

Potential and Probable Pathological Gamblers: Where Do the Differences Lie?

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A large proportion of adolescents engage in gambling activities and the prevalence of pathological gambling is high. This study presents a factor analysis of responses from 122 college students who obtained a score of 3 or greater on the South Oaks Gambling Screen (SOGS), the most widely used instrument to identify probable and potential pathological gamblers. The analysis showed five dimensions: Illegal Behaviors, Heavy Gambling, Eating Disorders, Parentally Modelled/Less Impulsive, and Worry. Analyses revealed that except for the Eating Disorders factor, all factors clearly differentiated the probable from potential pathological gamblers, as identified by the SOGS. Results raise important questions about the relationship of pathological gambling to other psychopathological or antisocial behaviors. Thus the probable pathological gambler category represents a wide-ranging behavioral profile that goes beyond gambling per se. Avenues for future research as well as clinical implications are discussed.

Gambling has been a phenomenon present in all societies since the dawn of mankind. Most adults and adolescents gamble. Some will gamble excessively and will eventually become pathological gamblers. Relationships between antisocial behavior, drug consumption, psychological

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distress, and pathological gambling have been established in several studies. Nonetheless, we have little knowledge on how these behaviors distinguish different kinds of gamblers, particularly probable and potential pathological gamblers. This study provides information concerning the validity of the two categories of pathological gamblers.

In 1991, Lesieur et al. reported that 5.5% of a sample of 1,771 college and university students were identified as pathological gamblers (Lesieur et al., 1991). As well, there was a marked difference between the sexes: only 2.4% of women were considered pathological gamblers compared to 9.3% of men. Results indicated a link between pathological gambling, abuse of psychotropic drugs, eating disorders, and illegal activities. These findings are in accordance with those of other studies. Results obtained by Steinberg (1988, in Jacobs, 1989) indicated that about 5% of the 573 teenagers questioned met DSM-III criteria for pathological gamblers. Nine percent of the participants committed illegal acts to gamble or to pay gambling related debts. Similarly, of the 50 adolescent regular gamblers questioned by Griffiths (1990), 18% were diagnosed as pathological gamblers using the DSM-III-R criteria (all were males), 38% had gambling debts, 12% stole and 32% admitted to committing criminal acts to obtain money for gambling. Fisher (1993), investigating gambling behavior on fruit machines, found 62% of adolescents (N = 460) gambled, 17.3% gambled weekly and 5.5% exhibited pathological gambling. Cigarette and alcohol use, video playing, parental gambling, playing alone and an early age of onset were all correlated with pathological gambling.

In the province of Quebec, Canada, Ladouceur and Mireault (1988) studied the gambling habits of 1,612 adolescents aged 14 to 18. Twenty-four percent gambled once a week, and 1.7% were pathological gamblers. Furthermore, 15% borrowed money to gamble, 9% used their lunch money and 9% committed illegal acts to support their gambling habits. In a sample of 1,471 college students, Ladouceur, Dubé and Bujold (1994) examined the prevalence of pathological gambling and its associated problems. The prevalence of pathological gambling was 2.8% for the entire sample, with males showing a much higher percentage of pathological gambling (5.7%) than females (0.6%). Apart from questions directly related to gambling behavior, students were asked about their consumption of psychotropic drugs, the social contexts of their gambling activities, and the presence of problematic behaviors such as suicidal ideation or excessive worrying. Pathological gambling was as-

sociated with reported suicide attempts, psychotropic drug abuse and antisocial behavior.

Using the probable and potential pathological gamblers from Ladouceur et al's (1994) previous sample, the goal of this study was to identify dimensions of gambling behavior, substance abuse, and indicators of psychological distress among probable and potential pathological gamblers. These dimensions will then be used to attempt to distinguish between probable and potential pathological gamblers, as identified by the South Oaks Gambling Screen (SOGS). A score of 3 or 4 on the SOGS results in a "potential" pathological gambler classification whereas a score of 5 or more indicates a "probable" pathological gambler. A score of 5 or more is evaluated to be an optimal cut-off point for reducing false negative and false positive classifications (Lesieur & Blume, 1987). This classification system has been widely used in epidemiological studies (Ladouceur, in press; Lesieur et al., 1991; Volberg, 1994). Relationships between antisocial behavior, drug consumption, psychological distress, and pathological gambling will be analysed in order to distinguish probable pathological gamblers from potential pathological gamblers. This information will provide important data concerning the validity of the two categories of pathological gamblers identified by the SOGS, and their usefulness in future research.

METHOD

Subjects

One hundred and twenty-two potential and pathological gamblers, identified from among the 1,471 students who participated in the Ladouceur et al (1994) study, made up the final sample. Three institutions were contacted and accepted to participate in the study. These colleges cover the entire metropolitan region of Quebec city. Of the 1,471, 56 percent were female and 44 percent were male. Further, 94 percent of the students were single, 4 percent co-habitated with someone and 1 percent were married. Finally, 56 percent of the original sample worked an average of 7.2 hours a week ($SD = 9.4$). Of the 122 gamblers who scored 3 or more on the SOGS., 27.1 percent were female and 72.9 percent were male, with ages varying from 16 to 23, and a mean age of 17 years.

Measure

The South Oaks Gambling Screen (SOGS) was used to determine the presence of pathological gambling. This measure has been widely used in different epidemiological (Ladouceur, in press; Volberg, 1994) and clinical studies (Blume, 1989; Rosenthal, 1989), and represents a valid and accurate instrument (Lesieur & Blume, 1987). In addition, six questions were taken from Jacobs' Health Survey (Jacobs, 1987) concerning abuse of psychotropic drug, alcohol, tobacco, overeating, and suicidal ideation. A question concerning worry about the future was included. The questionnaire also included socio-demographic questions as well as a consent form.

Procedure

Three research assistants administered the questionnaires in the classrooms of three colleges in the Quebec city area. Each class was visited by one assistant. The instructor remained present but did not intervene at any time. Before distributing the forms, the research assistant explained that the questionnaire solicited information on the gambling habits of college students. Students were assured anonymity and participated on a voluntary basis. The entire procedure took approximately ten to fifteen minutes.

RESULTS

The primary objective of this study was to perform a factor analysis of the items on the questionnaire addressing a variety of behavior including gambling habits (frequency and types of play, maximum wagers, parental modelling, social and solitary play), emotional disturbance (worry, suicide, eating disorder), substance abuse (drugs, alcohol), illegal behavior (arrests, illegal drugs), as well as sex and age. Thus none of the items discussed here were used to classify the gamblers. Principal components analysis was used in order to limit the number of variables, and thus the number of dimensions. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .60, which, together with a clear point of inflexion in the scree plot, suggested that factor analysis was appropriate. Five factors were retained on the basis of the scree plot and simple

structure criteria, and accounted for 55% of the variance. The factor structure is shown in Table 1.

The first factor, Illegal Behavior, accounted for 16% of the variance and consisted of three main items: frequency of cannabis use, other illegal drug use, and arrests (for any reason), and a weak secondary loading for frequency of drunkenness. The second factor, Heavy Gambling, consisted of four items and explained 14% of the variance. The items consisted of the number of gambling activities that were reported by less than 20% of college students (horse racing, dice, casino, stock market, games or skill), the number of gambling activities reported by more

Table 1
Factor Analysis

<i>Variables</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>
Mari/Hash	.82				
Drugs	.77				
Previously arrested	.61				
Playing non-popular games		.80			
Playing popular games		.73			
Maximum amount ever wagered		.51			
Overeating		-.51			
Refusing to eat			.81		
Sex (female)			.68		
Suicidal ideation			.54		
Parents with a gambling problem				.61	
Getting drunk, frequency	.34			-.60	
Age				.54	
Gambling with friends				.53	-.49
Worrying					.73
Solitary gambling					.66
Eigenvalue	2.51	2.17	1.77	1.19	1.18
% of variance	16%	14%	11%	7%	7%

Note: MSA = .60

N = 122

than 20% of college students (cards, bingo, sports events, lottery tickets, video-poker), highest maximum stake ever placed, and a negative loading for excessive eating (bingeing). The third factor, Eating Disorder, accounted for 11% of the variance and consisted of three main items: insufficient eating (perceived by others), female gender, suicide attempts, and a secondary negative loading indicating lower maximum stakes. There were four items loading on the fourth factor which accounted for 7% of the variance: problem gambling by one or other parent, age, frequency of gambling with friends, and a negative loading for drunkenness. This factor, although seeming to reflect less impulsive/parentally modelled behavior and more stable characteristics, was not immediately named. The final factor, Worry, accounted for 7% of the variance and consisted of frequency of worrying, solitary gambling, and a negative loading for gambling with friends.

Canonical discriminant analysis was performed on the five factor scores to identify which factors best characterized the differences between the 41 probable pathological gamblers and the 81 potential pathological gamblers. The discriminant function was significant ($F(116, 5) = 2.87, p < .05$). Examination of the total sample structure coefficients showed that four factors contributed ($>.40$) to the discriminant function (Table 2). The first, second, and fifth factors were positively correlated with the function indicating that Illegal Behavior, Heavy Gambling, and Worry were associated with probable pathological gambling. On the other hand, the Less Impulsive/Parentally Modelled factor was negatively correlated with the function suggesting that more stable characteristics were associated with potential gamblers. This may

Table 2
Canonical Discriminant Analysis of Factor Scores

<i>Factor</i>	<i>Coefficients</i>
Factor I Illegal Behavior	.59
Factor II Heavy Gambling	.52
Factor III Eating Disorder	-.02
Factor IV Parentally Modelled/Less Impulsive	-.44
Factor V Worry	.44

Note: 41 pathological gamblers and 81 potential pathological gamblers $F(116,5) = 2.87 p < .05$

refer to a style of gambling that exceeds, by definition, normal gambling behavior (because they score 3 or 4 on the SOGS), but is less impulsive (less alcohol abuse, more social play, older students) and may also be parentally modelled. The modelling may act in two ways: greater exposure to gambling but also greater awareness of difficulties associated with excessive gambling. Finally, the third factor, Eating Disorder did not contribute to the discriminant function.

DISCUSSION

This study shows that potential and probable adolescent pathological gamblers have distinct characteristics that go beyond the degree of gambling activity. Principal components analysis of behavior reported by potential and probable college-age pathological gamblers identified five factors: these factors referred to particular types of gambling behavior (Heavy Gambling and Parentally Modelled/Less Impulsive), to Illegal Behavior, and to psychological distress (Eating Disorder and Worry). Further, four of these factors (Illegal Behavior, Heavy Gambling, Parentally Modelled/Less Impulsive and Worry) distinguished between probable pathological gamblers and potential pathological gamblers in that they were *all* (and not just the Heavy Gambling factor as could have been expected) moderately correlated with the discriminant function. Greater Illegal Behavior and Worry were both associated with probable pathological gamblers whereas differences in gambling behavior were indicated by more Heavy Gambling in the probable pathological gambler group and a particular style of gambling-related behavior (Parentally Modelled/Less Impulsive) in the potential pathological gambler group. Each factor will be discussed in turn before addressing the implications of this study for the construct validity of the SOGS.

The factor, Illegal Behavior, was found to explain the highest percentage of variance in the factor analysis and was associated with probable pathological gambling. Numerous American, Canadian, and European studies have shed light upon the presence of antisocial and delinquent acts amongst adolescents and young adults with a gambling problem (Griffith, 1990; Ladouceur et al., 1994; Ladouceur & Mireault, 1988; Lesieur & Klein, 1987; Martinez-Pina et al., 1991; Meyer & Fabian, 1993). Three of these items are related to the con-

sumption of psychotropic drugs, a result consistent with past studies which suggest relationships between excessive gambling and the consumption of drugs and alcohol (Ciarrochi & Richardson, 1989; Fisher, 1993; Lesieur et al., 1991; Lesieur & Heineman, 1988; Lesieur, Blume & Zoppa, 1986; Martinez-Pina et al., 1991; Ramirez, McCormick, Russo, & Taber, 1983). The Illegal Behavior factor differentiated probable from potential pathological gamblers. The probable pathological gamblers reported a greater number of illegal behaviors than the other category of gamblers.

The second factor, Heavy Gambling, was associated with probable pathological gamblers. Not unexpectedly, these players gamble more frequently on all games and wager larger amounts of money than do potential pathological gamblers. This factor strengthens the validity of the categories of gamblers defined by the SOGS in that the two groupings of pathological gamblers differ on the activities and on the amount of money wagered.

The Worry factor, including solitary gambling, was associated with probable pathological gambling. Worrying can be the result of the problems associated with excessive gambling, as well as a contributor to the development of gambling dependency. On the other hand, the Less Impulsive/Parentally Modelled factor indicating that less alcohol, more social gambling, and older students were associated especially with the group of potential gamblers. This could suggest that potential pathological gamblers gamble as a social activity and are more likely to gamble with friends, contrary to probable pathological gamblers for whom gambling is primarily a solitary pastime. Such findings are in accordance with those of Martinez-Pina et al. (1991), who identified a preference towards solitary play in pathological gamblers. One surprising finding was that parental modelling, that is having one or more parents with a gambling problem, was associated with potential rather than probable pathological gamblers. Does this mean that these students, although gambling more than most of their peers (who score less than 3 on the SOGS), are also forewarned about the problems associated with excessive gambling?

The Eating Disorders factor was not found to play a role in distinguishing the two classes of gamblers. Rather, this factor seems to reflect women and those with suicidal ideation. Women's gambling habits appear to be related to different factors than those of men, especially with respect to reactions to stressful events (Custer & Milt, 1985; Lesieur et al., 1991). Few studies have examined variables specifically related to

pathological gambling in women (Lesieur, 1993). Pathological gambling in women may be associated with other problem behaviors. A similar study on a larger sample of women may reveal particular distinguishing profiles for probable and potential pathological gamblers.

The developmental relationship between delinquent activities and pathological gambling is difficult to determine in those individuals with coexisting problems. It appears as though the delinquent acts of most pathological gamblers follow the onset of the gambling problem (Blaszczynski, McConaghy & Frankova, 1989). Different studies have established a link between psychopathology, antisocial personality disorders, hostility, and pathological gambling (Blaszczynski et al., 1989; Martinez-Pina et al., 1991; Moran, 1970; Moravec & Munley, 1982; Roy, Custer, Lorenz, & Linnoila, 1989). The relationship between delinquency and pathological gambling warrants further investigation. More than a mere consequence of gambling, illegal activities can be a way of life characterized by rebellion against existing norms as well as by significant risk taking behavior, and this is undoubtedly the case with a certain percentage of pathological gamblers. In cases where illegal activities and pathological gambling coexist, the clinician should explore both dimensions as well as the interrelationship between the two, before establishing an appropriate treatment. This analysis may have important consequences in the case of legal psychological assessments.

Probable pathological gamblers are more drawn towards the consumption of psychotropic substances than are potential pathological gamblers. The need to escape and the resulting dissociative states are both reasons why people engage in drug consumption and in gambling (Jacob, 1989a). Such activities permit people to escape negative emotions arising from difficult situations. Several studies have identified personality characteristics such as socialisation, ego control, common to both pathological gamblers and substance abusers (Carlton & Manowitz, 1992; Ciarrochi, Kirschner, & Fallick, 1991; McCormick, Taber, Kruegelbach, & Angel, 1987). Assessing cross-addictions will allow the clinician to more readily establish an appropriate treatment plan for these individuals.

Numerous studies have highlighted the importance of considering the depressive and anxious states of individual in the attempt to understand the development and maintenance of pathological gambling (Linden, Pope & Jonas, 1986; Moravec & Munley, 1983; Taber, McCormick & Ramirez, 1987). With respect to this hypothesis, the differentiation of the two groups of gamblers by the Worry factor makes

sense. The probable pathological gamblers would have more worries than potential pathological gamblers, and these worries could be related to problems associated with gambling. For a specific percentage of gamblers, worry and anxiety would contribute to the development to the gambling problem. A recent study indicated that worrying is negatively related to problem solving (Dugas, Letarte, Rhéaume, Freeston, & Ladouceur, 1995), and that it is more the reaction to the problem among worriers rather than the lack of ability to solve problems, which explains unsuccessful problem solving. Our experience in the treatment of adult and adolescent pathological gamblers is that a large proportion of them have great difficulties in solving their problems. This difficulty seems to stem mostly from cognitive and affective factors more than from a lack of control over their behavior. The relationships between worrying, anxiety, problem resolution, and pathological gambling need further investigation.

Results indicate that gambling is perceived less as a social activity for probable pathological gamblers; they report more solitary play whereas potential pathological gamblers report gambling more often with friends. As a certain percentage of pathological gamblers suffer from a lack of affirmation and acceptance at the interpersonal level (McGurrin, 1992), clinicians should attempt to evaluate how interpersonal communication problems relate to gambling habits.

The results of this study identify different affective and behavioral dimensions which distinguish pathological gamblers from potential pathological gamblers. These dimensions can be viewed as being symptomatic of gambling habits or as playing an instrumental role in the development of the gambling problem. Certain characteristics can distinguish the groups: Illegal behavior, worry, and heavy gambling are all characteristics associated with pathological gambling. Results of this study broadly support the construct validity of the two groups identified by the SOGS. Four out of the five factors identified were moderately correlated with the discriminant function. This means that not only do probable pathological gamblers engage in more pathological gambling behaviors as defined by the SOGS, they also report a variety of other detrimental behavior. The concomitant or associated detrimental behavior both support the validity of the two categories identified by the SOGS and raise important questions about the relationship of pathological gambling to other psychopathological or antisocial behavior.

Thus these categories represent wide-ranging behavioral profiles that go beyond gambling per se.

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