

, Running head: ANXIETY AND SOCIAL STRESS RELATED TO GAMBLING

Anxiety and Social Stress Related to Adolescent Gambling Behavior

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October, 2001

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

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0-612-75257-7

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ACKNOWLEDGEMENTS

My deepest gratitude goes to Dr. Jeffrey Derevensky, my thesis supervisor, for his invaluable guidance and wise counsel throughout the process of my thesis. His insight, encouragement, and constructive feedback is greatly appreciated. Dr. Rina Gupta deserves the highest praise for her patience and skillful advice at every crucial stage of my thesis. I greatly admire and respect Dr. Gupta for her passion and knowledge of the field of youth gambling.

I would also like to make a pleasurable acknowledgement of the help my research assistants provided with data collection and data entry. Michelle Brazier, Natacha Doche, Mélanie Dovale, Geneviève Dupras, Karen Earlam, Kirn Godbout-Sundby, Hyejung Kirn, Marie Longpré, Tina Montreuil, Wydline Othello, Karine Silva, Annie Simpson, Marc Ste-Marie, Nicole Tsang, and Agnes Yang, I could have never completed my thesis without all of your help and dedication to this project.

Further, I would like to express my heartfelt appreciation to my family, the Ste-Marie's and the Paduano's for their endless love, support, and encouragement throughout the process of my thesis. My greatest debt is to Domenic, my fiance, for his unconditional love and for having confidence in me. Thank you for believing in me Dom.

I wish to express my gratitude to the administration, staff, and students from the following schools: Laval Catholic, Riverdale High School, Rosemere High School, Sacred Heart Middle School, Vincent Massey Collegiate, and one school who wishes to remain anonymous.

Partial support for this research was received from a Loto-Quebec grant awarded to Dr. Jeffrey Derevensky.

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ABSTRACT

This study examined the relationship between anxiety, social stress, and gambling behavior among 1,044 high school students from grades 7 to 11. Adolescents completed questionnaires concerning their state, trait, and generalized anxiety, social stress, and gambling behavior. Results reveal that probable pathological gamblers report more state anxiety, trait anxiety, and social stress compared to non-gamblers, gamblers with no/minimal problems, and problem gamblers. Gamblers with the highest levels of state and trait anxiety engaged in more severe gambling behaviors, substance abuse, reported different reasons for gambling, and endorsed more dissociation items compared to gamblers whose anxiety and social stress levels were in the average or low range. Results of this study provide added support for Jacob's *General Theory of Addictions*.

RESUME

La présente étude a examiné la relation entre les comportements de jeu, l'anxiété et le "stress interpersonnel" auprès de 1,044 élèves du secondaire (secondaires 1 à 5). Ces adolescents ont complété un questionnaire portant sur leur niveau de "stress interpersonnel" (comment ils se perçoivent dans leur relation à autrui), leur état et leur trait anxieux ainsi que sur leur niveau d'anxiété général. Les questionnaires portaient également sur leurs comportements de jeu. Les résultats démontrent que les joueurs pathologiques probants revelent davantage d'état et de trait anxieux ainsi que de "stress interpersonnel" que les adolescents abstinents, ne présentant pas ou peu de problèmes ou démontrant déjà un problème de jeu pathologique. Lorsqu'on les compare aux joueurs qui présentent des niveaux d'anxiété et de "stress interpersonnel" moyens ou faibles, les joueurs rapportant les plus hauts niveaux d'état et de trait anxieux s'adonnent à des formes plus sévères de comportements de jeu et de consommation, disent jouer pour des raisons différentes et s'approprient un plus grand nombre d'items de dissociation. Les résultats de la présente étude procurent un appui additionnel à la *General Theory of Addictions* de Jacob.

CHAPTER 1

*

Introduction

In an attempt to gain a better understanding of the etiology of gambling behavior, researchers are examining those risk factors thought to be associated with problem gambling. Of particular concern, are those personality traits found to be characteristic of problem gamblers. Anxiety has been found to be one characteristic of adult pathological gamblers (Cocco, Sharpe, & Blaszczynski, 1995; Henry, 1996; McConaghy, Armstrong, Blaszczynski, & Allcock, 1983; Zimmerman, Meeland, & Krug, 1985). Adult pathological gamblers have been found to have elevated state and trait anxiety scores as compared to the general population (Blaszczynski, Wilson, & McConaghy, 1986). The • comorbidity between anxiety disorders and problem gambling has led some researchers to propose that gamblers are not necessarily sensation seekers, but rather gamble in an attempt to reduce aversive physiological states; thus accounting for anxiety as an important component of the etiology and maintenance of gambling behavior.

Anxiety has similarly been found to be associated with other addictive disorders such as alcoholism, drug abuse, food addiction, and cigarette smoking (Kayloc, 1993; Regier, Narrow, Kaelber, & Schatzberg, 1998). Similar to adult pathological gamblers, adult alcoholics have been found to have higher anxiety levels and to be more susceptible to generalized anxiety disorders, agoraphobia, social phobia or panic (Kushner, Sher, & Erickson, 1999). Not only has the comorbidity between alcohol and anxiety disorders been well established, but the order of onset of alcoholism and anxiety disorders reveals that reported anxiety disorders occur prior to the reported development of alcoholism (Brady & Lydiard, 1993; Merikangas et al., 1998; Swendsen et al., 1998). When taken

together, these results suggest that individuals with anxiety disorders often rely on addictive substances and behaviors in order to help them cope with their anxiety; albeit in an ineffective way.

Recently, the psychological literature has focused on the increasing proportion of adolescents gambling (e.g., Fisher, 1991; Gupta & Derevensky, 1996, 1998; Jacobs, 2000; Ladouceur, Dube, & Bujold, 1994). Research targeting this population is likewise attempting to understand the risk factors and underlying mechanisms maintaining gambling behavior amongst this population. The necessity of examining anxiety as a possible risk factor leading to an addiction to gambling is apparent. It is postulated that adolescents initially engage in gambling behavior as a result of sensation seeking, and as a means to socialize. However, it is likely that youth experiencing higher anxiety levels than the general population may come to rely on gambling as a maladaptive way of coping with their anxious states.

The present study was designed to investigate whether adolescent problem gamblers have higher state and/or trait anxiety when compared to non-problem gamblers. Research has demonstrated that addictive substances and behaviors are often engaged in due to their self-medicating effects. As such, it is important to ascertain if gambling has similar effects on adolescents. No research has specifically examined the relationship between state and trait anxiety and gambling problems among adolescents. This study aims to investigate this relationship. Gender differences/as well as developmental differences will also be examined. Furthermore, the present study aims to examine differences between problem and non-problem gamblers, in terms of their reasons for gambling, as well as consequences of engaging in gambling behavior. This study will

provide valuable information concerning adolescent risk factors associated with problem gambling, which can subsequently be incorporated in the development of prevention and treatment programs. More generally, results of this study will add one more piece to the puzzle explaining youth problem gambling.

CHAPTER 2

Review of LiteraturePrevalence

People have engaged in gambling as a social activity and as a form of entertainment for centuries. However, it has now been established that what begins as social gambling behavior can, for a small percentage of the population, result in - pathological behavior. Furthermore, the prevalence of this activity is alarming. Research from Canada and the United States have found adult prevalence rates for problem gambling to range from 2.6% to 4.0% and from 0.1% to 3.0% for pathological gamblers (Ladouceur, 1991, 1996; Shaffer, Hall, & Vander Bilt, 1997, 1999; Volberg, 1994, 1996; Wynne, 1998; Wynne, Smith, & Volberg, 1994).

In recent years, considerable focus has shifted to gambling behavior among youth (Jacobs, 2000). An alarmingly high number of youth report engaging in gambling behavior. Early studies by Ladouceur et al. (1994) reported that gambling was prevalent amongst primary school children aged 8 to 12. Reports revealed that 86% of participants admitted to having bet money at least once, with more than 40% reporting gambling once a week or more.

Gupta and Derevensky (1998a), in a more comprehensive study, examined the gambling behavior of 980 adolescents between the ages of 12 and 17. They found that 80.2% of the participants reported having gambled during the previous 12 months. Out of this group, 35.1% reported gambling at least once a week. Furthermore, in a recent study, Derevensky and Gupta (2000) reported that between 12.7% and 46.5% of youth admitted having some gambling associated problems, with between 4 - 6% having a serious problem.

Shaffer, Hall, and Vander Bilt (1997) summarized available data on the percentage of gambling behavior among adolescents. Prevalence rates for pathological gambling among adolescents was estimated to range between 0.3% - 9.5%, with the median being 6.1%. They found that ~~between~~ 39% - 92% of adolescents reported having ~~gambled~~ at least once in their lifetime, with the 39% being an outlier (62% was the next highest prevalence rate). The median prevalence rate of adolescents who reported gambling at least once in their lifetime was 85%. Further, between 52% - 89% reported having gambled in the ~~last year~~, with the median being 73%. This not only suggests that adolescents have been exposed to gambling, but they have engaged in the behavior fairly recently.

Characteristics of Gambling Behavior in Youth

Along with the increasing prevalence of gambling behavior among youth, is the concern regarding its early age of onset. Retrospective studies conducted with adult problem gamblers reveal that they report having begun their gambling behavior between 9 - 19 years of age (Dell, Ruzika, & Palisi, 1981; Griffiths, 1990). Other researchers (Gupta & Derevensky, 1998a; Wynne et al., 1996) have found that adolescent ~~probable~~ gamblers report beginning gambling when they are very young (between 9-10 years of age) as compared with peers without gambling problems. Clearly, gambling behavior remains and is increasingly becoming a popular activity among children as well as adolescents.

The literature supports the ~~contention~~ that the rate of youth experiencing gambling problems is greater than that found for adults (Derevensky & Gupta, 2000; Fisher, 1993a; Griffiths, 1995; Jacobs, 2000; NRC, 1999). Results from studies conducted in ~~Canada~~, the USA, and the UK have revealed the rate of ~~youth~~ gambling to

be as much as two to four times that identified in the adult population (Derevensky & Gupta, 1998a, 2000; Fisher, 1993a; Griffiths, 1995). One also finds that problem or pathological gambling appears to be primarily a male phenomenon (Derevensky & Gupta, 2000; Fisher, 1993a; Griffiths, 1995; Ladouceur, Dube, & Bujold, 1994).

Another characteristic of youth gambling behavior concerns reported reasons for gambling. Based on reports from youth aged 9 to 14, it has been shown that 74% of the participants report gambling for the enjoyment, 49% for the excitement, 25% to pass the time, 22% to win money, and 1% to win peer approval (Gupta & Derevensky, 1996).

Interestingly, 90% of these adolescents also reported that their parents knew they gambled and only 6% said their parents were opposed to such activities. Findings such as these suggest that along with the proliferation of readily accessible gambling venues in the community, society, the media, and even parents are fostering the exposure youth have to gambling. What's more, this behavior is not perceived negatively but rather is sanctioned and supported by the state or province (Azmir, 2000; Gupta & Derevensky, 1996, 1998a).

Risk Factors Associated With Problem Gambling in Youth

Risk factors for youth with serious gambling problems have been identified throughout the literature. Adolescent problem and pathological gamblers have lower self-esteem compared with other adolescents (Gupta & Derevensky, 1998b), they have higher rates of depression compared to both social gamblers and non-gamblers (Gupta & Derevensky, 1998a, 1998b; Gupta, Marget, & Derevensky, 2000), they dissociate more frequently when gambling as compared with adolescents who gamble occasionally (Gupta & Derevensky, 1998b; Jacobs, Marsten & Singer, 1985), and they remain at * increased risk for the development of another addiction or multiple addictions (Gupta &

Derevensky, 1998a, 1998b; Kusyszyn, 1972; Lesieur & Klein, 1987; Winters & Anderson, 2000).

Further, adolescent problem gamblers score higher on measures of excitability, extroversion, and anxiety and lower on conformity and self-discipline personality scales compared to non-gamblers (Gupta & Derevensky, 1997b, 1998a, in press; Vitaro, Ferland, Jacques & Ladouceur, 1995). Adolescents with gambling problems have also been found to be greater risk-takers (Arnett, 1994; Breen & Zuckerman, 1996; Derevensky & Gupta, 1996; Powell, Haroon, Derevensky & Gupta, 1999; Zuckerman, 1979, 1994; Zuckerman, Eysenck & Eysenck, 1978), they have poor general coping skills (Gupta, Marget, & Derevensky, 2000; Nower, Gupta & Derevensky, 2000), and adolescents between the ages of 14 - 17 are at heightened risk for suicide ideation and suicide attempts (Gupta & Derevensky, 1998a) (see Dickson, Derevensky, and Gupta, 2001 for a comprehensive review of the risk factors associated with youth gambling).

Sequelae of Problem Gambling in Youth

The increasing prevalence of gambling behavior among youth is of great concern, especially when one takes into account the negative factors that have been linked with problem gambling. Adolescent and youth problem gambling has been associated with excessive spending on gambling, increased delinquency and crime, alcohol and substance abuse, poor academic achievement, depression, suicidal ideation, theft, the disruption of familial relationships, and truancy (Fisher, 1993b, 1998; Griffiths, 1994b, 1995; Griffiths & Sutherland, 1998; Gupta & Derevensky, 1997a, 1998a; Ladouceur & Mireault, 1988; Lesieur & Klein, 1987; Winters, Stinchfield, & Fulkerson, 1993; Wynne et al., 1996; Yeoman & Griffiths, 1996). The sequelae associated with problem and pathological

gambling in youth increases the urgency and importance of continued research in the field.

The increasing prevalence of gambling behavior among youth is alarming and calls for increased research aimed at identifying risk and protective factors, as our understanding still remains in its infancy. Although numerous risk factors have been established, this is by no means a complete list, hence the need for further research. Additional insight may be gained by examining the risk and protective factors associated with other addictions (see Dickson et al., 2001).

Gambling and Other Addictions

Commonalities among addictions. Jacobs (1989) defines addiction as "a dependent state acquired over time by a predisposed person in an attempt to relieve a chronic stress condition" (p.35). Commonalities among various addictive behaviors have frequently been reported in the psychological literature. According to Gupta and Derevensky (1996), there exist commonalities among the experiences of individuals suffering from various addictive behaviors. Some of these common properties include: a) experiencing excitement and/or an adrenaline rush when involved in the activity, b) engaging in the activity for the purpose of relieving stress, c) the addiction has a strong learning component, and d) it is commonly regarded as a form of sensation seeking.

More specifically, Lesieur, Blume and Zoppa (1986) discussed the commonalities among alcoholism, drug abuse, and pathological gambling. According to these researchers, all of the above-mentioned addictions a) involve states of arousal which heighten or depress one's state of awareness, b) have similar patterns of abstinence and relapse, c) have similar self-help approaches, and d) likely have similar treatment approaches.

* The relatedness among alcoholism, pathological gambling, and other drug abuse has been demonstrated with adults. Lesieur et al. (1986) questioned patients in a drug and alcohol dependency treatment facility regarding their gambling behavior. They found that 5% of those abusing alcohol only, showed clear signs of pathological gambling, 12% of those abusing alcohol and another drug in combination showed clear signs of pathological gambling, and 18% of those with drug abuse problems without an alcohol component showed clear signs of pathological gambling. Griffiths (1994a) corroborated previous findings, suggesting that 'alcohol/gambling' cross-addictions were the most frequently reported (42%), followed by 'drugs/gambling' (20%), 'solvents/fruit machines' (10.5%), 'alcohol & drugs/gambling' (7%), and 'amphetamines/gambling' (3.5%). Co-morbidity among these behaviors appears to indicate that they all fulfill some common need.

Winters and Anderson (2000) synthesized the literature concerning the co-occurrence of gambling and drug use among adolescents. According to their results, students who used drugs were 3.1 times more likely to have gambled, compared to students who had never used drugs. Further, students were 3.8 times more likely to be weekly/daily gamblers if they also used drugs on a weekly/daily basis, compared to students who either did not use drugs, or used them less often. These results provide support for the likelihood of common etiological processes between gambling behavior and drug use.

Personality studies. Studies examining personality dimensions of individuals suffering from addictions have often found concordance among this population. Specifically, previous research using the **MMPI** characteristic profiles has illustrated

some similarities between pathological gamblers and alcoholics. Using MMPI profiles, Ciarrocchi et al. (1991) found adult gamblers' personality profiles to be similar to alcoholics' profiles. Furthermore, besides education level and SES, no differences on MMPI scores emerged for pathological gamblers in comparison to alcoholics.

In 1986, Graham and Lowenfeld performed a cluster analysis of MMPI scores on pathological gamblers in a Veterans Administration inpatient adult treatment program. Four subtype profiles emerged, which accounted for 89% of the cases. These same four subtypes are associated with alcohol abuse (Graham, 1990). The most frequent type, (C1), is described as an individual who is likely to find himself in difficulty with society, has emotional problems, and accepts little responsibility for his behavior. Persons with this personality profile are also likely to be immature, hostile, rebellious, restless, and grandiose. The second most common personality profile (C2), describes individuals who tend to be diagnosed as having a paranoid personality disorder or being paranoid schizophrenic. They are rigid, suspicious, withdrawn, and jealous. They are likely to be very irritable, hostile and abuse alcohol. The C3 profile type is associated with anxiety reaction with alcoholism in a passive-aggressive personality, depressive reaction with alcoholism, and passive-aggressive personality with alcoholism. Individuals with the final cluster type (C4), are usually diagnosed as having a passive-aggressive personality or an emotionally unstable personality. These individuals tend to be impulsive, immature, demanding, and irresponsible. Further, they have low frustration tolerance, are often moody, tense, and depressed. A history of substance abuse and poor academic and vocational adjustment is also characteristic of individuals with this profile.

Kagan (1987) reported that alcoholics and compulsive gamblers scored significantly higher on the Social Maladjustment and Cognitive Impairment scales of the MacAndrew Alcoholism Scale, which led her to speculate that compulsive gamblers and alcoholics may have similar personality profiles.

Other evidence supporting gambling as having similar properties consistent with an addiction. It has also been found that when persons suffering from multiple addictions attend various self-help groups (e.g., Alcoholics Anonymous, Gamblers Anonymous, Overeaters Anonymous, Sex Anonymous) they discover that they are remarkably similar to the other members of these supposedly diverse groups (Jacobs, 1986). Gamblers also have been found to describe similar sensations as those experienced by other addicts (Custer, 1984).

Although there is yet no evidence for an "addictive personality" profile per se, there do exist numerous commonalities among individuals with various chemical and behavioral addictions. When investigating predisposing and maintaining factors for certain addictions, valuable knowledge may be obtained from a closer examination of other, similar addictions. Given the relation between pathological gambling and substance and chemical addictions, it may be useful to examine factors linked with these addictions in order to gain insight into gambling behavior.

Addictions and Anxiety

Theories linking addictions and anxiety. It has been shown that addictive behaviors share numerous commonalities. One of the factors often found to play a role in addictive behaviors is anxiety. Some researchers have proposed possible explanations for the link between anxiety and addictions. One of the most researched and widely held theories of the relationship between anxiety and addiction is the "tension-reduction"

hypothesis (Brady et al., 1993; DuPont, 1995, 1997; Kushner et al., 1990). This hypothesis has been primarily investigated with adult alcoholics, but may also be applied to other addictions (i.e., pathological gambling). According to this theory, anxiety disorders can predispose individuals to alcoholism due to alcohol's acute anxiolytic effects. In this sense, alcohol use is seen as a way to "self-medicate" against the negative symptoms caused by anxiety (Brady et al., 1993; Kushner et al., 1990; Wesner, 1990).

Wesner (1990) refers to a similar theory, which he calls the "tension or anxiety reducing theory of alcohol use and abuse." Although this theory is widely accepted, research supporting it has been inconsistent (Brady et al., 1993; Kushner et al., 1990; Wesner, 1990). Meyer (1986) has described three possible explanations for the co-existence between anxiety and addictive disorders; a) psychopathology (e.g., anxiety) may be a risk factor for an addictive disorder, b) psychopathology (i.e., anxiety) may modify the course of an addictive disorder, or c) psychiatric symptoms may emerge during the course of "intoxication" and withdrawal. According to Meyer, the relationship between anxiety and addiction is complex and more than simply cause and effect. Likewise, DuPont (1995, 1997) suggests numerous possible causes of the comorbidity between panic disorder (an anxiety-related disorder) and addiction. These hypotheses are a) both are highly prevalent therefore there is a substantial random comorbidity, b) alcohol and other drugs can subsequently cause anxiety, c) anxiety can result in an addiction ("self-medicating" hypothesis), d) a genetic component of both addiction and anxiety may be extended to the children of the addicts, and e) the medications or treatments used to help manage one or the other of these disorders lead to their being connected.

Research supporting the self-medicating theory. Individuals with an addiction often report also suffering from an anxiety-related disorder. Studies with alcoholics (Dupont, 1997; Kushner, Sher, & Erickson, 1999; Lotufo-Neto, & Gentil, 1994; Swendsen, Merikangas, Canino, Kessler, Rubio-Stipec, & Angst, 1998), drug abusers (Regier, Rae, Narrow, Kaelber, & Schatzberg, 1998), overeaters (Kayloe, 1993) and pathological gamblers (Black & Moyer, 1998; Blaszczynski et al. 1986, 1989; Derevensky, & Gupta, 1998; Gupta & Derevensky, 1997b, in press; Henry, 1996; Jacobs, 1987; Linden et al., 1986) have demonstrated the link between anxiety and addiction.

More specifically, the co-occurrence of alcohol dependency and anxiety disorders is well documented in the psychological literature (Kushner, Sher, & Beitmen, 1990; Schuckit, & Hesselbrock, 1994). A study based on the DSM-III diagnosis of these disorders found that the risk of alcoholism in persons with panic disorder is 4.3 times higher than the general population, and in individuals with any type of phobia, it is 2.4 times higher (Kushner, 1990). The National Institute of Mental Health Epidemiologic Catchment Area (ECA) study also provides evidence of the co-existence of alcohol and anxiety, based on community samples (Brady & Lydiard, 1993). Data from this study revealed that 25% of the adults with an anxiety disorder similarly had a substance abuse disorder. Among participants with any type of anxiety disorder, the odds ratio of having an addictive disorder was 1.7. Further, the odds ratio for panic disorder co-existing with any substance abuse disorder was 2.9, and for adults with Obsessive Compulsive Disorder and any addictive disorder, the odds ratio was 2.5. These data indicate that within the adult population, a significant overlap exists between anxiety disorders and

alcohol use and abuse, and the co-existence between these two disorders occurs more frequently than by chance.

One also finds a high incidence of alcohol use disorders within studies of clinically anxious patients. Woodruff et al. (1972) found that 14.5% of anxious neurotics met criteria for secondary alcoholism with 23% reporting heavy drinking secondary to anxiety. Furthermore, with regard to the order of onset of anxiety disorders and alcoholism, reports have generally shown that alcohol dependency develops subsequently to the anxiety disorder (Brady & Lydiard, 1993; DuPont, 1995, 1997; Kushner et al., 1999; Swendsen et al., 1998). Thyer et al. (1986) reported that 91% of alcoholic agoraphobics consumed alcohol to self-medicate, work, engage in social activities, or attend school. Other researchers (Smailet al., 1984; Stravynskiet al., 1986) have also found similar results, which seem to support a "self-medicating model" of addiction.

Other substance addictions besides alcohol have been linked with anxiety. DuPont (1995) reported that results from the National Comorbidity Survey (NCS) demonstrated that 35.6% of individuals with any substance use disorder had an anxiety disorder. Interestingly, 79.3% of participants who reported a lifetime comorbidity for substance use and any anxiety disorder, also reported that the anxiety disorder occurred first. Regier et al. (1998) examined the comorbidity between anxiety and addictive disorders. His work revealed that approximately 15% of those with an anxiety disorder also had a substance use disorder. Food addiction has also been related to anxiety (Kayloe, 1993). In a study attempting to predict factors related to the adherence of a diet program and weight loss, Kayloe (1993) found that participants reporting higher anxiety levels were less likely to continue the diet program and were less able to sustain weight

loss. Besides the commonalities among various addictions, it further appears that anxiety is an important factor in the predisposition ~~and/or~~ maintenance of addictive disorders. Further research is needed in order to determine exactly what this role is.

Clearly anxiety has been shown to play a significant role in the development and maintenance of addictive behaviors within the adult population. Although results remain somewhat inconsistent, much research supports the "self-medicating theory," whereby addictions help individuals cope with their ~~anxiolytic~~ states. If this hypothesis is found to be true for adolescent problem gamblers, the implications for identification of youth with gambling problems and prevention and treatment programs will be significant. This is especially true for adolescents, since it has been found that anxiety disorders appear to have an earlier onset in adolescence (Kessler et al., 1994, 1996; Regier et al., 1998). Youth suffering from anxiety may not only have to cope with the distress resulting from this ~~condition~~, but are predisposed to the potentially severe consequences of developing an addictive disorder. As a result, it is important that this co-existence not only ~~be~~ examined between anxiety and chemical and substance-related addictions, but with behavioral addictions as well.

Gambling and Anxiety

Jacob's General Theory of Addictions. Similar to the "stress-reduction" model associated with alcoholism and other substance addictions, Jacobs (1987) proposed a *General Theory of Addictions*, which states that the addiction of choice (in this case we will refer to gambling behavior) is reinforced and maintained by allowing the individual to escape from painful ~~realities~~. According to this ~~model~~, the need to escape is the driving force of the addiction. Therefore, although there are various forms of addictions, they all serve the common purpose of providing escape.

One way to measure escape is through an assessment of dissociation. An individual is said to dissociate, if, while engaging in the addictive behavior they a) lose track of time, b) feel like a different person, c) feel outside of themselves, or like they are watching themselves, d) go into a trance-like state, and e) experience blackouts (Gupta & Derevensky, 1998b, 1998c; Jacobs, 1987, 1988). A measure of escape can be obtained by asking gamblers why they gamble, as well as by using a measure of dissociation.

According to Jacob's theory, the need to escape from painful realities is what leads certain individuals to an addiction. It is proposed that these painful realities lead to an increase in anxiety within an individual, and it is the resulting anxiolytic state that individuals attempt to decrease or escape when engaging in their addiction.

Oupta and Derevensky (1998a, 1998b) conducted a study with adolescents, where degree of escape was measured. Problem gamblers reported the highest amount of dissociation while gambling compared to non-problem gamblers. Pathological gamblers also reported the need to escape from problems as one of their primary reasons for engaging in the behavior (Gupta & Derevensky, 1998a, 1998b, 1998c, 2000). These results appear to indicate that adolescents engage in gambling behavior to dissociate and escape from reality.

The attempt to alleviate painful states may be especially desirable during the turbulent developmental period of adolescence. The adolescent period has long been considered a time of extraordinary stress and turmoil (Berzonsky, 2000; Schlesinger & Revitch, 1980). The increase in anxiety levels for adolescents has been attributed to both internal (i.e., intellectual and psycho-sexual development, low self-esteem, anger, fear) and external factors (reduced socioeconomic conditions, disorganized family system,

disturbed or non-existent social networks) (Benzonsky, 2000; Buechler & Izard, 1980; Schlesinger & Revitch, 1980). Researchers contend that due to the increase in current demands made upon adolescents, they are experiencing even greater stresses and anxiety than a decade ago (Mortimer, Finch, Shanahan, & Ryu, 2000). The fact that certain youth have not yet developed successful coping skills puts them at further risk for developing an unhealthy way of coping with their daily stresses (Gupta, Margot, & Derevensky, 2000; Gupta & Derevensky, 2000; Nower, Gupta, & Derevensky, 2000).

- * Studies conducted by Martinez-Pina et al. (1991) provide further support for Jacobs' theory. Results found that adult problem gamblers, compared to controls, reported symptoms of dissociation, reported that gambling removes them from a problem-filled world by allowing them to focus on something concrete, claimed their lives are so stressful (or boring) that they only feel good when they gamble, and experienced painful events from which they were relieved while gambling. Again we find support for pathological gamblers using gambling as a maladaptive coping style, by allowing them to escape.

Other anxiety-based theories of problem gambling. Other anxiety-based models for the etiology of problem gambling behavior have also found support with adults, providing evidence for anxiety disorders among pathological gamblers (Henry et al., 1996). One theory proposes that similar to post-traumatic-stress-disorder (PTSD), pathological gambling behavior results from an unresolved trauma-related anxiety. The predictions that arise from this theory claim that the reduction of anxiety in pathological gamblers will result in a decrease in gambling behavior. Findings from a study done with

22 adults who met DSM-IV criteria for pathological gambling, support this conceptual theory (Henry et al., 1996).

Likewise, Dickerson (1993) supports the hypothesis that adult gambling behavior provides an escape from daily stresses. He highlights studies that have demonstrated that gambling behavior worsens during periods of emotional stress, and points to reports from gamblers admitting that gambling became problematic during highly stressful periods. The relationship between anxiety and pathological gambling has also been explained as a "cultural buffer" developed for the purpose of helping individuals cope with the difficulties, unpredictability and stresses of everyday life (Abt & McGurran, 1992).

Blaszczynski et al. (1986, 1989) argue that two factors work together in order to maintain pathological gambling. First, the pathological gambler engages in the addictive behavior in order to reduce or avoid "noxious physiological states." The "behavior completion mechanism" is the second factor which helps explain persistence in gambling despite repeated losses. The behavior completion mechanism develops in an individual's central nervous system when a certain behavior becomes habitual (McConaghy et al., 1983). According to this paradigm, whenever a person thinks about engaging in a habitual behavior, or is faced with stimuli which usually precedes the behavior, the mechanism is activated. If the person does not engage in this behavior once the system has been activated, he/she will experience an aversive anxious state, which compels the individual to engage in the behavior. The negative arousal state subsides once the behavioral act is completed.

According to this theory, pathological gamblers either react with anxiety or depression when confronted with a stressful situation. As a result, they increase their

gambling behavior as a means of distracting their attention from their disturbing life situations, and focus on something more concrete. This is similar to the proposition made by Martinez-Pina et al. (1991). Again, this theory appears to be consistent with an anxiety-reduction model, where pathological gambling is used as a maladaptive coping strategy employed to deal with anxiety and stressful life events. Blaszczynski et al. (1989) reported support for their theory, when 75 pathological gamblers were found to have higher state and trait anxiety scores when compared to a control group.

Research relating anxiety and problem gambling behavior. Several studies have demonstrated a relationship between anxiety and problem gambling behavior. Linden, Pope, and Jonas (1986) found that 28% of their sample of pathological gamblers displayed symptoms of anxiety disorders. In a study of 30 adult pathological gamblers, 40% met lifetime criteria for an anxiety disorder (Black & Moyer, 1998). Other studies demonstrated that adult pathological gamblers were found to have both elevated State and Trait anxiety scores when compared to the general population (Blaszczynski & McConaghy, 1989; Blaszczynski, Wilson, & McConaghy, 1986). When compared to data obtained from controls, pathological gamblers were at the 84th percentile for state anxiety and the 87th percentile for trait anxiety (Blaszczynski et al., 1986). Martinez-Pina et al. (1991) similarly found that of their sample of 57 adult pathological gamblers, 45.6% admitted to having suffered from some kind of "nervous disorder" (i.e., anxiety, sadness, behavioral problems, doubts) which was significantly different from the 20% reported by the control group.

"• •" Zimmerman, Meelard and Krug (1985), through an examination of adult problem gamblers' personality profiles, found that all the items that loaded highly for pathological

gamblers appeared to be symptomatic of underlying anxiety. Personality factors were grouped into clusters in another study examining the psychiatric comorbidity of pathological gamblers (Specker et al., 1996). Three main clusters were revealed; Cluster A (the "odd eccentric"), Cluster B (the "dramatic, acting-out"), and Cluster C (the "anxious-fearful"). Cluster C was found to be the most common among pathological gamblers, accounting for 17.5% of gamblers.

Taber, McCormick and Ramirez (1987) emphasize the occurrence of major traumatic events as causing an increase in anxiety-related disorders among pathological gamblers, who, as a result, use gambling as a means of escaping the anxiety caused by this traumatic life experience. A major traumatic event was found in the histories of 23% of pathological gamblers seeking treatment. Henry (1996) hypothesized that if gambling behavior results from unresolved anxiety caused by a traumatizing life event similar to PTSD, a reduction in anxiety levels should subsequently reduce gambling behavior. The results of his study support an anxiety-based model for the etiology of gambling behavior. Similarly, McConaghy et al. (1983) used imaginal desensitization to reduce anxiety levels in twenty compulsive gamblers. Gamblers reported a significantly greater reduction of gambling urge and behavior after treatment compared to controls. What's more, at one-year follow-up, they demonstrated a significant reduction in both trait and state anxiety.

Although previous research has not directly examined the relationship between anxiety and gambling behavior among youth and adolescents, reports of the personality traits of youth gamblers provides preliminary evidence for the presence of anxiety in this population. In these studies, adolescent pathological gamblers were found to have higher

levels of anxiety when compared to non-problem gamblers (Derevensky & Gupta, 1998; Gupta & Derevensky, 1997b, in press). Results from these studies clearly demonstrate the presence of anxiety in some problem gamblers. However, theories for how these two factors are related are still under investigation.

There is empirical support for the contention that gambling behavior is a maladaptive coping strategy used to reduce or escape from aversive anxious states. Although most of the research involves an adult population of pathological gamblers, preliminary work examining personality factors of adolescent problem gamblers also found evidence of higher levels of generalized anxiety when compared to non-problem gamblers (Gupta & Derevensky, 1998a, in press). However, it is important to differentiate whether these differences may be with respect to state or trait anxiety. This becomes one more attempt to help eliminate the risk factors amongst adolescents associated with problem gambling.

Principal Aims

The primary goal of the present study was to examine the relationship between state and trait anxiety, social stress, and gambling behavior among adolescents. Based upon the literature with adult pathological gamblers, it is hypothesized that adolescent problem and pathological gamblers will report more anxiety and social stress when compared to non-problem gamblers.

Specific measures of trait and state anxiety are important as these two dimensions of anxiety measure very different constructs. State anxiety comprises the degree of anxiety an individual is experiencing at that exact moment. As such, state anxiety is a transitory emotional condition, which varies in intensity and fluctuates over time. The essential qualities evaluated by the state anxiety scale are feelings of apprehension,

tension, nervousness, and worry. In contrast, trait anxiety is conceptualized as a more stable and enduring characteristic assessing the degree of generalized anxiety an individual perceives on a daily basis.

Individuals who have higher trait anxiety tend to experience higher state anxiety in any given situation (Spielberger, 1973). In general, youth that are higher in trait anxiety experience more frequent and intense state anxiety than youth with low trait anxiety, as these individuals perceive more situations as potentially dangerous and threatening. According to Spielberger, youth that are exposed to stressful situations are often found to have higher state anxiety compared to controls.

A measure of social stress was also obtained for each participant. Although there is no agreed-upon definition of the concept of stress, it is most often described in the field as "a response, a reaction, or an adaptation, usually somatic in nature, to environmental stimulation or change" (Schlesinger & Revitch, 1980; Wills & Langer, 1980). Social stress, a more specific type of stress, is a measure of perceived feelings of stress and tension in personal relationships and daily social situations. Measures of social stress also include evaluations of feelings of being excluded from social activities, perceptions of tension and pressure, as well as a lack of coping resources. Social stress, defined in this way, is highly related to anxiety, and provides another index of experienced emotional strain (Reynolds & Kamphaus, 1992).

In accordance with Jacobs' *General Theory of Addictions*, it is further hypothesized that problem gamblers will report more dissociative behaviors while gambling when compared to non-problem gamblers. Dissociation while gambling for problem gamblers would be indicative of an escape from current realities. It is assumed,

that gambling results in dissociation, which in turn reinforces and maintains their gambling behavior (this should be more evident for pathological gamblers).

This research is intended to provide insight regarding another set of risk factors that may be associated with adolescent problem gambling behavior. If predisposing factors can be identified for problem gambling, this will help in the development of effective, science-based, prevention and intervention programs. Further, information gained from adolescent problem gamblers may be used to gain insight regarding other addictions among youth. More generally, it is hoped that the information obtained from this research program will help further our current knowledge base of youth and adolescent gambling behavior.

CHAPTER 3

Method

Participants

The sample included 1,044 adolescents (512 males, 532 females) in grades 7 (n = 209), 8 (n = 233), 9 (n = 215), 10 (n = 199), and 11 (n = 189) from six high schools in the Greater Montreal region. The participants were between 12 and 17 years of age (M = 14.31, SD = 1.49). All students participated on a volunteer basis, after obtaining parental consent (Appendix A).

Instruments

Gambling Activities Questionnaire (GAQ) The CAQ (Derevensky et al., 1996) ascertains the type of gambling activities in which individuals engage, the frequency of their gambling behavior, where they gamble, with whom they gamble, as well as items describing other characteristics of their gambling behavior (see Appendix B). Items related to the frequency and type of gambling activities in which the participants engaged were included.

Diagnostic and Statistical Manual-Fourth Edition-Multiple Response-Juvenile (DSM-IV-MR-J) (Fisher, 2000) is a screen for adolescent problem gambling. This recently revised scale consists of 9 domains (12 items) which describe psychological states and symptoms associated with problem gambling. These domains include: 1) preoccupation, 2) tolerance, 3) loss of control, 4) withdrawal, 5) escape, 6) chasing, 7) lies, 8) illegal acts, and 9) risking job, education, relationship. Most of the items have four response options: "never," "once or twice," "sometimes," or "often." Individuals are categorized as either *no/minimal problem gamblers*, *problem gamblers* or *probable pathological gamblers*, according to the severity of their gambling behavior on the DSM-

IV-MR-J. This measure allows one to systematically distinguish problem gamblers from non-problem gamblers. This screening device was selected due to its high reliability (Cronbach's alpha = 0.75), as well as its good construct validity. Earlier versions have found this instrument to be a conservative measure of problem/pathological gambling (Derevensky & Gupta, 2000; Gupta et al., 2000; Nower et al., 2000; Volberg, 1996) (see Appendix B).

State-Trait Anxiety Inventory (STAI) (Spielberger, 1983) consists of separate self-report scales for measuring state and trait anxiety. This scale clearly differentiates between the temporary condition of *state anxiety* and the more general and long-standing quality of *trait anxiety*. The first scale (S-Anxiety scale), is comprised of twenty items that evaluate how the participant feels "right now, at this moment." The T-Anxiety scale measures trait anxiety and consists of 20 items that assesses how the participant "generally feels." The 40 questions have a range of 4 possible responses to each: a) not at all, b) somewhat, c) moderately so, and d) very much so. Although the STAI was developed for use with high school, college students, and adults, it has also been used with younger students. This measure was selected due to its widespread use and its strong reliability ($r = .92$ for S-Anxiety scale, $r = .90$ for T-Anxiety scale) as well as its concurrent validity with the Jackson's Personality Research Form ($r = .65$), and the Cornell Medical Index ($r = .70$) (Jackson, 1967; Spielberger, 1983) (see Appendix B).

Behavior Assessment System for Children (BASC) (Reynolds & Kamphaus, 1992) is a paper and pencil questionnaire, which evaluates the behavior and self-perceptions of children aged 2 ½ to 18 years. The BASC consists of five components; a parent rating scale, teacher rating scale, a structured developmental history, a record form

for observable behavior, and a self-report scale. For the purposes of the present study, only the items assessing anxiety and social stress, derived from the self-report scale, were used. There are 14 items assessing anxiety and 13 items assessing social stress. This scale was chosen for its established reliability ($r = .78$ to $.82$) and its concurrent validity with Burks' Behavior Rating Scales ($r = .85$), and the Revised Behavior Problem Checklist ($r = .36$ to $.58$) (Burks, 1977; Quay & Peterson, 1983; Reynolds & Kamphaus, 1992) (see Appendix B).

Procedure

After obtaining informed consent, students were administered the questionnaires in groups. For five of the schools, the questionnaires were administered either in the school cafeteria, auditorium, or in the library, depending on the size of the group and the room's accommodations. For one school, the questionnaires were completed in the classrooms. Questionnaires were administered by research assistants, with a ratio of two research assistants per 30 students. Research assistants were Undergraduate students from McGill University who obtained training in administering the questionnaires. All questions were answered individually. The entire questionnaire took the participants between 30-50 minutes to complete. Participants were informed that all information obtained for the study would remain confidential and they could withdraw from the study at any time. Terms found to be troublesome for some students were explained before the participants began completing the questionnaires. The students were thanked following the introduction for their participation in the study, as well as at the end of the collection period. A research assistant was present at all times to answer any questions. Teachers were not required to participate in any way during the data collection sessions.

Introduction and General Instructions

Hello everyone, my name is (researcher) and this is (research assistant). We are students from McGill University and we are conducting a project about gambling behavior among high school students. Everyone here should have returned their consent forms. Unfortunately, if you have not returned your consent form, you cannot participate in this study. I want you to know that all of your answers will remain confidential. That means that no one will see what you answer on these **questionnaires**. Your teachers will not see it, your parents will not see it, and neither will anyone else that you know. Therefore, it is important that you do not write your name on the questionnaire. It is also very important that you answer the questions on your own. We are interested in what you think, so it is important that you answer all of the questions as honestly as possible. If for any reason you no longer wish to participate in this study, just raise your hand and one of us will come and get your questionnaire. You can stop participating for any reason, and you do not have to tell us your reason. Nothing bad will happen if you decide to do this. You have the entire period to complete the questionnaire, so take your time when answering the questions. There are a few terms that some students may have difficulty with, so I want you to listen very carefully while I go over their definitions. You may want to write them down so that you will remember them when you get to **those** questions.

Definitions

Page 1, #3: **tense = strained, nervous**

Page 1, #4: **strained = stressed out, really emotionally tense**

Page 1, #13: **jittery = to be nervous, fidgety, restless, uneasy**

Page 1, #14: **indecisive - have a hard time deciding things, unsure of yourself, questioning yourself, doubtful, unsure**

Page 1, #16: **content = happy, satisfied, pleased**

Page 2: #35: **inadequate = imperfect, incompetent, awkward**

If there are any other words **that you** do not understand, or if you have any questions, just raise your hand and one of us **will** come over and try to answer your question as best as we can. When you have completed the questionnaire, please raise your hand and one of us will come and pick it up. I would like to thank all of you for participating in this project.

CHAPTER 4

Results

Participants

Data were obtained from 1,044 participants, in grades 7 - 11, from six anglophone high schools in and around the Montreal area. There were 512 males (49%) and 532 females (51%) who completed the questionnaires. Males ranged in age from 12 - 18 years ($M = 14.40, SD = 1.53$), and the ages for females was from 12 - 17 years ($M = 14.22, SD = 1.45$). The number of students who participated was fairly evenly distributed across grade level (see Table 1).

Table 1

Male and Female Participants by Grade

	Male	Female	Total
Grade 7	97	112	209
8	112	120	232
9	105	110	215
10	101	98	199
11	97	92	189
Total	512	532	1044

Problem Gambling Amongst Adolescents

Based upon their responses on the GAQ and the DSM-IV-MR-J criteria for problem gambling, the participants were categorized into one of four groups according to their gambling activities (past year). Participants who answered "no" to all of the gambling items on the GAQ, were categorized as *non-gamblers*. Those who responded "yes" to 0 or 1 item out of the 9 categories on the DSM-IV-MR-J were categorized as *non/minimal problem gamblers (NPG)*. Participants who answered positively to 2 or 3 items on the DSM-IV-MR-J were categorized as *problem gamblers (PG)*, and those who endorsed 4 or more items were categorized as *probable pathological gamblers (PPG)*.

As can be seen in Table 2, 28.6% of participants were categorized as non-gamblers, 57.2% as no/minimal problem gamblers, 9.7% as problem gamblers, and 4.5% as probable pathological gamblers.

Table 2

Percentage of Participants in Each DSM-IV-MR-J Groups

DSM-IV-MR-J Groups	Percent (%)
Non-gambler *	28.6
No/minimal problem gambler	57.2
Problem gambler	9.7
PPG	4.5

Males reported more gambling behavior than females (see Table 3). Furthermore, an examination of developmental differences reveals that gambling behavior increases as

Table 3

Males and Females in Each DSM-IV-MR-J Category

DSM-IV-MR-J Groups	Males	Females	Total
Non-gambler	9.6%	19.0%	28.6%
NPG	29.2%*	28.1%	57.2%
PG	6.1%	3.6%	9.7%
PPG	4.1%	0.4%	4.5%

adolescents get older (see Table 4). Chi-squares revealed significant differences between the groups by grade ($\chi^2 = 46.4$, $df = 12$, $p < .05$). It is interesting to note that problem and probable pathological gambling behavior appears to peak in grade 9. Youth with problem gambling is at 4.4% in grade 7, increases to 8.3% in grade 8, and then jumps to 17.8% in grade 9. In grade 10, the percentage of problem gamblers decreases to 10.2%, and further decreases to 7.4% in grade 11. Similarly, 2.5% of students in grade 7 are PPG's, 3.5% in grade 8, and 5.6% in grade 9. Again the percentage of PPG's decreases to 5.1% in grade 10, then increases slightly to 5.9% in grade 11.

Table 4

Gambling Severity by Grade

Grade	Non-gambler	NPG	PG	PPG
7	39.9%	53.2%	4.4%	2.5%
8	32.5%	55.7%	8.3%	3.5%
9	21.0%	55.6%	17.8%	5.6%
10	20.9%	63.8%	10.2%	5.1%
11	28.2%	58.5%	7.4%	5.9%

The percentage of males and females in each of the DSM-IV-MR-J categories according to grade level are presented in Table 5. An analysis reveals no significant developmental differences between males and females in terms of the DSM categories. Chi-square tests revealed no significant differences between males and females for non-gamblers, [($\chi^2 = 3.9$, $df = 4$, $p = .42$), NPGs ($\chi^2 = 2.5$, $df = 4$, $p = .64$), PGs ($\chi^2 = 2.9$, $df = 4$, $p = .58$), and PPGs ($\chi^2 = 3.9$, $df = 4$, $p = .42$)].

Gambling Activities

Participants in this study reported engaging in a variety of gambling activities (see Table 6). Overall, playing cards was the gambling activity engaged in most often, with 10.6% of gamblers reporting engaging in this activity once a week or more. This is followed by purchasing lottery tickets or scratch cards (8.5%) and wagering on sports with friends (7.6%). NPGs also prefer playing itards and purchasing lottery tickets or scratch cards as their two primary gambling activities (10.9% and 6.8%, respectively). A qualitative examination of the data revealed that this item consisted mostly of wagering on everyday events (for example, "betting that the teacher will be late again," "betting on who has a crush on who," "betting on who will get the best grades," etc).

Table 5

Gambling Severity by Grade by Gender

	Gender	Grade 7	Grade 8	Grade 9	Grade 10	Grade 11
Non-gambler	Male	31.5%	20.2%	11.4%	18.2%	17.5%
	Female	46.8%	43.7%	30.3%	23.7%	39.6%
	Total	39.9%	32.5%	21.0%	20.9%	28.2%
NPG	Male	56.4%	63.3%	59.0%	57.6%	60.8%
	Female	50.5%	48.7%	52.3%	70.1%	56.0%
	Total	53.2%	55.7%	55.6%	63.8%	58.5%
PG	Male	7.4%	10.1%	20.0%	14.1%	10.3%
	Female	1.8%	6.7%	15.6%	7.2%	4.4%
	Total	4.4%	8.3%	17.8%	10.2%	7.4%
PPG	Male	4.3%	6.4%	9.5%	10.1%	11.3%
	Female	0.9%	0.8%	1.8%	0%	0%
	Total	2.5%	3.5%	5.6%	5.1%	5.9%

Table 6

Types of Gambling Activities Engaged in Once Per Week or More

Gambling Activities (1/wk or more)	NPG	PG	PPG	Mean total of all gamblers
Play cards	10.9% N = 64	18.0% N = 18	67.5% N = 27	14.8% N = 109
Wager on sports with friends	6.1% N = 36	14.0% N = 14	70.0% N = 28	10.6% N = 78
Purchase sports lottery tickets	3.9% N = 23	11.0% N = 11	45.0% N = 18	7.1% N = 52
Purchase lottery tickets or scratch cards	6.8% N = 40	21.2% N = 21	65.0% N = 26	11.8% N = 87
Wager on video games or video poker	25% N = 15	10.0% N = 10	52.5% N = 21	6.3% N = 46
Play bingo	32% N = 19	10.0% N = 10	27.5% N = 11	5.4% N = 40
Play slot machines	1.4% N = 8	4.0% N = 4	35.0% N = 14	3.5% N = 26
Wager on sports, pool, bowling & other skills	5.4% N = 32	16.0% N = 16	2.5% N = 26	10.1% N = 74
Other	6.5% N = 38	8.0% N = 8	2.5% N = 11	7.8% N = 57

Problem gamblers reported the same top two gambling activities as the other groups (18.0% and 21.2%, respectively), followed by wagering on sports, pool; bowling, and

other skills (16.0%). Finally, PPGs reported wagering on sports with friends as being the gambling activity they engaged in most frequently, with 60.9% of them engaging in this activity once a week or more. Playing cards was the second most frequently reported activity (58.7%), followed by purchasing lottery tickets or scratch cards and wagering on sports, pool, bowling, and other skill games (56.5%).

Gambling and Substance Use

The relationship between gambling behavior and substance use was examined. As can be seen in Table 7, substance use increases with severity of gambling behavior. PPGs' weekly and daily use of all substances is greater than that of the PGs, NPGs, and non-gamblers. For example, 13.3% of PPGs consume alcohol on a daily basis compared to 1.0% of PGs, 1.2% of NPGs, and .3% of non-gamblers. Similar trends are evident for the use of *uppers*, *downers*, hallucinatory drugs, and cigarette smoking. Chi-square tests revealed significant differences between the groups for alcohol/beer ($\chi^2 = 182.3, df = 9, p < .05$), *uppers* ($\chi^2 = 146.0, df = 9, p < .05$), *downers* ($\chi^2 = 116.0, df = 9, p < .05$), hallucinatory drugs ($\chi^2 = 35.7, df = 9, p < .05$), and smoking cigarettes ($\chi^2 = 91.9, df = 9, p < .05$).

Gambling and Dissociation

An examination of the relationship between severity of gambling behavior and dissociation revealed that PPGs endorse more dissociation items compared to NPGs and PGs (see Table 8). Approximately 15% of PPGs reported going into a trance-like state all of the time while gambling, compared to 0.7% of NPGs and 4% of PGs. Whereas 1% of both NPGs and PGs reported feeling like a different person when gambling, 21.7% of PPGs reported the same. One percent of PGs and 0.2% of NPGs

Table 7

Gambling and Substance Use

	Non-gambler	NPG	PG	PPG
Alcohol Use				
Never	67.1%	38.3%	17.0%	22.2%
Less than 1/wk	28.4%	47.6%	55.0%	28.9%
1/wk or more	4.1%	12.9%	27.0%	35.6%
Everyday	.3%	1.2%	1.0%	13.3%
Upper Use				
Never	99.3%	98.5%	91.0%	75.6%
Less than 1/wk	.3%	1.2%	9.0%	8.9%
1/wk or more	.3%	2%	0	11.1%
Everyday	0	.2%	0	4.4%
Downer Use				
Never	88.7%	78.2%	56.0%	42.2%
Let* than 1/wk	9.2%	14.3%	19.0%	24.4%
1/wk or more	1.7%	6.3%	18.0%	20.0%
Everyday	.3%	1.2%	7.0%	13.3%
Barbiturate Use				
Never	99.7%	96.9%	95.0%	91.1%
Less than 1/wk	.3%	2.4%	5.0%	2.2%
1/wk or more	0	.2%	0	2.2%
Everyday	0	5%	0	4.4%
Cigarette Use				
Never	84.2%	73.6%	55.0%	35.6%
Less than 1/wk	8.9%	13.1%	12.0%	22.2%
1/wk or more	1.4%	3.9%	10.0%	20.0%
Everyday	5.5%	9.4%	23.0%	22.2%

reported experiencing blackouts during gambling episodes, compared to 10.9% of PPGs.

Two percent of NPGs and 12% of PGs reported losing track of time while gambling, whereas 37% of PPGs reported likewise. Finally, 17% of PPGs reported feeling as though they are "outside of themselves" or "watching themselves" while gambling, compared to only 1% of NPGs and 2% of problem gamblers.

Chi-square tests revealed significant differences between the three DSM categories on "trance-like state" ($\chi^2 = 130.81, df = 6, p < .01$), "feel like a different person" ($\chi^2 = 171.99, df = 6, p < .01$), "experience blackouts" ($\chi^2 = 99.22, df = 6, p < .01$), "lose track of time" ($\chi^2 = 158.17, df = 6, p < .01$), and "outside of yourself or

Table 8

Gambling Severity by Dissociation Measures

	NPG	PG	PPG
Trance-like state			
Occasionally	2.7%	12.1%	17.4%
All the time	0.1%	4.0%	15.2%
Feel like a different person			
Occasionally	5.1%	12.0%	23.9%
All the time	1.0%	1.0%	21.7%
Experience Blackouts			
Occasionally	0.7%	2.0%	8.7%
All the time	0.2%	1.0%	10.9%
Lose Track of Time			
Occasionally	11.7%	32.0%	30.4%
All the time	2.0%	12.0%	37.0%
Feel "outside yourself" "watching yourself"			
Occasionally	2.7%	7.0%	8.7%
All the time	1.0%	2.0%	17.4%

watching yourself" ($\chi^2 = 106.37$, $df = 6$, $p < .01$).

Anxiety and Problem Gambling

The present data were analyzed using a Multivariate Analysis of Variance (MANOVA) as the main research model in order to determine whether there were significant differences in the amount of reported anxiety and social stress between gamblers and non-gamblers. The dependent variables are the State Anxiety and Trait Anxiety standard scores, as well as the BAS and BSSS T-scores (see Table 9).

As depicted in Figure 1, the mean standard score of reported trait anxiety increases as the amount of reported gambling problems increase. A similar trend is noted for state anxiety and social stress. For the BAS, no such trend is evident, however, PPGs ($M = 49.24$) reported more anxiety on the BASC compared to non-gamblers ($M = 48.61$). These results also show that across all DSM-IV-MR-J groups, and for both anxiety and

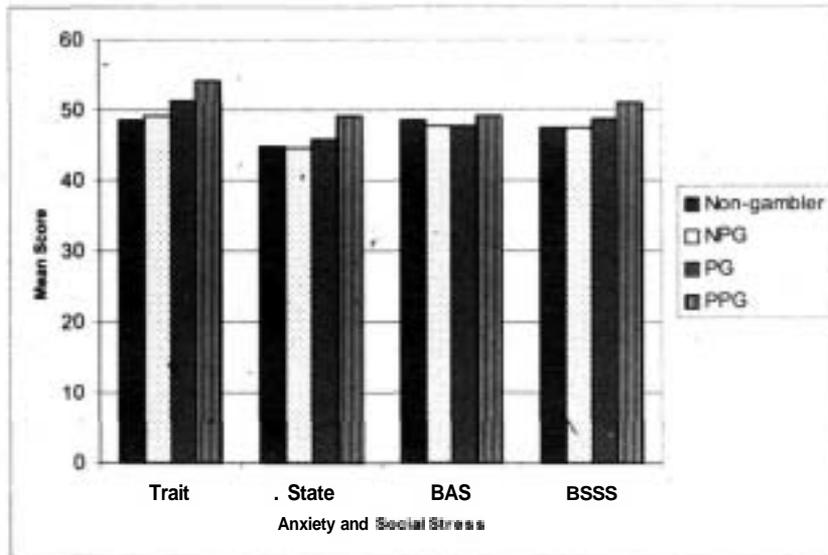


Figure 1. Mean scores on anxiety and social stress measures by DSM category.

social stress scales, females reported greater anxiety and social stress compared to males (see Table 9 for means).

The relationship between DSM groups and anxiety measures was also examined in terms of grade level. As depicted in Table 10, no appreciable developmental differences were found in terms of reported state anxiety, trait anxiety, and social stress.

The MANOVA revealed a significant main effect for the DSM-IV-MR-J groups [$F(12) = 1.88, p < .05$]. Although the T-scores and standard scores of the anxiety and social stress measures were co-varied for age and gender, a significant main effect for gender [$F(4) = 3.21, p < .05$] was found, while no significant main effect was found for grade. The two-way interactions between DSM groups and gender, DSM groups and grade, and gender and grade, were all found to be non-significant. Furthermore, the

Table 9

Mean Anxiety and Social Stress Scores by Gambling Severity

Anxiety Scale	Gender	Non-gambler	NP6	PG	PPG
Trait Anxiety	Male	M=47.43 SD=8.30	M=47.02 SD=8.21	M=50.41 SD=8.27	M=53.76 SD=11.49
	Female	M=49.05 SD=9.29	M=51.33 SD=9.14	M=52.70 SD=8.80	M=58.25 SD=6.50
	Total	M=48.51 SD=8.99	M=49.13 SD=8.94	M=51.26 SD=8.50	M=54.15 SD=11.17
State Anxiety	Male	M=43.34 SD=8.47	M=42.69 SD=8.72	M=44.81 SD=10.81	M=48.60 SD=13.11
	Female	M=45.68 SD=7.80	M=46.67 SD=7.44	M=47.59 SD=8.57	M=55.50 SD=8.88
	Total	M=44.89 SD=8.09	M=44.65 SD=8.35	M=45.84 SD=10.09	M=49.20 SD=12.88
BAS	Male	M=45.86 SD=7.48	M=44.83 SD=7.46	M=45.51 SD=7.32	M=49.05 SD=8.11
	Female	M=50.01 SD=8.21	M=50.89 SD=7.93	M=51.59 SD=7.90	M=51.25 SD=13.15
	Total	M=48.61 SD=8.20	M=47.80 SD=8.27	M=47.76 SD=8.06	M=49.24 SD=8.48
BSSS	Male	M=46.66 SD=8.74	M=45.84 SD=7.81	M=47.37 SD=9.5	M=50.68 SD=10.35
	Female	M=47.93 SD=8.75	M=49.38 SD=9.28	M=51.11 SD=8.79	M=51.75 SD=11.24
	Total	M=47.50 SD=8.75	M=47.58 SD=8.74	M=48.75 SD=9.38	M=50.96 SD=10.30

three-way DSM groups by gender by grade interaction was also non-significant (see Table 11 for the results of the multivariate tests).

Table 10

Mean Scores on Anxiety and Social Stress Measures by Grade by Gambling Severity

Anxiety Scale	Grade	Non-gambler	NPG	PG	PPG
Trait Anxiety	7	44.95	48.84	49.00	55.90
	8	50.18	49.43	48.89	59.75
	9	49.73	49.61	52.97	54.08
	10	48.93	48.97	52.45	56.60
	11	50.25	48.75	49.57	47.27
State Anxiety	7	42.27	45.06	43.33	55.00
	8	47.04	44.65	43.68	52.63
	9	45.31	45.09	47.76	46.75
	10	45.22	44.38	44.00	51.10
	11	45.28	44.05	47.79	45.00
BAS	7	47.28	49.39	46.44	49.00
	8	49.84	48.61	47.63	55.50
	9	50.69	47.45	49.18	49.17
	10	47.05	47.76	47.70	49.80
	11	48.36	45.75	45.00	44.82
BSSS	7	46.91	48.61	45.78	54.20
	8	47.34	47.57	47.74	51.25
	9	49.89	47.44	50.82	50.67
	10	46.85	47.18	46.95	54.99
	11	47.11	47.20	49.00	46.09

Table 11

Multivariate Tests

Effect	Wilk's Λ Value	F	df	p	Observed Power
DSMCATG	.98	1.88	12	.03*	.86
GRADE	.98	1.41	16	.13	.74
GENDER	.99	3.21	4	.01*	.83
DSMCATG * GRADE	.95	1.02	48	.44	.97
DSMCATG * GENDER	.99	.951	12	.49	.51
GRADE * GENDER	.99	.559	16	.92	.30
DSMCATG * GRADE * GENDER	.96	1.10	40	.31	.96

* Indicates significance at the .05 level.

As depicted in Table 12, the differences between the DSM categories in terms of trait anxiety [$F(3) = 3.92, p < .05$] and state anxiety [$F(3) = 4.02, p < .05$] were significant. A main

effect for Gender was found on the state anxiety scale [$F(1) = 6.66, p < .05$] and the BAS [$F(1) = 9.53, p < .05$]. The correlation between the BAS and Grade was also statistically significant [$F(4) = 2.90, p < .05$].

Table 12

Tests of Between Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	p	Observed Power
DSM CAT	Trait Anxiety	889.53	3	29984	3.92	< .01*	.83
	State Anxiety	87029	3	290.10	4.02	< .01*	.84
	BAS	68.80	3	22.93	.38	.77	.13
	BSSS	20536	3	68.46	.89	.45	.25
GRADE	Trait Anxiety	35059	4	87.65	1.15	.33	.36
	State Anxiety	71.49	4	17.87	.248	.91	.11
	BAS	693.50	4	173.38	2.90	< .02*	.78
	BSSS	444.94	4	111.24	1.44	.22	.45
GENDER	Trait Anxiety	257.13	1	257.13	3.36	.07	.45
	State Anxiety	481.18	1	481.18	6.66	< .01*	.73
	BAS	569.99	1	569.99	9.53	< .01*	.87
	BSSS	119.19	1	119.19	1.55	.21	.24
DSM*Grade	Trait Anxiety	140946	12	117.46	1.53	.11	.82
	State Anxiety	1281.34	12	106.78	1.48	.13	.81
	BAS	731.36	12	60.95	1.02	.43	.61
	BSSS	933.00	12	77.75	1.01	.44	.60
DSM*Gender	Trait Anxiety	360.55	3	120.19	1.57	.20	.42
	State Anxiety	189.44	3	63.15	.87	.45	.24
	BAS	267.38	3	89.13	1.49	.22	.40
	BSSS	373.17	3	124.39	1.63	.18	.43
Grade*Gender	Trait Anxiety	122.38	4	30.60	.400	.81	.14
	State Anxiety	66.33	4	16.58	.230	.92	.10
	BAS	153.31	4	38.33	.641	.63	.21
	BSSS	284.31	4	71.08	.923	.45	.30
DSM*Grade*Gender	Trait Anxiety	1281.16	10	128.12	1.67	.08	.81
	State Anxiety	94998	10	95.00	1.32	.21	.69
	BAS	84045	10	84.05	1.41	.17	.72
	BSSS	915.99	10	91.60	1.19	.29	.63

* Indicates significance at the .05 level.

Tukey HSD Post Hoc tests (see Table 13) were carried out in order to examine the significant main effects of the DSM groups in terms of state and trait anxiety. Within trait anxiety, the differences between the means of non-gamblers and PGs ($p < .03$), non-

gamblers and PPGs ($p < .05$), and NPGs and PPGs ($p < .01$) were significant. Within state anxiety, differences between the means of non-gamblers and PPGs ($p < .008$) and NPGs and PPGs ($p < .003$) were significant.

Table 13

Tukey HSD Post Hoc Tests

Main Effects	P
Trait Anxiety	
Non-gambler x PG	< .03
Non-gambler x PPG	< .01
NPG x PPG	< .01
State Anxiety	
Non-gambler x PPG	< .01
NPG x PPG	< .01

Anxiety, Social Stress, and Gambling Behavior

In order to examine the relationship between gambling severity, anxiety, and social stress, Pearson correlations were computed. Correlation coefficients were obtained between the DSM-IV-MR-J scale and standard scores on the Trait and State Anxiety scales, as well as with T-scores on the BASC Anxiety Scale (BAS) (a measure of generalized anxiety) and BASC Social Stress Scale (BSSS). Results revealed significant, but modest positive correlations between total DSM-IV-MR-J and State Anxiety ($r = .16, p < .05$), Trait Anxiety ($r = .18, p < .05$), and the BSSS ($r = .14, p < .05$). No significant correlation was found between DSM-IV-MR-J and the BAS. These results suggest that the higher the state anxiety, trait anxiety, and social stress scores reported by these adolescents, the more gambling problems they reported on the DSM-IV-MR-J (see Tables 14 and 15 for the correlation coefficients).

Table 14

Correlation Coefficients for DSM-IV-MR-J and State Anxiety, Trait Anxiety, and Social Stress Scores

Variables	Pearson r	P
Total DSM * State Anxiety	.16	< .01
Total DSM * Trait Anxiety	.18	< .01
Total DSM * BAS	.06	.09
Total DSM * BSSS	.14	< .01

Table 15

Multiple Correlation Matrix

	DSM-IV-MR-J	State anxiety	Trait anxiety	BAS	BSSS
DSM-IV-MR-J	1.00				
State anxiety	.162	1.00			
Trait anxiety	.184	.669	1.00		
BAS	.062	.471	.633	1.00	
BSSS	.140	.447	.610	.569	1.00

State anxiety, trait anxiety and gambling behavior. In order to examine the relationship between state anxiety, trait anxiety, social stress, and gambling behavior more closely, T-scores on the anxiety scales and standard scores on the BASC scales were divided into quartiles. Three groups were formed; the 25% highest scores, the middle 50%, and lowest 25% on the anxiety measures.

Once the anxiety and social stress scales were divided into groups, Crosstab and Chi-square analyses were performed in order to examine their relationship with gambling behaviors. Descriptive data and Chi-square analyses were performed in order to examine the relationship between the anxiety scales and the DSM-IV-MR-J categories (see Table 16). It is important to bear in mind that the two extreme groups (25% highest and 25% lowest) should contain approximately 25% of the sample population, and the middle

group should contain approximately 50% of the sample population. In order to interpret the results, it is important to examine the dispersions from the expected percentage.

Table 16

Anxiety and Gambling Severity

Anxiety Scales	Non-gambler	NPG	PG	PPG
Low	34.3%	31.9%	21.0%	13.0%
Medium	42.2%	40.9%	44.0%	39.2%
High	23.5%	27.2%	35.0%	47.8%
Low	26.9%	32.1%	33.0%	21.7%
Medium	47.6%	39.2%	35.0%	37.0%
High	25.5%	28.7%	32.0%	41.3%
Low	28.9%	32.1%	30.0%	21.8%
Medium	40.8%	42.3%	46.0%	54.3%
High	30.3%	25.6%	24.0%	23.9%
Low	35.4%	35.3%	31.0%	19.5%
Medium	41.8%	40.1%	40.0%	37.0%
High	23.2%	24.6%	29.0%	43.5%

For trait anxiety, state anxiety, and BSSS, a large percentage of the adolescents whose anxiety scores were within the high anxiety group were classified as PPGs. Forty-eight percent of PPGs' standard scores on the trait anxiety scale were within the highest anxiety group, 35% of PGs had trait anxiety scores within the highest anxiety group, compared with 24% of non-gamblers, and 27% of NPGs. Chi-square tests revealed significant differences between the DSM groups in terms of reported trait anxiety ($\chi^2 = 20.2, df = 6, p < .05$). For state anxiety, 41% of PPGs' standard scores were within the high anxiety group, compared with 26% of non-gamblers, 29% of NPGs, and 32% of PGs. The differences between the DSM groups for the levels of state anxiety, while approaching significance, failed to reach statistical significance.

($X^2 = 11.74, df = 6, p = .068$).

For social stress, 44% within the highest anxiety group were PPGs, compared to 29% of PPGs, 25% of NPGs, and 23% of non-gamblers. Although a higher percentage of PPGs reported social stress within the top quartile, no statistically significant differences between the DSM groups were revealed for the BASC social stress scale

($X^2 = 10.9, df = 6, p = .09$). No significant relationship was found for the BASC Anxiety Scale ($\chi^2 = 5.9, df = 6, p = .43$).

Anxiety, social stress, and substance use. The relationship between substance use, levels of anxiety, and social stress was similarly examined (refer to Tables 17-20). It was found that for those who consumed alcohol and/or beer once a week or more, 40% were in the highest state anxiety group, compared to 37% in the middle state anxiety group, and 23% in the lowest state anxiety group. Chi-square tests revealed significant differences between the levels of state anxiety for alcohol and/or beer consumption ($X^2 = 16.3, df = 6, p < .05$). For trait anxiety, 40% of those who consumed alcohol and/or beer daily had standard scores within the highest group, compared to 27% in the middle group, and 33% in the low trait anxiety group. Differences between trait anxiety levels for beer and/or alcohol consumption were also found to be significant ($\chi^2 = 41.2, df = 6, p < .05$). No relationship between the levels of anxiety on the BASC, nor between the levels of social stress and alcohol consumption was found.

For individuals who used stimulant drugs once a week or more, 71% had state and trait anxiety scores within the highest group, compared to 29% in the middle group.

Adolescents who used depressives on a daily basis, reported state (43%) and trait (48%)

" anxiety levels which fell within the highest group. The levels of state anxiety were significantly different for both stimulant and depressive use ($\chi^2 = 15.4, df=6, p < .05$; $\chi^2 = 21.1, df=6, p < .05$, respectively). Similarly, the levels of trait anxiety for these drugs differed significantly ($\chi^2 = 14.9, df=6, p < .05, \chi^2 = 15.9, df= 6, p < .05$, respectively). Again, the BASC anxiety levels and the BASC social stress levels did not yield any discernable relationships with drug use.

Interestingly, 100% of youth who reported using hallucinatory drugs once a week or more also reported trait and state anxiety scores that fell within the highest group. The BASC's measures of anxiety and social stress did not reveal any relationships with hallucinatory drug use. Chi-square analyses could not be performed on this data since the percentage of adolescents reporting hallucinatory drug use was too low.

In terms of cigarette use, 41% of daily smokers reported anxiety levels within the highest anxiety group. This was true for both state and trait anxiety, and the differences between the levels were statistically significant ($\chi^2 = 17.4, df=6, p < .05$; $\chi^2 = 13.7, df= 6, p < .05$). According to these findings, it appears that overall, adolescents who report having the higher state and trait anxiety scores, also tend to be the same individuals who engage in the most substance use (see Tables 17- 20).

Table 17

Trait Anxiety Levels and Substance Use

Anxiety Levels	Alcohol/beer		Stimulants		Depressives		Hallucinatory Drugs		Cigarettes	
	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily
Low	21.2%	33.3%	0.0%	66.7%	29.0%	19.0%	0.0%	40.0%	23.9%	22.1%
Medium	37.9%	26.7%	28.6%	0.0%	42.0%	33.3%	0.0%	20.0%	39.1%	36.5%
High	40.9%	40.0%	71.4%	33.3%	29.0%	47.7%	100%	40.0%	37.0%	41.4%

Table 18

State Anxiety Levels and Substance Use

Anxiety Levels	Alcohol/beer		Stimulants		Depressives		Hallucinatory Drugs		Cigarettes	
	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily
Low	22.7%	40.0%	0.0%	66.7%	40.6%	28.6%	0.0%	60.0%	17.4%	22.1%
Medium	37.1%	26.7%	28.6%	0.0%	27.5%	28.6%	0.0%	0.0%	47.8%	36.5%
High	40.2%	33.3%	71.4%	33.3%	31.8%	42.9%	100.0%	40.0%	34.8%	41.4%

Table 19

BASC Anxiety Levels and Substance Use

Anxiety Levels	Alcohol/beer		Stimulants		Depressives		Hallucinatory Drugs		Cigarettes	
	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily
Low	35.6%	40.0%	42.9%	66.7%	36.2%	28.6%	0.0%	40.0%	19.5%	26.0%
Medium	39.4%	33.3%	57.1%	0.0%	46.4%	47.6%	100.0%	20.0%	52.2%	44.2%
High	25.0%	26.7%	0.0%	33.3%	17.4%	23.8%	0.0%	40.0%	28.3%	29.8%

Table 20

BASC Social Stress Levels and Substance Use

Anxiety Levels	Alcohol/beer		Stimulants		Depressives		Hallucinatory Drugs		Cigarettes	
	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily	1/wk or more	Daily
Low	38.6%	40.0%	28.6%	66.7%	42.0%	28.6%	0.0%	40.0%	23.9%	33.7%
Medium	33.4%	20.0%	28.6%	0.0%	37.7%	38.1%	50.0%	20.0%	39.1%	38.5%
High	28.0%	40.0%	42.8%	33.3%	20.3%	33.3%	50.0%	40.0%	37.0%	27.8%

Anxiety, social stress, and types of gambling activities. The participants in this study reported engaging in a variety of gambling activities (see Tables 21 - 24).

Crosstabs and Chi-square tests were run in order to investigate whether differences

- existed in the choice of gambling activity with respect to different levels of reported anxiety. Only one gambling activity differed among the three groups for trait anxiety

Table 21

Levels of Trait Anxiety and Gambling Activities

Activities	Anxiety Levels		
	Low	Medium	High
Play Cards	25.0%	41.1%	33.9%
Wager on sports (sports pools) with friends	21.3%	50.0%	28.7%
Purchase sports lottery tickets	23.1%	50.0%	26.9%
Purchase lottery or scratch tickets	21.8%	39.1%	39.1%
Wager on video games or video poker for money	26.0%	37.0%	37.0%
Bingo	16.7%	39.1%	45.2%
Slot machines	22.3%	40.7%	37.0%
Wager on sports, pool, bowling, & other games of skill	23.7%	40.8%	35.5%

Table 22

Levels of State Anxiety and Gambling Activities

Activities (once a week or more)	Anxiety Levels		
	Low	Medium	High
Play Cards	28.6%	33.9%	37.5%
Wager on sports (sports pools) with friends	28.8%	38.7%	32.5%
Purchase sports lottery tickets	30.8%	34.6%	34.6%
Purchase lottery or scratch tickets	34.5%	31.0%	34.5%
Wager on video games or video poker for money	30.4%	30.4%	39.2%
Bingo	28.6%	35.7%	35.7%
Slot machines	29.7%	25.9%	44.4%
Wager on sports, pool, bowling, & other games of skill	27.6%	38.2%	34.2%

(playing bingo.) Approximately 45% of adolescents who reported playing bingo once a week or more had trait anxiety scores within the highest group, compared with 38% within the middle group, and 17% within the lowest group.

Table 23

Levels of BASC Anxiety and Gambling Activities

Activities	Anxiety Levels		
	Low	Medium	High
Play Cards	32.2%	46.4%	21.4%
Wager on sports (sports pools) with friends	40.0%	41.3%	18.7%
Purchase sports lottery tickets	38.5%	42.3%	19.2%
Purchase lottery or scratch tickets	29.9%	49.4%	20.7%
Wager on video games or video poker for money	37.0%	34.8%	28.2%
Bingo	19.0%	47.6%	33.4%
Slot machines	37.0%	48.2%	14.8%
Wager on sports, pool, bowling, & other games of skill	38.2%	39.5%	22.3%

Table 24

Levels of BASC Social Stress and Gambling Activities

Activities	Anxiety Levels		
	Low	Medium	High
Play Cards	41.1%	31.3%	27.6%
Wager on sports (sports pools) with friends	43.7%	26.3%	30.0%
Purchase sports lottery tickets	40.4%	34.6%	25.0%
Purchase lottery or scratch tickets	32.2%	40.2%	27.6%
Wager on video games or video poker for money	32.6%	39.1%	28.3%
Bingo	21.4%	38.1%	40.5%
Slot machines	40.7%	29.6%	29.7%
Wager on sports, pool, bowling, & other games of skill	40.8%	31.6%	27.6%

Playing cards once a week or more was found to be more pronounced within the group of gamblers who reported state anxiety within the highest group (38%), compared to gamblers who reported state anxiety within the middle (34%) and lowest (29%) group.

Another gambling activity where differences were found based on reported levels of state

anxiety was wagering on video games or video poker. Thirty-nine percent of youth who engaged in this activity, a minimum of once per week, fell within the highest state anxiety group. This is a higher percentage compared to gamblers whose state anxiety standard scores fell within the lowest and middle groups of state anxiety (both 30%). A more interesting difference can be seen within the group of gamblers who reportedly play slot machines or VLTs once a week or more. Adolescents who reported state anxiety levels within the highest group accounted for 44% of this group, compared to 30% in the lowest group and 26% in the middle group. Although none of these differences were found to be statistically significant, they do provide interesting information with respect to the relationship between gambling behaviors and anxiety.

Anxiety, social stress, and reported reasons for gambling. Crosstabs and Chi-squares were performed in order to examine the relationship between levels of anxiety, social stress, and reported reasons for gambling (see Tables 25 - 28). Interesting results appear for four items in particular. For instance, 89% of gamblers who endorsed "because I'm unhappy," as one of their reasons for gambling, had trait anxiety scores within the highest group and 67% had high state anxiety scores. Chi-square analyses revealed significant differences for trait anxiety ($\chi^2 = 15.6, df = 2, p < .05$) but not for state anxiety ($\chi^2 = 6.0, df = 2, p = 0.51$). Similarly, 85% of individuals who reported gambling to "escape from problems of home and school" were individuals with the high trait anxiety standard scores, and 65% had state anxiety scores within the highest group. Chi-squares revealed significant differences for both trait and state anxiety ($\chi^2 = 31.0, df = 2, p < .05$ and $\chi^2 = 12.1, df = 2, p < .05$, respectively). All (100%) of the adolescents who reported gambling because they were lonely had high trait anxiety

scores. Approximately 67% of youth who reported loneliness as one of their reasons for gambling had state anxiety scores within the highest group.

*

Table 25

Trait Anxiety Levels and Reported Reasons for Gambling

Reasons	Anxiety Levels		
	Low	Medium	High
Enjoyment	29.0%	41.8%	29.2%
To Relax	27.0%	36.0%	37.0%
Excitement	27.2%	44.3%	28.5%
To be with or make new friends	26.5%	45.8%	27.7%
Because I'm unhappy	0.0%	11.1%	88.9%
To escape from problems of home and school	0.0%	15.0%	85.0%
Because I'm lonely	0.0%	0.0%	100.0%
To feel older	28.9%	26.4%	44.7%
To win money	27.3%	41.6%	31.1%

Table 26

State Anxiety Levels and Reported Reasons For Gambling

Reasons	Anxiety Levels		
	Low	Medium	High
Enjoyment	31.2%	40.6%	28.2%
To Relax	31.5%	38.2%	30.3%
Excitement	33.3%	37.3%	29.4%
To be with or make new friends	28.9%	39.8%	31.3%
Because I'm unhappy	11.1%	22.2%	66.7%
To escape from problems of home and school	15.0%	20.0%	65.0%
Because I'm lonely	8.3%	25.0%	66.7%
To feel older	31.6%	28.9%	39.5%
To win money	30.1%	39.9%	30.0%

This is compared to 8% who had state anxiety scores in the lowest group, and 25% in the middle group. The differences between the groups were found to be significant for both trait and state anxiety ($\chi^2 = 29.2$, $df = 2$, $p < .05$ and $\chi^2 = 8.2$, $df = 2$, $p < .05$, respectively).

Finally, differences between the three anxiety groups were also found for the reason "to feel older." Of the gamblers who endorsed this as one of their reasons for gambling, 45% of them had high trait anxiety scores, 29% had trait anxiety scores within the lowest

Table 27

BASC Anxiety Levels and Reported Reasons for Gambling

Reasons	Anxiety Levels		
	Low	Medium	High
Enjoyment	30.5%	44.5%	25.0%
To Relax	32.6%	46.1%	21.3%
Excitement	31.9%	42.0%	26.1%
To be with or make new friends	28.9%	42.2%	28.9%
Because I'm unhappy	0.0%	44.4%	55.6%
To escape from problems of home and school	10.0%	55.0%	35.0%
Because I'm lonely	0.0%	50.0%	50.0%
To feel older	26.4%	44.7%	28.9%
To win money	30.9%	44.0%	25.1%

Table 28

BASC Social Stress Levels and Reported Reasons for Gambling

Reasons	Anxiety Levels		
	Low	Medium	High
Enjoyment	33.6%	40.7%	25.7%
To Relax	28.1%	38.2%	33.7%
Excitement	33.9%	39.1%	27.0%
To be with or make new friends	28.9%	39.8%	31.3%
Because I'm unhappy	0.0%	11.1%	88.9%
To escape from problems of home and school	5.0%	15.0%	80.0%
Because I'm lonely	0.0%	8.3%	91.7%
To feel older	18.4%	36.8%	44.8%
To win money	35.0%	40.1%	24.9%

group, and 26% had scores in the middle group. Chi-squares revealed no statistically significant differences for either trait or state anxiety ($\chi^2 = 5.4$, $df = 2$, $p = .07$ and

$\chi^2 = 2.2$, $df = 2$, $p = .23$, respectively). According to these results, adolescents who reported gambling because they are "unhappy," "lonely," "to escape from problems of home and school," and "want to feel older," are individuals who had the highest trait and state anxiety scores.

Anxiety, social stress, and dissociation. Endorsed items of dissociation as a function of levels of anxiety and social stress are reported in Tables 29 - 32. Of the gamblers who reported going into a trance-like state when gambling, 47% of them were in the high trait anxiety group. This compares to the 40% who were in the middle group, and 13% in the low trait anxiety group. Chi-square tests revealed statistically significant differences between the levels of trait anxiety for this item ($\chi^2 = 21.1$, $df = 6$, $p < .05$).

Table 29

Trait Anxiety and Dissociation

	Low	Medium	High
Trance-like state			
Occasionally	13.9%	41.7%	44.4%
All the time	13.3%	40.0%	46.7%
Blacked out			
Occasionally	15.1%	39.6%	45.3%
All the time	11.8%	29.4%	58.8%
Excessive Blackouts			
Occasionally	10.0%	20.0%	70.0%
All the time	14.3%	28.6%	57.2%
Loss Track of Time			
Occasionally	20.9%	41.7%	37.4%
All the time	24.4%	39.0%	36.6%
Feel "outside yourself," watching yourself			
Occasionally	11.1%	40.7%	48.2%
All the time	12.5%	43.8%	43.7%

Similarly, more gamblers who reported feeling like a different person when gambling fell in the high trait anxiety group (59%), compared to gamblers on the medium trait anxiety group (29%), and those in the low trait anxiety group (11%). The three levels of anxiety were significantly different ($\chi^2 = 22.5, df = 6, p < .05$).

Table 30

State Anxiety and Dissociation

	Low	Medium	High
Occasionally	38.9%	19.4%	41.7%
All the time*	26.7%	20.0%	53.3%
Occasionally	22.7%	35.8%	41.5%
All the time	17.6%	17.7%	64.7%
Occasionally	200%	20.0%	600%
All the time	14.3%	28.6%	57.1%
Occasionally	304%	33.1%	365%
All the time	220%	43.9%	34.1%
Occasionally	25.9%	29.7%	44.4%
All the time	25.0%	25.0%	500%

Table 31
 BASC Anxiety Scale and Dissociation

	Low	Medium	High
Trance-like state			
Occasionally	27.7%	41.7%	30.6%
All the time	26.7%	53.3%	200%
Feel like a different person			
Occasionally	28.3%	41.5%	30.2%
All the time	17.7%	58.8%	23.5%
Experience Blackouts			
Occasionally	20.0%	50.0%	30.0%
All the time	28.6%	42.8%	286%
Lose Track of Time			
Occasionally	31.3%	40.0%	28.7%
All the time	24.3%	53.7%	22.0%
Feel "outside yourself" "watching yourself"			
Occasionally	25.9%	48.2%	25.9%
All the time	31.3%	37.5%	312%

Table 32
 BASC Social Stress Scale and Dissociation

	Low	Medium	High
Trance-like state			
Occasionally	38.9%	25.0%	36.1%
All the time	13.3%	53.3%	334%
Feel like a different person			
Occasionally	22.6%	35.8%	41.6%
All the time	17.6%	23.5%	58.9%
Experience Blackouts			
Occasionally	10.0%	30.0%	60.0%
All the time	28.5%	42.9%	286%
Lose Track of Time			
Occasionally	28.7%	40.9%	30.4%
All the time	19.5%	39.0%	41.5%
Feel "outside yourself" "watching yourself"			
Occasionally	14.8%	37.0%	48.2%
All the time	25.0%	25.0%	50.0%

A similar trend can be seen for gamblers who reported experiencing blackouts while gambling. Fifty-seven percent of these gamblers were in the high trait anxiety group, 29% were in the medium group, and 14% were in the low trait anxiety group. Further, the differences between the three anxiety levels was significant ($\chi^2 = 16.1, df = 6, p < .05$).

More gamblers who reported losing track of time were in the high trait anxiety group (37%) compared to those in the low trait anxiety group (24%). However, there were more gamblers who fell in the medium trait anxiety groups for this dissociation item (39%). Nevertheless, significant differences were found ($\chi^2 = 16.2, df = 6, p < .05$).

Finally, the same percentage of gamblers (44%) who reported feeling "outside of themselves" or like they were "watching themselves" while gambling were in the medium and high trait anxiety groups. Approximately thirteen percent of these individuals were in the low trait anxiety group. Chi-square analyses again revealed significant differences between the three levels of anxiety ($\chi^2 = 18.17, df = 6, p < .05$).

For state anxiety, there is also a larger percentage of gamblers endorsing the dissociation items who fell into the high anxiety group compared to the medium state anxiety group and the low state anxiety group. Chi-square tests revealed statistically significant differences for "trance-like state" ($\chi^2 = 15.3, df = 6, p < .05$), "feeling like a different person" ($\chi^2 = 17.3, df = 6, p < .05$), "losing track of time" ($\chi^2 = 19.5, df = 6, p < .05$), and "feeling you are outside of yourself or watching yourself while gambling" ($\chi^2 = 20.7, df = 6, p < .05$). Gamblers endorsing "experiencing blackouts" as a dissociation item also tended to be in the high state anxiety group, however, the differences between the levels were not statistically significant

$\chi^2 = 9.7, df = 6, p = .14$) (see Table 30 for percentages).

For the BASC Anxiety measure, there were no apparent relationships between the dissociation items and the levels of anxiety. Further, Chi-square tests revealed no significant differences between the levels of generalised anxiety, as measured by the BASC anxiety scale, and the dissociation items (see Table 31 for percentages).

For the BASC Social Stress Scale, similar trends are found as for trait and state anxiety. Overall, gamblers who endorsed the dissociation items tended to fall within the high level of social stress. However, Chi-square tests revealed significant differences between the social stress levels only for "feeling like a different person" ($\chi^2 = 22.4, df = 6, p < .05$) and "feeling like you are outside yourself for watching yourself" ($\chi^2 = 23.9, df = 6, p < .05$). For the other items, a larger percentage of gamblers were categorized within the high social stress level, however, these differences are not statistically significant (for "trance-like state" $\chi^2 = 10.9, df = 6, p = .09$, for "blackouts" $\chi^2 = 7.0, df = 6, p = .32$, and for "lose track of time" $\chi^2 = 12.0, df = 6, p = .06$) (see Table 32 for percentages).

CHAPTER 5

Discussion

The aim of this study was to examine the relationship between state anxiety, trait anxiety, social stress and gambling behavior among adolescents. Based on adult findings from the addictions literature, it was hypothesized that adolescent problem gamblers would report more state and trait anxiety, as well as more social stress, compared to non-gamblers and non-problem gamblers. Results demonstrating such differences would lend partial support for a self-medicating model of gambling behavior, as suggested by Jacob's *General Theory of Addictions*.

Problem Gambling Amongst Adolescents

Participants Were classified as non-gamblers, no/minimal problem gamblers (NPG), problem gamblers (PG), or probable pathological gamblers (PPG). The majority of participants were gamblers with no/minimal problems (57%). This corroborates previous findings in the gambling literature, however, the percentage of NPGs found in the current study is smaller compared to previous results (Derevensky & Gupta, 1996, 2000; Jacobs, 2000; Shaffer & Hall, 1996). Gambling for the vast majority of these adolescents is not problematic and does not appear to be negatively affecting their lives.

However, 9.7% of the sample reported having some negative consequences resulting from their gambling. This is similar to Shaffer and Hall's (1996) findings that between 9.9% and 14.2% of adolescents are at risk for developing serious gambling problems. As supported by the literature, 4.5% of the current sample, as measured by the DSM-IV-MR-J, consisted of probable pathological gamblers (Derevensky & Gupta, 1996, 2000; Jacobs, 2000; Shaffer & Hall, 1996).

Males were found to gamble more than females, and gambling activity was found to increase as the students got older. Not only do more adolescents gamble as they get older, but the severity of the male gambling behaviors and problems also increases with age.

Gambling Activities

Overall, the three most popular gambling activities, engaged in once a week or more, were found to be playing cards (14.8%), purchasing lottery tickets or scratch cards (11.8%), and wagering on sports with friends (10.6%). NPGs also enjoyed wagering on situational events (6.5%) such as betting on who has a crush on whom, and academic grades and performance. PGs reported wagering on sports, pool, bowling, and other games of skill (16.0%) as one of their top three gambling activities.

Throughout the literature, these gambling activities emerge repeatedly as being the most popular (Jacobs, 2000; Ladouceur & Mireault, 1988; Stinchfield, 2000). It is evident that adolescents engage in a myriad of gambling activities, both legal and illegal. Unfortunately, different types and formats of gambling activities are on the rise, increasing gambling's appeal, and attracting more youth.

Gambling and Substance Use

Results from this study indicate that substance use increases with severity of gambling activity. PPGs consumed more alcohol and/or beer, used more "uppers," "downers," and hallucinatory drugs, and smoked more cigarettes than non-gamblers, NPGs, and PGs. These findings corroborate previous findings (Gupta & Derevensky, 1997c, 1998a; Jacobs, 2000; Winters & Anderson, 2000).

Gambling and Dissociation

In support of Jacob's *General Theory of Addictions* (Jacobs, 1986, 1987, 1988, 1989, 2000; Gupta & Derevensky, 1998b), adolescent problem gamblers and probable pathological gamblers from this study were found to endorse more dissociation items compared to non-gamblers and gamblers with no/minimal problems. This was true for all five dissociation items. These results support the hypotheses that compared to non-problem gamblers, some adolescent problem gamblers may engage in gambling behaviors in order to escape. It may be plausible that since gambling is experienced differently by the PGs and PPGs who report different levels of dissociation while gambling, there is a possibility that their reasons for engaging in the behavior are different as well.

Anxiety and Problem Gambling

Significant positive correlations were found between DSM-IV-MR-J and state anxiety, DSM-IV-MR-J and trait anxiety, and DSM-IV-MR-J and the BASC Social Stress Scale. The more state, trait, and social stress reported by participants, the more gambling problems they reported. These findings are consistent with what has been reported for adults. Studies have reported that gamblers, as well as other addicts, are often found to have higher anxiety-related problems, compared to non-addicts (Cocco, Sharpe, & Blaszczynski, 1995; Henry, 1996; Kayloe, 1993; McConaghy, Armstrong, Blaszczynski, & Allcock, 1983; Regier, Narrow, Kaelber, & Schatzberg, 1998; Zimmerman, Meeland, & Krug, 1985).

Results of the MANOVA revealed a significant main effect for the DSM-IV-MR-J groups. Gamblers in each of the four DSM groups differed significantly in terms of their reported anxiety. Between subject effects revealed that differences between the

DSM groups on trait and state anxiety were significant, but no significant differences were found between the groups for the BASC anxiety scale, nor for the BASC social stress scale.

Post hoc tests demonstrated that PPGs reported significantly more state and trait anxiety compared to non-gamblers and NPGs. The hypothesis that PPGs would report more state and trait anxiety compared to non-gamblers and NPGs was supported. However, it was also hypothesized that similar results would be found for social stress. Although the results of this study show that more social stress was reported by PPGs compared to non-gamblers, this difference was not found to be statistically significant. Furthermore, no relationships were found with the BASC Anxiety Scale. There are several possible explanations for why no results were obtained with the BASC anxiety scale. When comparing the questions within the STAI to the BASC anxiety scale, it appears that the BASC items are targeting more severe anxiety. Whereas the STAI manual describes the measures as evaluating "feelings of apprehension, tension, nervousness, and worry" (Spielberger, 1983), the BASC anxiety subscale is described as assessing "generalized fears, oversensitivity, and worries that typically are irrational and poorly defined in the mind of the individual."

Further, considering that behavior varies across time and settings, the BASC's forced-choice format may have been difficult for the participants to interpret, compared to the STAI's 4-item response scale (Merenda, 1996). It is likely that adolescents indicated their response as "False" when they were unsure what to answer or when the item applied to be true only some of the time.

Finally, weaknesses in the reliability and construct validity of the BASC's Self-Report of Personality (SRP) construct (which contains the anxiety sub-scale) have been reported (Merenda, 1996; Witt, 1998). In particular, Merenda (1996) discusses the weak ~~test-retest~~ coefficients of the SRP. Witt (1998) claims that although the BASC is a reliable instrument with psychometric qualities that are "generally quite good," the internal consistency coefficients for individual scales fall below the recommended criterion. Taken together, these weaknesses may help explain the lack of results obtained with the BASC anxiety ~~scale~~.

A significant main effect was also found ~~for gender~~, although an examination of the mean scores reveals that females reported higher ~~anxiety and~~ social stress scores on all measures; these differences being only statistically different for state anxiety and social stress. No significant developmental differences were found for anxiety nor social ~~stress~~.

Anxiety, Social ~~Stress~~, and Gambling Behavior

Once it was found that PPGs demonstrate higher state and trait anxiety compared to non-gamblers and no/minimal problem(s) gamblers, analyses were conducted in order ~~to~~ investigate differences in severity of problems gambling between high, middle, and low anxiety gamblers. Although this part of the study was exploratory, it was hypothesized that there would be significant differences in gambling behavior among gamblers who reported different levels of state anxiety, trait anxiety, and social stress.

Gamblers were divided, according to their responses on three anxiety and one social stress scales, into three anxiety groups (low, medium, and high) for state anxiety, trait anxiety, and social stress. The ~~formation~~ of the groups was based upon ~~quartiles~~ of

- the scores on the four scales. The first group included all gamblers whose anxiety

Standard scores fell within the lowest 25%. The second group included the two middle groups which were combined to form one group consisting of 50% of gamblers with median anxiety scores, while the third group consisted of gamblers whose reported anxiety scores were within the highest 25%.

The relationship between the anxiety and social stress groups and DSM group membership was examined. It was found that for state and trait anxiety, as well as for social stress, gamblers with the highest anxiety scores were PPGs (41%, 48%, and 44%, respectively). Only 24% of non-gamblers and 27% of NPGs reported trait anxiety scores within the highest group. For state anxiety, only 26% of non-gamblers and 29% of no/minimal problem gamblers reported scores in the highest state anxiety group. Similarly, for social stress, non-gamblers and NPGs had lower percentages of gamblers in the high social stress group (23% and 25%, respectively). Therefore, it appears that PPGs not only report the greatest amount of gambling related problems, but also, in general, indicated the highest state anxiety, trait anxiety, and social stress.

No relationship was found between the DSM groups and scores on the BASC anxiety scale. The lack of results may have been due to the previously mentioned weaknesses found to be associated with the BASC (Merenda, 1996; Witt, 1998).

Anxiety, social stress, and substance use. Co-morbidity has been found between substance use and anxiety, as well as between substance use and gambling behavior for adults (Kayloe, 1993; Kushner, Sher, & Erickson, 1999; Regier, Narrow, Kaelber, & Schatzberg, 1998). Analyses revealed that adolescent gamblers in the highest state anxiety, trait anxiety and social stress groups reported more alcohol and/or beer consumption on a regular basis (weekly or more), and reported more use of upper and

downer drugs on a regular basis (weekly or more), compared to gamblers in the low or middle anxiety groups. Furthermore, 41% of daily smokers were within the highest group on measures of state and trait anxiety. All adolescents (100%) who reported using hallucinatory drugs on a regular basis (once a week or more), also scored in the highest group on measures of anxiety.

According to these findings, it appears that of the adolescents who report consuming alcohol, using drugs, and smoking cigarettes on a weekly or daily basis, the majority of them also indicate high levels of state and trait anxiety. This finding supports the contention of anxiety playing a significant role in the development and maintenance of addictive behaviors in general (Kayloe, 1993; Kushner, et al., 1999; Regier, et al., 1998).

Anxiety, social stress, and types of gambling activities. No appreciable differences were found between the trait anxiety groups in terms of gambling activities engaged in, with the exception being playing bingo. Forty-five percent of adolescents who reported playing bingo once a week or more fell within the highest trait anxiety group, compared to 34% in the middle trait anxiety group, and 29% in the lowest trait anxiety group. Similar findings emerged for differences between the state anxiety quartiles. However, 44% of slot machine players reported anxiety levels within the highest group, compared to 30% in the lowest, and 26% in the middle group.

Anxiety, social stress, and reported reasons for gambling. If problem gamblers report higher anxiety levels, it may well be that gamblers who indicate high levels of anxiety would endorse different reasons for gambling compared to gamblers who report low levels of anxiety. Previous research has suggested that gambling serves multiple

functions for different individuals (Cocco et al., 1995; Dickerson, 1993; Moran, 1979; Zimmerman et al., 1985). For some, gambling is merely an activity engaged in periodically as a form of entertainment, while for others it is a social activity, and a chance to meet new people or spend time with friends. It is hypothesized that for a minority of individuals, gambling is a maladaptive coping mechanism, engaged in to help reduce negative states (Gupta & Derogovsky, 2000). It is further hypothesized that one of these negative states which gamblers attempt to escape from is high anxiety. As such, these individuals may gamble in order to escape from their negative anxiety state through a process which Jacobs refers to as *dissociation* (Jacobs, 1967, 1988, 1989, 2000).

Results of this study seem to support the contention that adolescents, like adults, engage in gambling for a variety of reasons. Still further, the data appear to suggest that gamblers with high anxiety scores endorse different reasons for gambling compared to gamblers with lower anxiety levels. While no significant differences were found between the levels of either state or trait anxiety for the following items: for enjoyment, to relax, for excitement, to be with or make new friends, and to win money, the differences on the remaining four items provide interesting information. For adolescents reporting gambling because they were "unhappy," approximately 89% reported trait anxiety scores within the highest anxiety group (compared to 11% in the middle group), and 67% reported state anxiety within the highest anxiety group (compared to 11% in the lowest group and 22% in the middle group). Eighty-five percent of youth who reported gambling "to escape from problems of home and school" were in the highest trait anxiety group, and 65% were in the highest state anxiety group. All (100%) of the

students who reported gambling "because I'm lonely" were in the highest trait anxiety group, and 67% were in the highest state anxiety group. Finally, 45% of gamblers who reported engaging in the behavior "to feel older" were within the highest state anxiety group. This is compared to 29% in the lowest group, and 26% in the middle group. There were no significant differences found for this reason on state anxiety.

Interestingly, the reasons with the largest differences between PPGs and the other gamblers, are the ones most related *Jacob's General Theory of Addictions*. It can be argued that endorsing these particular items as reasons for gambling demonstrates that these individuals were trying to escape from some negative state. Either they were trying to forget their unhappiness, trying to escape from the source of their unhappiness, they were trying to escape from problems of home and school, or they were trying to escape their loneliness.

It appears, therefore, that these high-anxiety adolescents are using gambling as a maladaptive coping mechanism, by trying to escape from their negative states. The results of this study support the contention that PPGs experience more state and trait anxiety compared to non-gamblers and NPGs. The negative life events from which these youth are trying to escape, may be the cause of their heightened levels of state and trait anxiety.

Anxiety, social stress, and dissociation. Results from this study demonstrate that a greater percentage of high anxiety and high social stress gamblers endorse dissociation items. These findings support the hypothesis that gamblers reporting higher levels of anxiety and social stress also report dissociating more frequently when gambling. It can be argued, that the dissociative state may actually be the goal that these high anxiety and

high social stress gamblers are trying to achieve through gambling. The dissociative states they experience while gambling may temporarily allow them to escape from their uncomfortable **anxiolytic** states.

Summary and Conclusions

In sum, the present findings suggest that adolescent probable pathological gamblers experience higher levels of state and trait anxiety compared to non-gamblers and gamblers with no/minimal problems. This relationship between anxiety and gambling behavior has been supported in the adult literature, as is the link between anxiety and other addictions.

Adolescents within the highest state anxiety, trait anxiety, and social stress groups report more gambling behavior problems, more alcohol, cigarette, and drug use compared to gamblers whose scores on measures of anxiety and social stress are lower. These adolescents also report similar reasons for gambling overall, however, they also consist of the largest number of respondents endorsing the four items supporting gambling as an escape from negative states.

Although more research needs to be done, these results **provide** preliminary support for a self-medicating model of gambling behavior, whereby adolescents engage in gambling behaviors in order to help decrease negative **anxiolytic** states resulting from negative life events. One mechanism for decreasing anxiety **would** be through the process of dissociation when gambling.

The present study examined the relationship between anxiety and gambling behavior among adolescents. It appears that similar to what has been found for adults, anxiety plays a pivotal role in the development and maintenance of youth gambling **behavior**. Results of this research provide valuable information regarding risk factors

that may be associated with youth gambling behavior, which can be used in the development of ~~effective~~ prevention and intervention programs. ~~Further~~, knowledge gained from this research program will add one more piece to the puzzle explaining youth and adolescent gambling behavior.

Limitations

Although this study yielded interesting results, it should be kept in mind that this is the first study, to the author's ~~knowledge~~, focusing solely on the relationship between anxiety and adolescent gambling behavior. Therefore, there may be multiple factors that were not taken into consideration, ~~which~~ may have affected the results, such as sampling bias, and cohort ~~effects~~.

It has been argued that the BASC Anxiety Scale did not yield results for several possible reasons. First, the items on the BASC seem to be assessing more severe levels of anxiety compared to the items on the ~~STAI~~. Further, Merenda (1996) suggested that participants' responses on the BASC may be biased due to its forced-choice response scale. Compared to the STAI, where the participants have a choice of responding "not at all," "somewhat," ~~"moderately so,"~~ or "very much so," to any particular ~~question~~, participants have a choice of answering either "True" or "False" on the BASC items. If the item does not describe how the participant feels all of the time, it is assumed that they will be more likely to indicate "False" as their response than "True".

The reliability and validity of the BASC's Self-Report of Personality (SRP) construct has been critiqued (~~Merenda, 1996; Witt, 1998~~). It has been argued that despite the BASC's good overall reliability and correlation with other personality assessments, such results have not been obtained for individual subtests. Although more research is

needed, these weaknesses may have contributed to the lack of results obtained from the BASC anxiety scale.

Directions for Future Research

The present study is the only one focusing primarily on the relationship between anxiety and gambling behavior among adolescents. Obviously, much more research needs to be done in this area. Perhaps the first project would be an attempt to replicate the present findings. Research using different measures of anxiety would be useful since the present results may have been affected by the type of scales used.

The current study examined state and trait anxiety. It would be interesting to investigate whether other types of anxiety are related to adolescent gambling behavior. For example, school-related anxiety, social anxiety, general anxiety, etc.

It would be interesting to conduct research which attempts to determine underlying factors of adolescents' elevated levels of anxiety and stress. Jacobs (personal communication) argues that certain childhood risk factors (e.g. abuse, neglect) are positively correlated with problem gambling. Perhaps anxiety and social stress function as intermediary variables between these risk factors and problem gambling.

Further, studies comparing gambling behavior directly with other addictive behaviors in terms of levels of anxiety would provide interesting information regarding the similarities among addictions and help advance knowledge regarding addictive personalities.

This study has contributed to the gambling literature by demonstrating anxiety to be one more identified risk factor for problem gambling among adolescents. This valuable information can now be considered when developing prevention and treatment programs.

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APPENDIX A:
Letter of Consent



McGill

Department of Educational and Counselling Psychology
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Consent Form

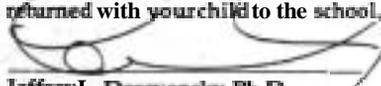
Dear Parent

We are presently heading a McGill University research team studying anxiety and risk-taking behavior in children and adolescents. More specifically, we are attempting to determine the relationship between experienced levels of anxiety/stress and gambling involvement. Considering that gambling problems are becoming more evident among youth, your adolescent's participation is considered extremely valuable in helping us develop better educational and prevention programs.

Individuals who participate in this research will be given a questionnaire, which will take approximately one class period to complete. All information is highly confidential and only group scores will be reported. Rest assured that no unethical procedures will be involved; your child will not be forced to do anything that may make them feel uncomfortable, and he/she may discontinue their participation at any time.

The information gathered in this research will remain confidential at all times. This study has been approved by the McGill ethics committee and is supported by your school, as they view this project as having significant value.

If you support your child's participation, and if your child is interested in participating in this study, please complete the attached consent form and have it returned with your child to the school.


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


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

-Statement of Consent-

I agree to allow my adolescent _____, who is in grade _____, to participate in this research project. I understand that he/she is free to withdraw this consent and discontinue participation in this project at any time without further implication.

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

Date: _____

Parent's Name _____

Parent's Signature _____

Student's Signature _____

APPENDIX B:

State - Trait Anxiety Inventory

BASC Anxiety Scale

BASC Social Stress Scale

Gambling Activities Questionnaire

DSM-IV-MR-J

Grade: _____ Age: _____ Gender: male... female...

Read each sentence carefully.

Please respond to each sentence as truthfully as possible. This questionnaire is confidential — do not write your name. No one will know what you answered.

There are no right or wrong answers. Please do not skip any sentences. Before starting, complete the blanks at the top of the page.

What you think is important to us. Answer the following questions as best as you can. This is not a test

Thank you for participating.

Directions:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate value to the right of the statement to indicate how you feel right now, that is, at this moment. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

	Not at all	Somewhat	Moderately So	Very Much So
1. I feel calm	1	2	3	4
2. I feel secure	1	2	3	4
3. I am tense	1	2	3	4
4. I feel strained	1	2	3	4
5. I feel at ease	1	2	3	4
6. I feel upset	1	2	3	4
7. I am presently worrying over possible misfortunes.....	1	2	3	4
8. I feel satisfied	1	2	3	4
9. I feel frightened.....	1	2	3	4
10. I feel comfortable.....	1	2	3	4
11. I feel self-confident	1	2	3	4
12. I feel nervous	1	2	3	4
13. I am jittery.....	1	2	3	4
14. I feel indecisive	1	2	3	4
15. I am relaxed	1	2	3	4
16. I feel content	1	2	3	4
17. I am worried	1	2	3	4
18. I feel confused	1	2	3	4
19. I feel steady.....	1	2	3	4
20. I feel pleasant.....	1	2	3	4

Directions:

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate value to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	Almost Never	Sometimes	Often	Almost Always
21. I feel pleasant.....	1	2	3	4
22. I feel nervous and restless.....	1	2	3	4
23. I feel satisfied with myself.....	1	2	3	4
24. I wish I could be as happy as others seem to be.....	1	2	3	4
25. I feel like a failure.....	1	2	3	4
26. I feel rested.....	1	2	3	4
27. I am "calm, cool, and collected".....	1	2	3	4
28. I feel that difficulties are piling up so that I cannot overcome them.....	1	2	3	4
29. I worry too much over something that really doesn't matter.....	1	2	3	4
30. I am happy.....	1	2	3	4
31. I have disturbing thoughts.....	1	2	3	4
32. I lack self-confidence.....	1	2	3	4
33. I feel secure.....	1	2	3	4
34. I make decisions easily.....	1	2	3	4
35. I feel inadequate.....	1	2	3	4
36. I am content.....	1	2	3	4
37. Some unimportant thought runs through my mind and bothers me.....	1	2	3	4
38. I take disappointments so keenly that I can't put them out of my mind.....	1	2	3	4
39. I am a steady person.....	1	2	3	4
40. I get in a state of tension or turmoil as I think over my recent concerns and interests.....	1	2	3	4

Directions:

In this section of the questionnaire, there are sentences that young people may use to describe themselves. These sentences are listed to help you describe your thoughts, feelings, and actions.

Read each sentence carefully. If you agree with the sentence, circle the T for True. If you don't agree with it, circle the F for False.

If you want to change your answer, make an X through it and circle your new answer.

- | | | |
|--|---|---|
| 41. I am afraid of a lot of things..... | T | F |
| 42. I worry about what other people think about me..... | T | F |
| 43. Little things bother me a lot..... | T | F |
| 44. My feelings get hurt easily..... | T | F |
| 45. I worry about little things..... | T | F |
| 48. I worry about what is going to happen..... | T | F |
| 47. I am afraid of being "put down" by a teacher..... | T | F |
| 48. I have trouble making up my mind..... | T | f |
| 49. I worry a lot of the time..... | T | F |
| 50. I feel guilty about things..... | T | F |
| 51. I often worry about something bad happening to me..... | T | F |
| 52. I am nervous..... | T | F |
| 53. I get nervous when things do not go the right way for me..... | T | F |
| 54. I worry when I go to bed at night..... | T | F |
| SRP-A(AS) _____ | | |
| 55. People act as if they don't hear me..... | T | F |
| 56. Sometimes I feel lonely, even when there are people with me..... | T | F |
| 57. Other people are against me..... | T | F |
| 58. I am left out of things..... | T | F |
| 59. Sometimes I feel as if I am invisible..... | T | F |
| 60. I feel really "stressed out"..... | T | F |
| 61. People say bad things to me..... | t | F |
| 62. I feel that others do not like the way I do things..... | T | F |
| 63. I am lonely..... | T | F |
| 64. Other children are happier than I am..... | T | F |
| 65. I feel out of place around people..... | T | F |
| 66. Other people always find things wrong with me..... | T | F |
| 67. My friends have more fun than I do..... | T | F |

SRP-A(SSS) _____

Directions:

This part of the questionnaire asks questions about gambling. Gambling is an activity that involves betting money or important belongings. This means that we risk losing the things that we bet with the hopes of winning more money or objects. Again, there are no wrong or right answers, just answer the questions as they apply to you.

- 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 week	once a week or more	
a)	___	___	___	play cards
b)	___	___	___	wager on sports (i.e. sports pools) with friends
c)	___	___	___	purchase sports lottery tickets (pro-line)
d)	___	___	___	purchase lottery tickets or scratch tickets
e)	___	___	___	wager on video games or video poker for money
0	___	___	___	play bingo
9)	___	___	___	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 23. THANK YOU! IF YOU HAVE ANSWERED "LESS THAN ONCE" FOR EVEN ONE ITEM, PLEASE CONTINUE WITH QUESTION #2.

- 2) Approximately how old were you when you started to gamble for money? _____

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

___ alone	___ my parents
___ my friends	___ my brother or sister
___ strangers	___ other relatives

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

___ at home	___ at school
___ at friends	___ in arcades
___ bingo halls	___ in depanneurs

• other (please list) _____

- 5) Do you ever gamble more than you want to? _____ yes _____ no

12) In the past year how often have you found yourself thinking about gambling or planning to gamble?

Never ___ Once or Twice ___ Sometimes ___ Often ___

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

Yes ___ No ___

14) In the past year have you ever spent much more than you planned to on gambling?

Never ___ Once or Twice ___ Sometimes ___ Often ___

15) In the past year have you felt bad or fed up when trying to cut down or stop gambling?

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

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

Never ___ Once or Twice ___ Sometimes ___ Often ___

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

Never ___ Less than half the time ___ More than half the time ___ Every Time ___

18) In the past year have you ever taken money from the following without permission to spend on gambling:

School dinner money or fare money? Never ___ Once or Twice ___ Sometimes ___ Often ___

Money from your family? Never ___ Once or Twice ___ Sometimes ___ Often ___

Money from outside the family? Never ___ Once or Twice ___ Sometimes ___ Often ___

19) In the past year has your gambling ever led to:

Lies to your family? Never ___ Once or Twice ___ Sometimes ___ Often ___

Arguments with family/friends or others? Never ___ Once or Twice ___ Sometimes ___ Often ___

Missing school? Never ___ Once or Twice ___ Sometimes ___ Often ___

20) What is the largest amount of money you have ever bet in one day? \$ _____

21) What is the largest amount of money you have ever won in one day? \$ _____

22) What is the largest amount of money you have ever lost in one day? \$ _____

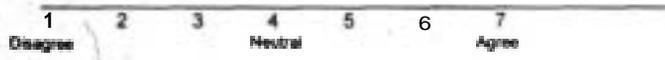
23) Please check the following activities you have done in the past 12 months. Please mark only one answer for

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

Directions:

Read the statements below and indicate to which degree you agree or disagree with each one by circling a number on the scale.

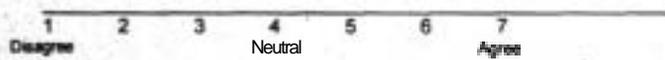
1) People who gamble on a regular basis are more popular.



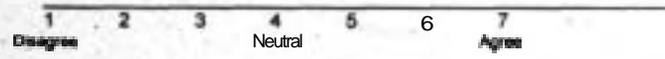
2) Children are not afraid of getting caught gambling.



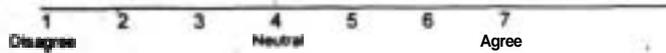
3) It is OK for children and adolescents to be gambling for money.



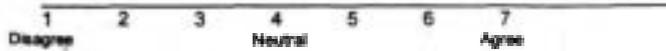
4) Parents get angry when children drink beer and alcohol with their friends.



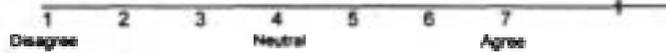
5) Teenagers with a gambling problem have an illness.



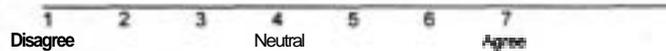
6) Gambling can be bad for you.



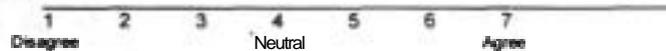
7) Children are not afraid of getting caught drinking alcohol.



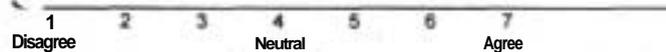
8) There are tricks or strategies to becoming a successful gambler.



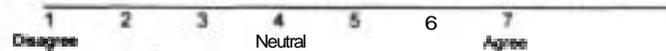
9) Teenagers should be allowed to gamble on gambling machines (VLT's).



10) Parents get upset if their children gamble.



11) A person cannot get hooked on gambling just like they can on drugs.



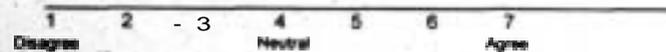
12) Gambling will never lead to addiction.



13) Teenagers are afraid of getting caught drinking alcohol.



14) Children should be afraid of getting caught taking drugs.



24) A person who can't control their gambling is in serious trouble.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

25) Most children under the age of 18 buy scratch lottery tickets.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

26) It is OK to borrow money from your friends to gamble.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

27) Children who are good at playing video games are also good at gambling.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

28) Gambling can result in addiction just like alcohol and drugs.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

29) Becoming a gambler makes your friends respect you and like you more.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

30) Gambling at school is OK.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

31) Winning money gambling would make your parents proud of you.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

32) Buying lottery tickets is a form of gambling.

1	2	3	4	5	6	7
Disagree			Neutral			Agree

Thank You! ©