantly from Groups NG and SG on these three subscales.

Gender Differences on the CISS. No significant main effect for gender was found for the CISS subscales. As well, no significant gender x group interaction was found.

Developmental Differences on the CISS. No significant main effect for grade was noted with respect to the CISS subscales. The three-way interaction of group x grade x gender was also not found to be statistically significant.

Substance Use and Coping

In order to establish a possible parallel between the coping styles of probable pathological gamblers and the coping styles of regular substance users, a multivariate analysis of variance (MANOVA) was conducted, including substance use as a fixed variable and the CISS subscales as dependent variables. The comorbidity of pathological gambling and substance use will be discussed in a later section.

Participants were classified into one of three categories based upon their reports in the GAQ of substance use. Non-substance users ($N = 217$) consists of individuals who did not report any drug or alcohol consumption within the past year. Occasional substance users ($N = 249$) includes individuals who reported occasional drug or alcohol consumption (less than once per week) during the previous 12 months. Regular substance users ($N = 95$) includes individuals who reported regular use (once per week or more) of drugs or alcohol within the past year.

It is important to mention that since substance use was not the main focus of the present study, results are not broken down into separate sections specific to alcohol and drug use. Multivariate results indicate a significant main effect of substance use on CISS

scores, $F(2, 539) = 3.186$, $p < .0001$. Similar to the results found for probable pathological gamblers, univariate results indicate that significant differences exist between the substance groups on three of the five CISS subscales: Emotion, avoidance, and distraction coping. Means and standard deviations for the five CISS subscales, as well as the results of the univariate analyses are presented in Table 8.

Table 8

A Comparison of the Three Substance Groups on the CISS

CISS Subscale	Non-Substance Users		Occasional Substance Users		Regular Substance Users		Univariate $F(2, 558)$
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Task	50.26	8.62	49.89	9.03	48.08	8.98	2.06
Emotion	47.17	10.20	49.71	11.00	52.01	10.90	7.48***
Avoidance	47.72	11.54	49.33	11.56	52.26	10.62	5.23**
Social Diversion	47.63	10.47	48.90	10.59	50.61	9.11	2.90
Distraction	48.31	10.60	49.70	10.95	51.87	10.44	3.70*

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Tukey HSD post hoc analyses indicate that regular substance users obtained significantly higher scores on measures of avoidance, distraction, and emotion-oriented coping than non-substance users. However, it is important to note that their scores fall within the normative range. Additionally, occasional substance users obtained significantly higher scores pertaining to emotion-oriented coping than non-substance users.

Locus of Control and Gambling

It was hypothesized that probable pathological gamblers would be more likely to have an external locus of control orientation. The locus of control measure was analyzed by performing a quartile split analysis, with the top 25% of individuals being classified as externally oriented ($N = 141$) and the bottom 25% classified as internally oriented ($N = 172$).

A chi square analysis comparing the four levels of gambling involvement demonstrated that probable pathological gamblers were significantly more likely to be externally oriented, $\chi^2(6, N = 559) = 24.06, p < .001$, with 62.9% of probable pathological gamblers classified as externals (see Table 9 for a breakdown by gambling involvement).

Table 9

A Comparison of the Four Gambling Groups on the LOC

Group	Locus of Control	
	Internals (Bottom Quartile)	Externals (Top Quartile)
Non-Gamblers	22.1%	30.1%
Social Gamblers	28.4%	28.1%
Problem Gamblers	7.7%	30.8%
Probable Pathological Gamblers	5.7%	62.9%

It is important to note that among probable pathological gamblers, there is an equal representation of males and females in the top quartile (61.5% and 66.7%, respectively).

An analysis of variance (ANOVA) conducted among externally oriented individuals did not reveal significant differences in locus of control scores across the different levels of gambling involvement, $F(3, 168) = 2.376, p > .05$.

Although the external locus of control group is represented by 62.9% of probable pathological gamblers, a closer look at the means reveals no significant distinction among the different gambling groups (see Table 10).

Table 10

A Comparison of the Four Gambling Groups on the LOC Among Externals

Group	<u>M</u>	<u>SD</u>	<u>N</u>
Non-Gamblers	19.03	2.10	34
Social Gamblers	19.83	2.43	112
Problem Gamblers	21.75	5.50	4
Probable Pathological Gamblers	20.50	3.08	22

Note. ANOVA was conducted using participants with an external orientation.

Gambling and Other Addictive Behaviors

The adolescents provided information concerning their alcohol and illicit drug consumption. They were given a list of different types of alcohol, drugs, and cigarette smoking, and were required to indicate the frequency with which they use these substances (never, less than once per week, or once per week or more). Regular use is defined as using any of these substances a minimum of once per week.

Chi square analyses were conducted in order to determine whether problem and probable pathological gamblers would obtain higher rates of comorbidity with regular alcohol, drug use, and cigarette smoking.

As Figure 1 indicates, probable pathological gamblers engage in other addictive behaviors to a greater extent than non-probable pathological gamblers. The percentages of adolescents who regularly engage in alcohol use are 5.0% for non-gamblers, 13.0% for social gamblers, 38.5% for problem gamblers, and 65.8% for probable pathological gamblers, $\chi^2(6, N = 584) = 99.72, p < .0001$. The percentages of adolescents who regularly engage in illicit drug use are 2.5% for non-gamblers, 4.3% for social gamblers, 0% for problem gamblers, and 5.3% for probable pathological gamblers, $\chi^2(6, N = 585) = 19.09, p < .001$. The percentages of youth who regularly engage in cigarette smoking are 10.1% for non-gamblers, 16.4% for social gamblers, 23.1% for problem gamblers, and 42.1% for probable pathological gamblers, $\chi^2(6, N = 584) = 36.29, p < .0001$.

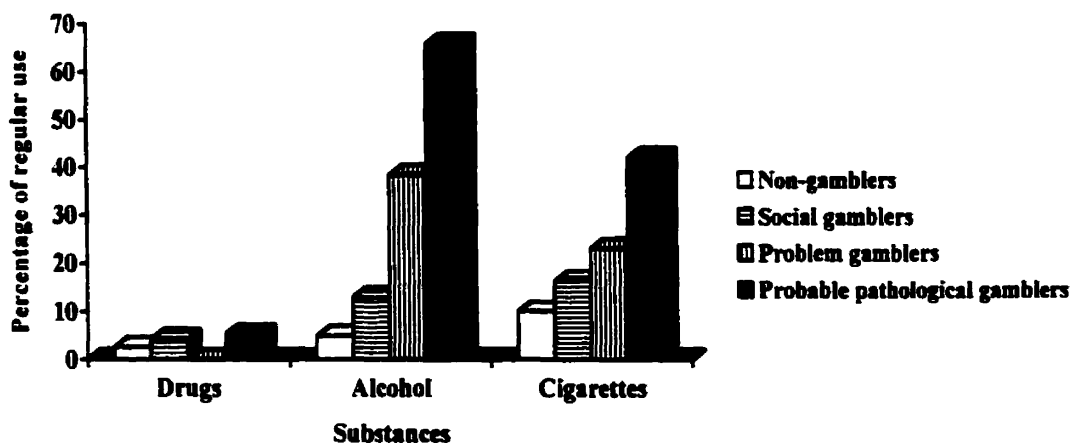


Figure 1. Percentage of Regular Drug, Alcohol, and Cigarette Use Across the Four Levels of Gambling Involvement.

Table 11 provides more detailed information concerning the different types of drugs and substances associated with the severity of the gambling problem. As can be seen in Table 11, the percentage of total use of substances increase linearly from non-gamblers to probable pathological gamblers, indicating that substance use is positively associated with degree of gambling involvement.

Table 11

Frequencies of Drug, Alcohol, and Cigarette Use for Adolescents

Substance	Group NG	Group SG	Group PG	Group PPG
Alcohol				
Used	44.5%	61.4%	84.6%	86.8%
Occasional Use	39.5%	48.3%	46.2%	21.1%
Regular Use	5.0%	13.0%	38.5%	65.8%
Upper Drugs				
Used	3.4%	2.6%	15.4%	18.4%
Occasional Use	1.7%	2.4%	15.4%	10.5%
Regular Use	1.7%	.2%	0%	7.9%
Downer Drugs				
Used	6.7%	17.7%	30.8%	34.2%
Occasional Use	5.0%	11.4%	7.7%	15.8%
Regular Use	1.7%	6.3%	23.1%	18.4%
Hallucinatory Drugs				
Used	1.7%	2.4%	15.4%	15.8%
Occasional Use	1.7%	2.4%	15.4%	5.3%
Regular Use	0%	0%	0%	10.5%
Cigarette Smoking				
Used	19.3%	30.9%	61.5%	63.2%
Occasional Use	9.2%	14.5%	38.5%	21.1%
Regular Use	10.1%	16.4%	23.1%	42.1%

Logistic Regression Analyses

A forward logistic regression analysis was performed through SPSS to assess prediction of membership into the group of probable pathological gamblers (PPG). The following variables were included in the logistic regressions: depression (RADS),

substance use (Substance), distraction coping (Distraction), and external locus of control (External). Separate analyses were performed for males and females to better understand the relative contributions made by the psychological risk factors. The PPG group was included as the dependent variable.

Of the original 587 cases, 31 were deleted due to partial missing data. Thus, 556 cases were included in the overall analysis (209 males and 347 females).

For the overall logistic regression, there was an adequate model fit on the basis of three predictor variables alone (Distraction, External, and Substance). Overall prediction rates were unimpressive, with 99.42% of the non-probable pathological gamblers and only 22.86% of the probable pathological gamblers correctly predicted, for an overall success rate of 99.42%. However, the analysis including only females resulted in different findings. For females, one significant predictor for membership into the PPG group was obtained (Substance), with 99.70% of the non-probable pathological gamblers and only 11.11% of the probable pathological gamblers correctly classified, for an overall success rate of 99.70%. For males, four significant predictor variables for membership into the PPG group were obtained (RADS, Distraction, External, and Substance), with 97.81% of the non-probable pathological gamblers and 30.77% of the probable pathological gamblers correctly predicted, for an overall success rate of 89.47%.

Further logistic regression analyses were performed, substituting general substance use for alcohol use, and it was found that alcohol accounted for most of the substance effect. For the analysis using males, three significant predictors for membership into the PPG group emerged (RADS, Distraction, and Alcohol), correctly classifying 42.31% of male probable pathological gamblers as opposed to the previously

reported 30.77%. The use of alcohol in the analysis in place of general substance use did not alter the results for the overall regression using both genders, nor for the analysis using females. Table 12 depicts the relationship between the predictor variables and membership into the PPG group for the three analyses. The Wald statistic evaluates the contribution of an individual predictor to a model, and a significant result indicates a predictor that is reliably associated with PPG membership. The Odds Ratio is a measurement of relative risk when directionality is determined. For example, taking into account the contribution of all variables in the model, males who use alcohol on a regular basis (once per week or more) are approximately 9 times more likely to become probable pathological gamblers.

Goodness of fit was evaluated with use of the Hosmer-Lemeshow statistic, where a good model produces a non-significant chi-square (Tabachnick & Fidell, 1996). By this criterion, we can see that the tested model provides adequate fit to a good model since $p > .05$ (See Table 13).

Table 12

Logistic Regression Results for the Three Models

Variables	B	S.E.	Wald	df	p	R	Odds Ratio
Total Sample							
RADS	.03	.01	3.79	1	.0516	.08	1.03
Distraction	.08	.02	13.99	1	.0002	.21	1.09
External	1.08	.42	6.54	1	.0105	.13	2.94
Alcohol	2.75	.42	42.56	1	<.0001	.39	15.70
Males							
RADS	.07	.02	11.21	1	.0008	.24	1.07
Distraction	.08	.03	9.90	1	.0017	.22	1.08
Alcohol	2.19	.52	17.82	1	<.0001	.32	8.95
Females							
Distraction	.08	.04	3.23	1	.0720	.12	1.08
External	1.22	.78	2.41	1	.1205	.07	3.38
Alcohol	3.39	.84	16.97	1	<.0001	.42	32.79

Table 13

Evaluation of Goodness of Fit: Hosmer-Lemeshow Statistic

	Chi-Square	<u>df</u>	<u>p</u>
Total Sample			
Goodness of Fit	7.76	8	.46
Males			
Goodness of Fit	1.87	8	.98
Females			
Goodness of Fit	2.62	8	.96

CHAPTER V

Discussion

Hypotheses-Driven Findings

The current finding that specific maladaptive coping styles are associated with problem gambling behavior makes a significant contribution to the current body of literature on youth gambling. More specifically, the results of the present study demonstrated that probable pathological gamblers use more emotion (i.e., rumination) and distraction-oriented coping skills than both non-gamblers and social gamblers. The present findings corroborate the findings of several other studies which implicate both rumination coping (Higgins & Endler, 1995) and avoidance coping (Billings & Moos, 1981; Higgins & Endler, 1995; Menaghan 1982; Suls & Fletcher, 1985) as potentially maladaptive strategies for dealing with stress. Contrary to expectations, no differences in coping skills were noted between problem gamblers and either non-gamblers or social gamblers. In light of the fact that these problem gamblers do not meet the established criteria for pathological gambling, it is possible that their healthier coping styles may have protected them from falling into the patterns of addictive behavior, despite their intensive involvement with gambling activities. No gender or developmental differences were noted with respect to coping skills.

The results of the present study indicated that regular substance users exhibited greater degrees of maladaptive coping, namely emotion, and distraction-oriented coping than non-substance users and occasional substance users. These findings offer some support to the conclusions of previous research which claim that maladaptive coping skills (e.g., Odgers, Houghton, & Douglas, 1996; Rhodes & Jason, 1988; Wills &

Shiffman, 1985) are associated with adolescent involvement in substance use, and also extend the addiction literature by demonstrating that common maladaptive coping styles underlie excessive involvement in both gambling and substance use.

Current results confirmed that probable pathological gamblers reported higher levels of dysphoric mood and clinical depression than their peers, which is consistent with previous research with adolescents (Gupta & Derevensky, 1998) and adults (Becoña et al., 1996; Blaszczynski & McConaghy, 1988; Blaszczynski et al., 1990; Linden et al., 1986; McCormick, et al., 1984). Further, 29% of these adolescent qualified for a diagnosis of clinical depression on the Reynolds Adolescent Depression Scale, which is in agreement with Gupta and Derevensky's (1998) findings. Contrary to the findings obtained by Gupta and Derevensky (1998), current results indicated that rates of clinical depression among probable pathological gamblers were evenly distributed among males and females. Gupta and Derevensky (1998) found higher rates of depression among female probable pathological gamblers and suggested that depression may play a larger role in the development of pathological gambling in females than in males. Results of the current study should be interpreted with caution given the small number of females represented in the pathological gambling group. Further inquiry into the possible gender differences among probable pathological gamblers is clearly warranted.

The findings of this study suggest once again that depression and dysphoric mood play a significant role in the syndrome of pathological gambling. It has been implied that gambling activities help these youth cope with their already existing depression (Gupta & Derevensky, 1998). Support for this contention is provided by other researchers who propose that gambling is sought with the goal of being able to relieve depressive and

hypotonic tendencies, decrease anxiety, and improve self-esteem (Bolen, Caldwell, & Boyd, 1975; Fisher & Bellringer, 1996; Ohtsuka, Bruton, DeLuc, & Borg, 1997).

The results of the present study shed additional light into Jacobs' (1986) General Theory of Addictions. According to Jacobs there are two interrelated sets of predisposing factors that determine whether or not an individual is at risk for developing and maintaining an addictive pattern of behavior. The first is a unipolar physiological resting state that is chronically and excessively either depressed or excited and the second is of a psychological nature characterized by feelings of inferiority or inadequacy.

However, the results of the present study suggest that coping patterns may mediate the relationship between these two predisposing risk factors and the development of an addiction. In particular, it is suggested that among the individuals who are experiencing both physical and emotional distress, those who tend to respond to problematic situations by engaging in ruminative and distraction-orientated activities may be more likely to develop an addiction. On the other hand, individuals who approach everyday problems in a more task-oriented way may be shielded from the development of an addiction.

The results of the present study are very encouraging and suggest a fruitful avenue for future research. In addition, the current findings have implications for the development of adolescent prevention and treatment programs. In particular, the results seem to suggest that preventive methods and treatment programs should incorporate coping enhancement strategies designed to broaden the coping repertoire of adolescents. Particular attention should be paid towards teaching adolescents more appropriate means of dealing with their problems. Two lines of research suggest that these adolescents

would clearly benefit from learning to utilize more task-oriented coping behaviors and less emotion or distraction-oriented coping behaviors. Several researchers have demonstrated that depressive individuals use more emotion-related coping behaviors than nondepressed individuals (Billings, Cronkite, & Moos, 1983; Billings & Moos, 1984; Endler & Parker, 1990; Mitchell, Cronkite, & Moos, 1983). As well, researchers have provided empirical evidence for a negative relationship between depressive symptomatology and task-oriented coping (Mitchell & Hodson, 1983). Also of interest is the fact that many researchers have demonstrated the presence of depressive symptoms among adult gamblers (Becona et al., 1996; Blaszczynski & McConaghy, 1988; Blaszczynski et al., 1990; Linden et al., 1986; McCormick et al., 1984) and most recently among adolescents (Gupta & Derevensky, 1998), further suggesting that gambling may be a means by which adolescents cope with their already existing depression (Gupta & Derevensky, 1998). Given that the present study found high levels of dysphoric mood and clinical depression among probable pathological gamblers and that these gamblers use predominantly more emotion and distraction oriented coping than their peers, it follows that teaching these adolescents more effective means of dealing with their problems will not only lower their depressive affect but may in fact decrease their need to gamble.

Current results indicated that probable pathological gamblers were more likely to have an external locus of control orientation as compared to the non-probable pathological gamblers. Further, among the probable pathological gamblers, there was an equal representation of males and females in the grouping of external locus of control. Nonetheless, an unexpected but important finding of this investigation originated from

the analysis conducted within the group of *externally oriented* individuals. Surprisingly, no differences in locus of control scores were found across level of gambling involvement. These findings do not support the contention that the relationship between depression and the development of gambling problems is mediated by the presence of an external locus of control orientation which is typical of depressed individuals. The results of the study suggest that locus of control may not predict pathological gambling per se; rather it may differentially predict the type of gambling activity that one chooses. For example, individuals with an internal locus of control orientation may prefer gambling activities which involve a greater amount of skill (i.e., blackjack) to those which involve more luck (i.e., lottery or bingo), whereas, individuals with an external locus of control orientation may be attracted to gambling activities in which luck plays a greater role. Partial support for this contention is provided by a recent study which demonstrated that an external locus of control was related to student lottery playing (Browne & Brown, 1994). Further studies are needed to examine the link between locus of control and specific gambling preferences.

The present study sought to systematically investigate the contribution of coping skills, locus of control, depressive symptoms, and regular substance use to the development and maintenance of a gambling problem. Logistic regression analyses yielded less than adequate predictions regarding pathological gambling, suggesting that these risk factors are insufficient on their own to fully account for the development and maintenance of pathological gambling among adolescents. Nevertheless, this study does effectively demonstrate that distraction-oriented coping skills, regular alcohol consumption, external locus of control, and depressive symptoms are significant

contributors to problem gambling behavior. These findings suggest that alcohol consumption and gambling involvement are among the various distraction-oriented coping strategies utilized by adolescents in order to escape problems and to alleviate depression. It is further believed these addictive-prone behaviors become elevated in individuals who do not possess more adaptive/instrumental means of dealing with their problems.

In light of the poor predictive ability of the present gambling model, it is evident that additional factors should be included in future examinations of the psychosocial correlates of adolescent gambling behavior. The existing literature on youthful gambling has identified a handful of risk factors which are believed to increase an individual's vulnerability to the development of a gambling problem: physiological arousal (Gupta & Derevensky, 1998), personality variables (i.e., impulsiveness, risk-taking, and excitability) (Gupta & Derevensky, 1998; Vitaro, Ferland, Jacques, & Ladouceur, 1998) dissociation (Gupta & Derevensky, 1998), and parental history of a gambling problem (Govoni et al., 1996; Jacobs, 1989). In addition, it is suggested that social factors should be examined as well. Given that the addiction literature has identified social support as an important determinant of substance use (e.g., Wills & Vaugh, 1989), it follows that future investigations of youthful gambling should incorporate measures of social support. It is quite possible that a healthy and supportive relationship with parents, or one's peers, may reduce an adolescent's vulnerability to gambling by reducing emotional distress and enhancing self-esteem. At the very least, the current findings would suggest that coping skills should be included in future examination of the psychosocial correlates of adolescent gambling behavior.

General Findings Pertaining to Gambling

The results of the present study indicate that a large number of adolescents (79.7%) are taking part in gambling activities, which is in agreement with the findings of most adolescent surveys (Gupta & Derevensky, in press; Ide-Smith, & Lea, 1988; Ladouceur, & Mireault, 1988; Lesieur, & Klein, 1987; Govoni et al., 1996; Volberg, 1993; Winters et al., 1993; Wynne et al., 1996). Consistent with the findings of previous research (Ladouceur et al., 1994; Lesieur & Klein, 1987) which has indicated gender differences in rates of gambling involvement, the present results indicated that males are more likely to gamble than females (90% vs. 73%). Furthermore, current results indicated that a small but substantial number of adolescents (6.7%) met the established criteria for pathological gambling, which also corroborates the findings of previous researchers (Fisher, 1993; Wood & Griffiths, 1998; Gupta & Derevensky, in press; Shaffer, & Hall, 1996; Shaffer, La Brie, Scanlon, & Cummings, 1994; Wynne et al., 1996). Grade 11 students showed the highest rates of pathological gambling, with 9.2% meeting the DSM-IV-J criteria. It is noteworthy to mention, however, that the rate of pathological gambling in the current study is slightly higher than the rate of 4.7% reported in a recent survey of Montreal adolescents which used the same diagnostic instrument to measure youth gambling (Gupta & Derevensky, in press). Given the recent proliferation of VLT machines in the province of Quebec, the present findings support the view that increased exposure to legalized forms of gambling result in increased rates of problem gambling (Jacobs, 1989). Nevertheless, the significance of this finding must be interpreted with caution given the small sample size of the current study.

Results of the present study indicate that males continue to experience more gambling-related problems than females. Consistent with the findings of previous researchers (Gaboury & Ladouceur, 1993; Ladouceur et al., 1994; Lesieur & Klein, 1987; Lesieur et al., 1991; Stinchfield et al., 1997), males are considerably more likely than females to meet the criteria for pathological gambling.

The findings of the current study indicate that disordered gambling amongst adolescents is associated with a host of negative consequences. In particular, results suggest that excessive gambling involvement lead adolescents towards similar problems experienced by adults, such as debts, financial difficulties, crime, and use of illicit substances.

Obtaining money to gamble tends to be a primary concern for adolescents who are regular gamblers. Approximately 30% of the adolescent probable pathological gamblers reported stealing money for gambling purposes, as compared to 2% of non-probable pathological gamblers reporting similar actions. The finding that over 80% of probable pathological gamblers chased their losses is worrisome given that such losses may perpetuate their gambling involvement, leading to more serious monetary problems.

Current results indicate that the percentage of substance use increases with degree of gambling involvement, which is in agreement with the findings of Gupta and Derevensky (1998). As expected, problem and probable pathological gamblers are considerably more likely to drink, take illicit drugs, and smoke, than non-problem gamblers. These results are consistent with the majority of researchers who found a high degree of comorbidity between pathological gambling and substance abuse disorders (Dell et al., 1981; Elia & Jacobs, 1993; Spunt, Lesieur, Hunt, & Cahill, 1995).

It is noteworthy to mention that the truancy rate of the current study (44.7%) is much higher than the rate of 7.9% reported in a 1997 survey of adolescents (Gupta & Derevensky, in press). Another important finding is that over 75% of these probable pathological gamblers are plagued by a constant preoccupation with planning their next gambling venture. Consequently, the academic success of probable pathological gamblers may be seriously jeopardized, given that so many of these adolescents are missing important class time and that many of them, even while in class, may have trouble focussing on academic tasks. Another factor that complicates this matter, is the finding that probable pathological gamblers are three times more likely to report the presence of a learning difficulty/disability than the non-probable pathological gamblers. This finding must be interpreted with caution, given that the present study relied on subjective accounts ("Have you ever been told that you have a learning difficulty/disability?") rather than diagnostic measures of learning disabilities. Nevertheless, the possible relationship between gambling involvement and learning disabilities deserves further attention. If such a relationship is substantiated then preventive efforts should target students known to have learning disabilities.

Limitations and Directions for Future Research

Several methodological limitations of the present study should be noted. Given that this study is cross-sectional, it supports no inferences about causality. For instance, although it is possible that specific maladaptive coping skills lead adolescents to gambling involvement, it is also likely that continuing gambling involvement impedes the development and implementation of adaptive coping strategies. Therefore, future

research should take the form of longitudinal studies to illuminate the causal connections between coping styles and gambling behavior amongst adolescents.

The fact that all measures were self-report measures raises the possibility that the relationships obtained could be explained by common method variance. Therefore, it may be important to obtain multiple measures of such constructs through several different ways. It would be useful if these studies obtained information from multiple sources, such as parents, teachers, friends, and participants themselves. In particular, corroboration of adolescents' reported coping skills can be obtained from parents and teachers.

An additional methodological issue which speaks to the questionable generalizability of the present findings is the unequal representation of participants within the four gambling groups, as well as the small number of female probable pathological gamblers in the current sample ($N = 10$). Therefore, the results obtained from the present study should be interpreted with that in mind.

The results of the current study should be viewed with caution given that information concerning the internal consistency and reliability of the CISS was not available. As such it is not known whether use of this measure is warranted among a community sample of adolescent gamblers.

Adolescent gambling involvement is a major public health problem that continues to pervade our society at an increasingly alarming rate without showing signs of abating. Although the definitive cause of youth gambling is unknown, considerable evidence indicates that it is a multidimensional disorder with several psychosocial and

environmental correlates. More research is needed to better understand how specific risk factors interact to predispose an individual to an addiction.

References

- American Psychiatric Association (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: APA.
- Bailey, S. L., Flewelling, R. L., & Rachal, J. V. (1992). Predicting continued use of marijuana among adolescents: The relative influence of drug-specific and social context factors. Journal of Health and Social Behavior, 33, 51-66.
- Becoña, E., Lorenzo, M., & Fuentes, M. J. (1996). Pathological gambling and depression. Psychological Reports, 78, 635-640.
- Billings, A. G., Cronkite, R. C., & Moos, R. H. (1983). Social-environmental factors in unipolar depression: Comparisons of depressed patients and nondepressed controls. Journal of Abnormal Psychology, 92, 119-133.
- Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. Journal of Behavioral Medicine, 4, 139-157.
- Billings, A. G., & Moos, R. H. (1984). Coping, stress, and social resources among adults with unipolar depression. Journal of Personality and Social Psychology, 46, 877-891.
- Blaszczynski, A., & McConaghy, N. (1988). SCL-90 assessed psychopathology in pathological gamblers. Psychological Reports, 62, 547-552.
- Blaszczynski, A., & McConaghy, N. (1989). Anxiety and/or depression in the pathogenesis of addictive gambling. International Journal of Addictions, 24, 337-350.
- Blaszczynski, A., McConaghy, N., & Franckova, A. (1990). Boredom proneness in pathological gambling. Psychological Reports, 67, 35-42.

Bolen, D. W., Caldwell, A. B., & Boyd, W. H. (1975). Personality traits of pathological gamblers. Paper presented at the Second Annual Conference on Gambling, Lake Tahoe, Nevada.

Brown, S. A., Vik, P. W., Patterson, T. L., & Grant, I. (1995). Stress, vulnerability, and adult alcohol relapse. Journal of Studies on Alcohol, 56, 538-535.

Browne, B. A., & Brown, D. J. (1994). Predictors of lottery gambling among American college students. The Journal of Social Psychology, 134, 339-347.

Bukstein, O. G., Brent, D. A., & Kaminer, Y. (1989). Comorbidity of substance abuse and other psychiatric disorders in adolescents. American Journal of Psychiatry, 146, 1131-1141.

Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. Journal of Personality and Social Psychology, 56, 267-283.

Compas, B. E. (1998). An agenda for coping research and theory: Basic and applied developmental issues. International Journal of Behavioral Development, 22, 231-237.

Compas, B. E., Ey, S., & Grant, K. E. (1993). Taxonomy, assessment, and diagnosis of depression during adolescence. Psychological Bulletin, 114, 323-344.

Compas, B. E., Malcarne, V. L., & Fondacaro, K. M. (1988). Coping with stressful events in older children and young adolescents. Journal of Consulting and Clinical Psychology, 56, 405-411.

Compas, B. E., Orosan, P. G., & Grant, K. E., (1993). Adolescent stress and coping: Implications for depressive phenomena in adolescence. Journal of Adolescence, 16, 331-349.

Custer, 1982. An overview of compulsive gambling. In P. Carone, S. Yoles, S. Keiffer, & L. Krinsky (Eds.), Addictive disorders update (pp. 107-124). NY: Human Sciences Press.

Dell, L. J., Ruzika, M. F., & Palisi, A. T. (1981). Personality and other factors associated with the gambling addiction. Interantional Journal of the Addictions, 16, 149-156.

Derevensky, J., Gupta, R., & Della-Cioppa, G. (1996). A developmental perspective of gambling behavior in children and adolescents. Journal of Gambling Studies, 12, 49-66.

Derevensky, J., Gupta, R., & Émond, M. (1995, August). Locus of control, video game playing and gambling behavior in children and adolescents. Poster session presented at the American Psychological Association Annual Convention. New York, NY.

Ebata, A. T., & Moos, R. H. (1991). Coping and adjustment in distressed and healthy adolescents. Journal of Applied and Developmental Psychology, 12, 33-54.

Elia, C., & Jacobs, D. F. (1993). The incidence of pathological gambling among Native Americans treated for alcohol dependence. International Journal of Addictions, 28, 659-666.

Endler, N. S., & Parker, J. D. A. (1990). Coping Inventory for Stressful Situations (CISS): Manual. Toronto, Canada: Multi-Health Systems.

Fisher, S. (1990). Juvenile gambling: The pull of the fruit machine. Paper presented at the Eighth International Conference on Risk and Gambling. London.

Fisher, S. (1992). Measuring pathological gambling in children: The case of fruit machines in the U.K. Journal of Gambling Studies, 8, 263-285.

Fisher, S. (1993). Gambling and pathological gambling in adolescents. Journal of Gambling Studies, 9, 277-288.

Fisher, S. (1995). The amusement arcade as a social space for adolescents: An empirical study. Journal of Adolescence, 18, 71-86.

Fisher, S., & Bellringer, P. (1996). The young fruit machine player. London: The UK Forum of Young People and Gambling.

Fleming, J. E., & Offord, D. R., (1990). Epidemiology of childhood depressive disorders: A critical review. Journal of the American Academy of Child and Adolescent Psychiatry, 29, 571-580.

Folkman, S., & Lazarus, R. A. (1985). If it changes it must be a process: A study of emotion and coping during three stages of a college examination. Journal of Personality and Social Psychology, 48, 150-170.

Frank, M. L., Lester, D., & Wexler, A. (1991). Suicidal behavior among members of Gamblers Anonymous. Journal of Gambling Studies, 7, 249-254.

Gadboury, A., & Ladouceur, R. (1993). Preventing pathological gambling among teenagers. Journal of Primary Prevention, 14, 21-28.

Gomez, R. (1998). Locus of control and avoidant coping: Direct, interactional and mediational effects on maladjustment in adolescents. Personality and Individual Differences, 24, 325-334.

Govoni, R., Rupcich, N., & Frisch, G. R. (1996). Gambling behavior of adolescent gamblers. Journal of Gambling Studies, 12, 305-318.

Graham, J. R., & Lowenfeld, B. H. (1986). Personality dimensions of the pathological gambler. Journal of Gambling Behavior, 2, 58-66.

Griffiths, M. D. (1989). Gambling in children and adolescents. Journal of Gambling Behavior, 5, 66-83.

Griffiths, M. D. (1990). The acquisition, development, and maintenance of fruit machine gambling in adolescents. Journal of Gambling Studies, 6, 193-204.

Griffiths, M. D. (1991). Amusement machine playing in childhood and adolescence: A comparative analysis of video games and fruit machines. Journal of Adolescence, 14, 53-73.

Gupta, R., & Derevensky, J. (1997). Personality characteristics and risk-taking tendencies among adolescent gamblers. Unpublished Manuscript, McGill University, Montreal, Canada.

Gupta, R., & Derevensky, J. (1998). An empirical examination of Jacob's General Theory of Addictions: Do adolescent gamblers fit the theory? Journal of Gambling Studies, 14, 17-29.

Gupta, R., & Derevensky, J. (in press). Adolescent gambling behavior: A prevalence study and examination of the correlates associated with problem gambling. Journal of Gambling Studies.

Harrison, P. A., & Luxenberg, M. G. (1995). Comparisons of alcohol and other drug problems among Minnesota adolescents in 1989 and 1992. Archives of Pediatrics and Adolescent Medicine, 149, 137-144.

Helzer, J. E., & Pryzbeck, T. R. (1988). The occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. Journal of Studies on Alcohol, 49, 219-224.

Higgins, J. E., & Endler, N. S. (1995). Coping life stress, and psychological and somatic distress. European Journal of Personality, 9, 253-270.

Hong, Y., & Chiu, C. (1989). Sex, locus of control, and illusion of control in Hong Kong as correlates of gambling involvement. The Journal of Social Psychology, 128, 667-673.

Huxley, J., & Carroll, D. (1992). A survey of fruit machine gambling in adolescents. Journal of Gambling Studies, 8, 167-179.

Ide-Smith, S. G., & Lea, S. E. (1988). Gambling in young adolescents. Journal of Gambling Behavior, 4, 110-118.

Jacobs, D. F. (1986). A general theory of addictions: A new theoretical model. Journal of Gambling Behavior, 2, 15-31.

Jacobs, D. F. (1988). Evidence for a common dissociative-like reaction among addicts. Journal of Gambling Behavior, 4, 27-37.

Jacobs, D. F. (1989). Illegal and undocumented: A review of teenage gambling and the plight of children of problem gamblers in America. In H. J. Shaffer, S. A. Stein, & B. Gambino (Eds.), Compulsive gambling: Theory, research, and practice. Toronto: Lexington Books.

Jaycox, L. H., Reivich, K. J., Gillham, J., & Seligman, M. E. P. (1994). Prevention of depressive symptoms in school children. Behavior, Research, and Therapy, 32, 801-816.

- Karnes, F. A., & D'Ilio, V. R. (1991). Locus of control in rural southern elementary gifted students. Psychological Reports, 69, 927-928.
- Kendell, P. C., Flannery-Schroeder, E., Panichelli-Mindel, S. M., Southam-Gerow, M., Henin, A., & Warman, M. (1997). Therapy for youths with anxiety disorders: A second randomized trial. Journal of Consulting and Clinical Psychology, 65, 366-380.
- Kliwer, W., & Sandler, I. (1992). Locus of control and self-esteem as moderators of stressor-symptom relations in children and adolescents. Journal of Abnormal Child Psychology, 20, 393-413.
- Ladouceur, R., Dubé, D., & Bujold, A. (1994). Prevalence of pathological gambling and related problems among college students in the Quebec metropolitan area. Canadian Journal of Psychiatry, 39, 289-293.
- Ladouceur, R. & Mireault, C. (1988). Gambling behavior among high school students in the Quebec area. Journal of Gambling Behavior, 4, 3-12.
- Lamontagne, L. L., & Hepworth, J. T. (1991). Issues in the measurement of children's locus of control. Western Journal of Nursing Research, 13, 67-83.
- Lazarus, R. S., & Folkman, S. (1984). Stress, appraisal, and coping. NY: Springer.
- Lesieur, H. R., Cross, J., Frank, M., Welch, M., White, C., Rubenstein, G., Moseley, K., & Mark, M. (1991). Gambling and pathological gambling among university students. Addictive Behaviors, 16, 517-527.
- Lesieur, H. R., & Klein, R. (1987). Pathological gambling among high school students. Addictive Behaviors, 12, 129-135.
- Lester, D. (1980). Choice of gambling activity and belief in locus of control. Psychological Reports, 47, 22.

Linden, R. D., Pope, H. G., & Jonas, J. M. (1986). Pathological gambling and major affective disorder: Preliminary findings. Journal of Clinical Psychiatry, 47, 201-203.

Liverant, S., & Scodel, A. (1960). Internal and external locus of control as determinants of decision making under conditions of risk. Psychological Reports, 7, 59-67.

Lorenz, V. C., & Shuttlesworth, D. E. (1983). The impact of pathological gambling on the spouse of the gambler. Journal of Community Psychology, 11, 67-76.

Marlatt, G. A. (1985). Relapse prevention: Theoretical rationale and overview of model. In G. A. Marlatt & J. R. Gordon (Eds.), Relapse prevention (pp. 3-70). NY: Guilford Press.

Marlatt, G. A. (1987). Alcohol, the magic elixir: Stress, expectancy, and the transformation of emotional states. In E. L. Gottheil (Ed.), Stress and addiction (pp. 302-322). NY: Brunner/Mazel.

McClun, L. A., & Merrell, K. W. (1998). Relationship of perceived parenting styles, locus of control orientation, and self-concept among junior high age students. Psychology in the Schools, 35, 381-405.

McCormick, R. A. (1988). Pathological gambling: A parsimonious need state model. Special issue, Compulsive gambling: An examination of relevant models. Journal of Gambling Studies, 3, 257-263.

McCormick, R.A. (1994). The importance of coping skill enhancement in the treatment of the pathological gambler. Journal of Gambling Studies, 10, 77-86.

McCormick, R. A., Russo, A. M., Ramirez, L. F., & Taber, J. L. (1984). Affective disorders among pathological gamblers seeking treatment. American Journal of Psychiatry, 141, 215-218.

McCormick, R. A., & Taber, J. L. (1988). Attributional style in pathological gamblers in treatment. Journal of Abnormal Psychology, 97, 368-370.

Menaghan, E. (1982). Measuring coping effectiveness: A panel analysis of marital problems and coping efforts. Journal of Health and Social Behavior, 23, 220-234.

Mitchell, R. E., Cronkite, R. C., & Moos, R. H. (1983). Stress, coping, and depression among married couples. Journal of Abnormal Psychology, 92, 433-448.

Mitchell, R. E., & Hodson, C. A. (1983). Coping with domestic violence: Social support and psychological health among battered women. American Journal of Community Psychology, 11, 629-654.

Moravec, J. D., & Munley, P. H. (1983). Psychological test findings on pathological gamblers in treatment. The International Journal of the Addictions, 18, 1003-1009.

Musson, R. F., & Alloy, L. B. (1988). Depression and self-directed attention. In L. B. Alloy (Ed.), Cognitive processes in depression (pp. 193-220). NY: Guilford Press.

Myers, M. G., & Brown, S. A. (1990). Coping and appraisal in relapse risk situations among adolescent substance abusers following treatment. Journal of Adolescence and Chemical Dependency, 1, 95-190.

Myers, M. G., & Brown, S. A. (1990). Coping responses and relapse among adolescent substance abusers. Journal of Substance Abuse, 2, 177-190.

Myers, M. G., Brown, S. A., & Mott, M. A. (1993). Coping as a predictor of adolescent substance abuse treatment outcome. Journal of Substance Abuse, 5, 15-29.

Neiss, R. (1993). The role of psychobiological states in chemical dependency: Who becomes addicted? Addiction, 88, 745-756.

Nolen-Hoeksema, S. (1987). Sex differences in unipolar depression: Evidence and theory. Psychological Bulletin, 101, 259-282.

Nolen-Hoeksema, S. (1998). Ruminative coping with depression. In J. Heckhausen & C. S. Carol (Eds.), Motivation and self-regulation across the life-span (pp. 237-256). NY: Cambridge University Press.

Nowicki, Jr., S., & Strickland, B. R. (1973). A locus of control scale for children. Journal of Consulting and Clinical Psychology, 40, 148-154.

Nunn, G. D. (1987). Concurrent validity between children's locus of control and attitudes towards home, school, and peers. Educational and Psychological Measurement, 47, 1087-1089.

Odgers, P., Houghton, S., & Douglas, G. (1996). Reputation enhancement theory and adolescent substance use. Journal of Child Psychology and Psychiatry, 37, 1015-1022.

Odgers, P., Houghton, S., & Hattie, J. (1994). Reputation and adolescent drug use: A focus group study. The Australian Educational and Developmental Psychologist, 11, 18-24.

Ohtsuka, K., Bruton, E., DeLuca, L., & Borg, V. (1997). Sex differences in pathological gambling using gaming machines. Psychological Reports, 80, 1051-1057.

Pedro-Carroll, J. L., & Cowen, E. L. (1985). The children of divorce intervention program: An investigation of the efficiency of a school-based prevention program.

Journal of Consulting and Clinical Psychology, 53, 603-611.

Powell, J., Hardoon, K., Baboushkin, H., Gupta, R., & Derevensky, J. (1997). Risk-taking in blackjack, roulette and slots: Do probable pathological gamblers take greater risks? Paper presented at the annual meeting of the National Conference on Compulsive Gambling, New Orleans.

Powell, J., Hardoon, K., Derevensky, J., & Gupta, R. (1999). Gambling and risk-taking behavior among university students. Substance Use & Misuse, 34, 1167-1184.

Reynolds, W. M. (1987). Reynolds adolescent depression scale. Champaign, IL: Psychological Assessment Resources, Inc.

Rhodes, J. E., & Jason, L. A. (1988). Preventing substance abuse among children and adolescents. NY: Pergamon Press.

Roth, S., & Cohen, L. J. (1986). Approach, avoidance, and coping with stress. American Psychologist, 4, 813-819.

Rotter, J. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, 1, Whole No. 609.

Rounsaville, B. J., & Kleber, H. D. (1986). Psychiatric disorders in opiate addicts: Preliminary findings on the course and interaction with program types. In R. E. Meyer (Ed.), Psychopathology and addictive disorders (pp. 140-168). NY: Guilford Press.

Sandler, I., Tein, J., & West, S. (1994). Coping, stress, and the psychological symptoms of children of divorce: A cross-sectional and longitudinal study. Child Development, 65, 1744-1763.

Schneider, J. M. (1968). Skill vs. chance activity preference and locus of control. Journal of Consulting and Clinical Psychology, 32, 333-337.

Shaffer, H. J. (1993). The emergence of youthful addiction: The prevalence of underage lottery use and the impact of gambling. Technical Report (121393-100). Massachusetts Council on Compulsive Gambling.

Shaffer, H. J., & Hall, M. N. (1996). Estimating the prevalence of adolescent gambling disorders: A quantitative synthesis and guide toward standard gambling nomenclature. Journal of Gambling Studies, 12, 193-214.

Shaffer, H. J., LaBrie, R., Scanlan, K. M., & Cummings, T. N. (1994). Pathological gambling among adolescents: Massachusetts gambling screen (MAGS). Journal of Gambling Studies, 10, 339-362.

Spunt, B., Lesieur, H. R., Hunt, D., & Cahill, L. (1995). Gambling among methadone patients. International Journal of Addictions, 30, 929-962.

Stevens, J. (1996). Applied multivariate statistics for the social sciences (3rd ed.). Mahwah, NJ: Lawrence Earlbaum.

Stinchfield, R., Cassuto, N., Winters, K., & Latimer, W. (1997). Prevalence of gambling among Minnesota public school students in 1992 and 1995. Journal of Gambling Studies, 13, 25-48.

Sulls, J., & Fletcher B. (1985). Self-attention, life stress, and illness: A prospective study. Psychosomatic Medicine, 47, 469-481.

Tabachnick, B. G., & Fidell, L. S. (1996). Using multivariate statistics (3rd ed.). NY: Harper Collins.

Taber, J. I., McCormick, R. A., & Ramirez, L. F. (1987). The prevalence and impact of major stressors among pathological gamblers. International Journal of Addictions, 22, 71-79.

Vitaro, F., Ferland, F., Jacques, C., & Ladouceur, R. (1998). Gambling, substance use, and impulsivity during adolescence. Psychology of Addictive Behaviors, 12 (3), 185-194.

Volberg, R. A. (1993). Gambling and problem gambling in Washington State. Report to the Washington State Lottery. Albany, NY: Gemini Research.

Volberg, R. A., & Steadman, H. J. (1988). Refining prevalence estimates of pathological gambling. American Journal of Psychiatry, 145, 502-505.

Wallisch, L. (1996). Gambling in Texas: 1995 Surveys of adult and adolescent gambling behavior. Austin TX: Texas Commission on Alcohol and Drug Abuse.

Weiss, R. D., Najavits, L. M., & Mirin, S. M. (1998). Substance abuse and psychiatric disorders. In R. J. Frances & S. L. Miller (Eds.), Clinical textbook of addictive disorders (2nd ed., pp. 291-318). NY: Guilford Press.

Wildstein, A. B., & Thomson, D. N. (1989). Locus of control, expectational set, and problem solving. Perceptual and Motor Skills, 68, 383-388.

Wills, T. A., & Clearly, S. D. (1995). Stress-coping model for alcohol/tobacco interactions in adolescence. In J. Fertig & J. Allen (Eds.), Alcohol and tobacco: From basic science to policy (pp. 107-128). NIAA Research Monograph.

Wills, T. A., & Shiffman, S. (1985). Coping and substance use: A conceptual framework. In S. Shiffman & T. A. Wills (Eds.), Coping and substance use (pp. 3-24). Orlando, FL: Academic Press.

Wills, T. A., & Vaughn, R. (1989). Social support and substance use in early adolescence. Journal of Behavioral Medicine, 12, 321-337.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993). Toward the development of an adolescent gambling problem.

Wood, R. T., & Griffiths, M. D. (1998). The acquisition, development, and maintenance of lottery and scratchcard gambling in adolescence. Journal of Adolescence, 265-273.

Wray, I., & Dickerson, M. G. (1981). Cessation of high frequency gambling and "withdrawal" symptoms. British Journal of Addiction, 76, 401-405.

Wynne, H. J., Smith, G. J., & Jacobs, D. F. (1996). Adolescent gambling and problem gambling in Alberta. Prepared for the Alberta Alcohol and Drug Abuse Commission. Edmonton: Wynne Resources LTD.

Zinberg, N. E. (1984). Drug, set, and setting: The basis for controlled intoxicant use. New Haven, CT: Yale University Press.

Appendix A: Gambling Activities Questionnaire

Grade: _____ Sex: _____ M _____ F ID # _____

Please note that all information is confidential.

- 1) Please check the following types of gambling (for money) you have done in the past 12 months. Please mark only one answer for each item.

	never	less than once a week	once a week or more	
a)	_____	_____	_____	play cards
b)	_____	_____	_____	wager on sports (i.e. sports pools) with friends
c)	_____	_____	_____	purchase sports lottery tickets
d)	_____	_____	_____	purchase lottery tickets
e)	_____	_____	_____	wager on video games or video poker for money
f)	_____	_____	_____	play bingo
g)	_____	_____	_____	play slot machines
h)	_____	_____	_____	wager on sports, pool, bowling, other games of skill
i)	_____	_____	_____	another form of gambling not listed above Please list _____

*** IF YOU HAVE ANSWERED "NEVER" TO ALL THE CATEGORIES IN THE ABOVE QUESTION, YOU HAVE FINISHED COMPLETING THIS SECTION OF THE QUESTIONNAIRE. PLEASE GO TO QUESTION 16. THANK YOU!**

- 2) What is the largest amount of money you have ever bet in one day? \$ _____
- 3) What is the largest amount of money you have ever won in one day? \$ _____
- 4) What is the largest amount of money you have ever lost in one day? \$ _____

- 5) When you gamble, with whom do you gamble? (You can have more than one answer)

<input type="checkbox"/> alone	<input type="checkbox"/> my parents
<input type="checkbox"/> my friends	<input type="checkbox"/> my brother or sister
<input type="checkbox"/> strangers	<input type="checkbox"/> other relatives

- 6) Where do you gamble? (You can have more than one answer)

<input type="checkbox"/> at home	<input type="checkbox"/> at school
<input type="checkbox"/> at friends	<input type="checkbox"/> in arcades
<input type="checkbox"/> bingo halls	<input type="checkbox"/> in depanneurs
<input type="checkbox"/> other (please list) _____	

- 7) Who currently lives at home with you? (circle your answers):

mother	father	stepmother	stepfather	sister	brother
stepsister	stepbrother	halfsister	halfbrother	grandparent(s)	

- 8) To your knowledge does your mother (or stepmother) have a gambling problem? ☐ yes ☐ no

- 9) To your knowledge does your mother (or stepmother) have a drinking/drug problem? ☐ yes ☐ no

- 10) To your knowledge does your father (or stepfather) have a gambling problem? ☐ yes ☐ no

- 11) To your knowledge does your father (or stepfather) have a drinking/drug problem? ☐ yes ☐ no

- 12) Do you ever gamble more than you want to? ☐ yes ☐ no

- 13) Have you ever stolen money to gamble? ☐ yes ☐ no

- 14) Do you think you gamble too much? ☐ yes ☐ no

- 15) Why do you gamble? (you can have more than one answer)

<input type="checkbox"/> for enjoyment
<input type="checkbox"/> to relax
<input type="checkbox"/> for excitement
<input type="checkbox"/> to be with or make new friends
<input type="checkbox"/> because I'm unhappy
<input type="checkbox"/> to escape from problems of home and school
<input type="checkbox"/> because I'm lonely
<input type="checkbox"/> to feel older
<input type="checkbox"/> to win money
<input type="checkbox"/> other, please list _____

- 16) Have you ever been told that you have a _____ yes _____ no
learning disability (difficulty)?
- 17) How much effort do you have to put into getting good grades?
_____ **Very little effort.** Good grades come easily to me.
_____ **Average amount of effort.** Good grades come when I study as much as
my classmates do.
_____ **Tremendous effort.** No matter how hard I try, I rarely get good grades?
- 18) Have you ever attended a program or were in _____ yes _____ no
a class for children with special needs?
- 19) Please check the following activities you have done in the past 12 months. Please
mark only one answer for each.

never less than once a every day
once a week or
week more

- a) _____ _____ _____ _____ consume alcohol/beer
- b) _____ _____ _____ _____ use "upper" drugs (speed, cocaine, ecstasy)
- c) _____ _____ _____ _____ use "downer" drugs (marijuana, hashish,
tranquilizers)
- d) _____ _____ _____ _____ use hallucinatory drugs (acid, LSD)
- e) _____ _____ _____ _____ smoke cigarettes

- 20) How much **skill** and **luck** are needed to be good at roulette?

SKILL

1 2 3 4 5 6 7
none some a lot

LUCK

1 2 3 4 5 6 7
none some a lot

- 21) How much **skill** and **luck** are needed to be good at baseball?

SKILL

LUCK

1	2	3	4	5	6	7
none			some		a lot	

1	2	3	4	5	6	7
none			some		a lot	

- 22) How much **skill** and **luck** are needed to be good at slot machines?

SKILL

LUCK

1	2	3	4	5	6	7
none			some		a lot	

1	2	3	4	5	6	7
none			some		a lot	

- 23) How much **skill** and **luck** are needed to be a good video game player?

SKILL

LUCK

1	2	3	4	5	6	7
none			some		a lot	

1	2	3	4	5	6	7
none			some		a lot	

- 24) How much **skill** and **luck** are needed to be good at blackjack?

SKILL

LUCK

1	2	3	4	5	6	7
none			some		a lot	

1	2	3	4	5	6	7
none			some		a lot	

- 25) How much **skill** and **luck** are needed to do well at school?

SKILL

1	2	3	4	5	6	7
none			some		a lot	

LUCK

1	2	3	4	5	6	7
none			some		a lot	

- 26) How much **skill** and **luck** are needed to be good at playing the lottery?

SKILL

1	2	3	4	5	6	7
none			some		a lot	

LUCK

1	2	3	4	5	6	7
none			some		a lot	

- 27) How much **skill** and **luck** are needed to be a good gambler?

SKILL

1	2	3	4	5	6	7
none			some		a lot	

LUCK

1	2	3	4	5	6	7
none			some		a lot	

- 28) How much **skill** and **luck** are needed to be good at swimming?

SKILL

1	2	3	4	5	6	7
none			some		a lot	

LUCK

1	2	3	4	5	6	7
none			some		a lot	

- 29) How much **skill** and **luck** are needed to be good at high/low?

SKILL

1	2	3	4	5	6	7
none			some		a lot	

LUCK

1	2	3	4	5	6	7
none			some		a lot	

Appendix B: Coping Inventory for Stressful Situations

Instructions: The following are ways people react to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 for each item, where 1 is not at all and 5 is very much. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

	Not at all				Very much
1. Schedule my time better	①	②	③	④	⑤
2. Focus on the problem and see how I can solve it	①	②	③	④	⑤
3. Think about the good times I've had	①	②	③	④	⑤
4. Try to be with other people	①	②	③	④	⑤
5. Blame myself for putting things off	①	②	③	④	⑤
6. Do what I think is best	①	②	③	④	⑤
7. Become preoccupied with aches and pains	①	②	③	④	⑤
8. Blame myself for having gotten into this situation	①	②	③	④	⑤
9. Window shop	①	②	③	④	⑤
10. Outline my priorities	①	②	③	④	⑤
11. Try to go to sleep	①	②	③	④	⑤
12. Treat myself to a favourite food or snack	①	②	③	④	⑤
13. Feel anxious about not being able to cope	①	②	③	④	⑤

- | | Not at all | | | | Very much |
|---|------------|---|---|---|-----------|
| 14. Become very tense | ① | ② | ③ | ④ | ⑤ |
| 15. Think about how I have solved similar problems | ① | ② | ③ | ④ | ⑤ |
| 16. Tell myself that it is really not happening to me | ① | ② | ③ | ④ | ⑤ |
| 17. Blame myself for being too emotional

about the situation | ① | ② | ③ | ④ | ⑤ |
| 18. Go out for a snack or meal | ① | ② | ③ | ④ | ⑤ |
| 19. Become very upset | ① | ② | ③ | ④ | ⑤ |
| 20. Buy myself something | ① | ② | ③ | ④ | ⑤ |
| 21. Determine a course of action and follow it | ① | ② | ③ | ④ | ⑤ |
| 22. Blame myself for not knowing what to do | ① | ② | ③ | ④ | ⑤ |
| 23. Go to a party | ① | ② | ③ | ④ | ⑤ |
| 24. Work to understand the situation | ① | ② | ③ | ④ | ⑤ |
| 25. "Freeze" and don't know what to do | ① | ② | ③ | ④ | ⑤ |
| 26. Take corrective action immediately | ① | ② | ③ | ④ | ⑤ |
| 27. Think about the event and learn from my mistakes | ① | ② | ③ | ④ | ⑤ |

	Not at all				Very much
28. Wish that I could change what had happened or how I felt	①	②	③	④	⑤
29. Visit a friend	①	②	③	④	⑤
30. Worry about what I am going to do	①	②	③	④	⑤
31. Spend time with a special person	①	②	③	④	⑤
32. Go for a walk	①	②	③	④	⑤
33. Tell myself that it will never happen again	①	②	③	④	⑤
34. Focus on my general inadequacies	①	②	③	④	⑤
35. Talk to someone whose advice I value	①	②	③	④	⑤
36. Analyze my problem before reacting	①	②	③	④	⑤
37. Phone a friend	①	②	③	④	⑤
38. Get angry	①	②	③	④	⑤
39. Adjust my priorities	①	②	③	④	⑤
40. See a movie	①	②	③	④	⑤
41. Get control of the situation	①	②	③	④	⑤

- | | Not at all | | | | Very much |
|--|------------|---|---|---|-----------|
| 42. Make an extra effort to get things done | ① | ② | ③ | ④ | ⑤ |
| 43. Come up with several different
solutions to the problem | ① | ② | ③ | ④ | ⑤ |
| 44. Take some time off and get away from the situation | ① | ② | ③ | ④ | ⑤ |
| 45. Take it out on other people | ① | ② | ③ | ④ | ⑤ |
| 46. Use the situation to prove that I can do it | ① | ② | ③ | ④ | ⑤ |
| 47. Try to be organized so I can be on
top of the situation | ① | ② | ③ | ④ | ⑤ |
| 48. Watch TV | ① | ② | ③ | ④ | ⑤ |

Appendix C: Nowicki-Strickland Locus of Control Scale for Children

	YES	NO
1. Do you believe that most problems will solve themselves if you just don't fool with them?	①	②
2. Do you believe that you can stop yourself from catching a cold?	①	②
3. Are some kids just born lucky?	①	②
4. Most of the time, do you feel that getting good grades means a great deal to you?	①	②
5. Are you often blamed for things that just aren't your fault?	①	②
6. Do you believe that if somebody studies hard enough he or she can pass any subject?	①	②
7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?	①	②
8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do?	①	②
9. Do you feel that most of the time parents listen to what their children have to say?	①	②
10. Do you believe that wishing can make good things happen?	①	②
11. When you get punished, does it usually seem it's for no good reason at all?	①	②
12. Most of the time, do you find it hard to change a friend's (mind) opinion?	①	②
13. Do you think that cheering more than luck helps a team to win?	①	②
14. Do you feel that it's nearly impossible to change your parent's mind about anything?	①	②
15. Do you believe that your parents should allow you to make most of your own decisions?	①	②

	YES	NO
16. Do you feel that when you do something wrong there's very little you can do to make it right?	①	②
17. Do you believe that most kids are just born good at sports?	①	②
18. Are most of the other kids your age stronger than you are?	①	②
19. Do you feel that one of the best ways to handle most problems is just not to think about them?	①	②
20. Do you feel that you have a lot of choice in deciding who your friends are?	①	②
21. If you find a four leaf clover, do you believe that it might bring you good luck?	①	②
22. Do you often feel that whether you do your homework has much to do with what kind of grades you get?	①	②
23. Do you feel that when a kid your age decides to hit you, there's little you can do to stop him or her?	①	②
24. Have you ever had a good luck charm?	①	②
25. Do you believe that whether or not people like you depends on how you act?	①	②
26. Will your parents usually help if you ask them to?	①	②
27. Have you felt that when people were mean to you it was usually for no reason at all?	①	②
28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?	①	②
29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?	①	②
30. Do you think that kids can get their own way if they just keep trying?	①	②

	YES	NO
31. Most of the time, do you find it useless to try to get your own way at home?	①	②
32. Do you feel that when good things happen they happen because of hard work?	①	②
33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?	①	②
34. Do you feel that it's easy to get friends to do what you want them to?	①	②
35. Do you usually feel that you have little to say about what you get to eat at home?	①	②
36. Do you feel that when someone doesn't like you there's little you can do about it?	①	②
37. Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are?	①	②
38. Are you the kind of person who believes that planning ahead makes things turn out better?	①	②
39. Most of the time, do you feel that you have little to say about what your family decides to do?	①	②
40. Do you think it's better to be smart than to be lucky?	①	②

Appendix D: Reynolds Adolescent Depression Scale

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

	Almost never	Hardly ever	Some- times	Most of the time
1. I feel happy	①	②	③	④
2. I worry about school	①	②	③	④
3. I feel lonely	①	②	③	④
4. I feel my parents don't like me	①	②	③	④
5. I feel important	①	②	③	④
6. I feel like hiding from people	①	②	③	④
7. I feel sad	①	②	③	④
8. I feel like crying	①	②	③	④
9. I feel like no one cares about me	①	②	③	④
10. I feel like having fun with other students	①	②	③	④
11. I feel sick	①	②	③	④
12. I feel loved	①	②	③	④
13. I feel like running away	①	②	③	④
14. I feel like hurting myself	①	②	③	④
15. I feel that other students don't like me	①	②	③	④
16. I feel upset	①	②	③	④
17. I feel life is unfair	①	②	③	④
18. I feel tired	①	②	③	④
19. I feel I am bad	①	②	③	④
20. I feel I am no good	①	②	③	④
21. I feel sorry for myself	①	②	③	④
22. I feel mad about myself	①	②	③	④
23. I feel like talking to other students	①	②	③	④
24. I have trouble sleeping	①	②	③	④
25. I feel like having fun	①	②	③	④
26. I feel worried	①	②	③	④
27. I get stomachaches	①	②	③	④
28. I feel bored	①	②	③	④
29. I like eating meals	①	②	③	④
30. I feel like nothing I do helps anymore	①	②	③	④

Appendix E: DSM-IV-J

1. Do you often find yourself thinking about gambling activities at odd times of the day and/or planning the next time you will play?
Yes _____ No _____
2. Do you find you need to spend more and more money on gambling activities?
Yes _____ No _____
3. Do you become restless, tense, fed up, or bad tempered when trying to cut down or stop gambling?
Yes _____ No _____
4. Do you ever gamble as a way of escaping from problems?
Yes _____ No _____
5. After spending money on gambling activities do you play again another day to try and win your money back? (More than half the time)
Yes _____ No _____
6. Do you lie to your family or friends or hide how much you gamble?
Yes _____ No _____
7. In the past year have you spent your school dinner money, or money for bus or train fares, on gambling activities?
Yes _____ No _____
8. In the past year have you taken money from someone you live with, without their knowing, to gamble?
Yes _____ No _____
9. In the past year have you stolen money from outside the family, or shoplifted, to gamble?
Yes _____ No _____
10. Have fallen out with members of your family, or close friends, because of your gambling behavior?
Yes _____ No _____
11. In the past year have you missed school to participate in gambling experiences? (5 times or more)
Yes _____ No _____
12. In the past year have you gone to someone for help with a serious money worry caused by participation in gambling activities?
Yes _____ No _____