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Editorial Contact: [phil\\_lange@camh.net](mailto:phil_lange@camh.net)

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### **The interactive effects of avoidance coping and dysphoric mood on problem gambling for female and male gamblers**



*By Anna Thomas  
School of Mathematical  
Sciences  
Swinburne University of  
Technology  
Melbourne, Australia  
Email: [athomas@swin.edu.au](mailto:athomas@swin.edu.au)*



*Susan Moore  
Institute of Social Research  
Swinburne University of  
Technology  
Melbourne, Australia*

## **Abstract**

A study involving 83 female and 72 male gamblers tested the direct and interactional effects of avoidance coping and five dysphoric moods on problem gambling via regression analysis. Important differences were found between female and male gamblers. For female gamblers, loneliness, boredom, anxiety, depression and avoidance coping were all positively related to problem gambling. Additionally, interactions between these mood states and avoidance coping significantly predicted problem gambling; female gamblers with high dysphoria and high avoidance coping showed substantially more symptoms of problem gambling than those scoring high on only one variable. In contrast, loneliness and stress were the only significant predictors of problem gambling for males —neither avoidance coping nor any of the interactional relationships between mood and coping predicted problem gambling. These results support previous qualitative studies and suggest that female problem gamblers gamble as an escape from dysphoric moods. Even though male problem gamblers expressed more negative affect than male non-problem gamblers, there was no evidence to suggest that negative mood was a precursor rather than an outcome of gambling behaviour.

**Key words:** women, gambling, avoidance, coping, depression, anxiety, loneliness, boredom

Gambling today is far from being a secret vice undertaken by a deviant few. In Australia, and indeed in most Western countries, gambling has been transformed into a respectable and popular leisure activity (Trevorrow & Moore, 1998). A recent inquiry into Australia's gambling industries found that 82% of Australian adults had participated in at least one gambling activity in the 12 months preceding April 1999. It also found that women were just as likely to gamble as men (Productivity Commission, 1999). In addition, the Productivity Commission (1999) report estimated that one per cent of the Australian adult population were experiencing severe gambling problems, and another one per cent had moderate but significant problems. Problem gambling amongst women appears to be increasing, and female and male problem gamblers are now evenly represented at counselling services in Australia. Similarly, other Western studies estimate that females represent one-third to one-half of the problem gamblers in the general population (Getty, Watson & Frisch, 2000; Hraba & Lee, 1996; Mark & Lesieur, 1992; Productivity Commission, 1999). However, few studies have investigated this change in what has historically been seen as a male issue.

There have been many theories to explain problem gambling —ranging from a focus on individual pathology to a focus on social factors. However, it is probable that most of these theories were developed with male problem gamblers in mind, and certainly the vast majority of past research about problem gambling has concentrated on males, with samples of gamblers consisting of all or almost all male participants. Other studies that included female and male problem gamblers failed to systematically assess gender differences (e.g., Blaszczyński, McConaghy & Frankova, 1990; Delfabbro, 2000; Mark & Lesieur, 1992; McCormick, 1994). This is somewhat understandable because historically the majority of problem gamblers receiving counselling were male (Blaszczyński et al., 1990; Mark & Lesieur, 1992). Today, however, the widely held assumptions that problem gambling is a male problem and that what is true for males is also true for females needs to be challenged.

On the basis of case material, Lesieur and Blume (1991) implied that women's gambling may be differently motivated from men's gambling. They concluded that women use gambling to escape personal and family problems, whereas men are more likely to gamble for excitement and financial gain. Similarly, two other studies which investigated the motivations of male and female problem gamblers found that female problem gamblers were significantly more likely to say they were gambling to escape isolation, depression, anxiety and worry compared to male problem gamblers. On the other hand, male problem gamblers were more likely to say they were gambling to win or to improve their self-worth (Loughnan, Pierce & Sagris, 1996; Pierce, Wentzel & Loughnan, 1997). These studies suggest that

gambling motivations may not be homogeneous across gender and that women may be gambling to temporarily escape negative moods and situations, rather than for excitement or to win money.

Qualitative research by Brown and Coventry (1997) also sheds light on the motivational processes involved for a sample of women who defined themselves as problem gamblers. Through telephone interviews, most of these women reported that they gambled initially for social reasons rather than as a means of increasing stimulation. However, as time went on gambling became a method of distraction from everyday problems, a way of avoiding dysphoric states, such as loneliness, boredom, anxiety, depression and stress. As more problems arose from gambling, dysphoric moods increased, leading to a cycle of "escaping" through gambling, with resulting financial loss and family problems, dysphoric mood, etc.

A review of quantitative research into problem gambling interestingly revealed evidence of elevated dysphoric states, such as loneliness, depression, boredom and anxiety in both male and female problem gamblers (e.g., Blaszczynski & McConaghy, 1988; Blaszczynski et al., 1990; Coman, Burrows & Evans, 1997; McCormick, Russo, Ramirez & Taber, 1984; Trevorrow & Moore, 1998). Indeed, the few studies that compared male and female problem gamblers dysphoric emotions showed mixed results. Some found that female problem gamblers had significantly higher levels of dysphoria compared to male problem gamblers (Specker, Carlson, Edmonson, Johnson & Marcotte, 1996; Steel & Blaszczynski, 1996). In contrast, others have found no differences (Becoña, Lorenzo & Fuentes, 1996; Ohtsuka, Bruton, DeLuca & Borg, 1997). Therefore, these quantitative studies suggest that it is possible for both male and female problem gamblers to have elevated levels of dysphoria. However, the studies mentioned earlier suggest that female problem gamblers are more likely to gamble to escape these feelings (Brown & Coventry, 1997; Lesieur & Blume, 1991; Loughnan et al., 1996; Pierce et al., 1997).

If female problem gamblers, in particular, are deliberately choosing to gamble to escape dysphoric emotions their gambling could fundamentally be seen as a form of coping, albeit a maladaptive form. The Folkman and Lazarus (1988) model of stress proposes that individuals appraise potential stressors and search for a coping strategy to reduce the threat. These strategies can range from active attempts to "solve the problem," through to emotional responses, help-seeking or attempts to escape from the situation, either physically or mentally. Therefore, coping resources are theorised to mediate the impact of stressors (Billings & Moos, 1984), although it is clear that some strategies will be more effective than others. Avoidance or escapist coping refers to activities or cognitions used by people to divert attention away from a source of distress



(Folkman & Lazarus, 1988). This method of coping is very common and can range from culturally acceptable activities such as jogging to destructive behaviours such as taking drugs or alcohol (Folkman & Lazarus, 1988). It is possible that gambling could be used in a similar same way to divert attention away from a distressing issue.

In fact, there is some evidence of excessive reliance on avoidance coping in both male and female problem gamblers. For example, a study by Scannell, Quirk, Smith, Maddern and Dickerson (2000) found that female gamblers with low control over their gambling behaviours used avoidance coping significantly more than females with high control over their gambling. Similarly, McCormick (1994) found that male substance abusers with gambling problems used avoidance coping strategies significantly more than those without gambling problems. In addition, one study that directly compared male and female problem gamblers found that they were very similar in their use of avoidance coping (Getty, Watson & Frisch, 2000).

In sum, prior research suggests that both coping style and dysphoric emotions may be important factors in explaining problem gambling; however, it is less certain that they are equally important for males and females. Recent qualitative data can be interpreted to suggest that it may not be negative mood that leads to problem gambling per se—but the use of gambling as an escape from dysphoric mood (Brown & Coventry, 1997). In other words, the effect of emotional stressors on problem gambling may be moderated by coping tendencies. This complex relationship requires an assessment of the combined effects of high dysphoric mood and high avoidance coping (as opposed to assessing only the simple or direct effects of high scores on either of these variables). To the authors' knowledge, no prior research has directly tested the extent to which the interaction between dysphoric mood and coping style predicts problem gambling.

Therefore, an initial aim of this study was to partially replicate prior research by investigating the differences between males and females and between problem gamblers and non-problem gamblers on dysphoric mood and avoidance coping. In line with prior research (e.g., Blaszczynski, et al, 1990; McCormick, 1994; Scannell, Quirk, Smith, Maddern & Dickerson, 2000; Trevorrow & Moore, 1998), it was expected that problem gamblers would score higher on avoidance coping and all measures of dysphoric mood than non-problem gamblers. Due to the mixed results of prior studies (Becoña et al., 1996; Getty et al., 2000; Steel & Blaszczynski, 1996), an exploration was undertaken to determine whether there would be significant differences between male and female gamblers or male and female problem gamblers on avoidance coping or dysphoric mood.

The main aim of this study was to test the interactional model discussed above by assessing the emotion-moderating effects of coping for both male and female gamblers, using more sophisticated analyses than those used in prior research. Three steps were taken in testing this model. Firstly, it was hypothesised that female and male gamblers with higher levels of dysphoric emotion (depression, anxiety, loneliness, stress or anxiety) would show more symptoms of problem gambling than those with lower levels of dysphoric emotion. Secondly, it was hypothesised that both male and female gamblers who had a high tendency to use avoidance coping would exhibit more problems with their gambling. Finally, it was hypothesised that these avoidant styles of coping would become very maladaptive when paired with dysphoric emotions. When placed together these factors were expected to interact to predict problem gambling more effectively than either dysphoric mood or avoidant coping alone. Whether or not these effects would differ for male and female gamblers was explored because past research did not allow for a clear hypothesis of either difference or similarity in process.

## **Methods**

### **Participants**

Current gamblers (who had gambled for money at least once in the past 12 months) 18 and older were recruited for this study. The sample comprised 155 participants: 83 females ( $M=28.4$  years,  $SD=13.5$  years) and 72 males ( $M=30.1$  years,  $SD=12.9$  years). Ninety-five participants were first-year psychology students at a university in Melbourne, Australia, 13 were recruited via a gambling counselling organisation in a suburb of Melbourne and 47 were accessed via broader community contacts. Unfortunately, the anonymous method of data collection did not allow for demographics to be collated on specific sub-samples.

### **Materials**

Participants completed a questionnaire that included questions about gambling behaviour and demographics as well as measures of coping, problem gambling and several measures of dysphoric mood (loneliness, anxiety, depression, stress and boredom). All of these mood states were included because they had been implicated in prior gambling research, but not all had been tested on both male and female gamblers or in conjunction with coping strategies.

#### **Loneliness measurement**

The UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980) rates feelings



of loneliness the participant may have experienced in relation to other people. Twenty items are rated on a four-point scale, where 1 = *never* and 4 = *often*. The measure has 10 positively scored items (e.g., *I feel isolated from others*) and 10 negatively scored items (e.g., *I do not feel alone*); overall loneliness scores are calculated by summing all items. Higher scores indicate higher levels of loneliness. The measure has shown excellent internal consistency ( $\alpha = .94$ ). That it showed positive correlations with several other loneliness scales and a lack of relationship with conceptually distinct emotions indicate that the measure has construct validity (Russell, 1982).

### **Depression, anxiety and stress measurement**

The Depression, Anxiety, Stress Scale (DASS21) (Lovibond & Lovibond, 1995) is a shortened version of the full DASS, consisting of 21 items querying the participant's feelings over the past week. All items are rated on a four-point scale, where 0 = *did not apply to me* and 3 = *applied to me very much, or most of the time*. The measure has three sub-scales that have questions (seven in each) relating to depression (e.g., *I felt down-hearted and blue*), anxiety (e.g., *I felt I was close to panic*) and stress (e.g., *I found it hard to wind down*). Scores are summed and multiplied by two so that they can be directly compared to Australian normative samples based on the full-scale DASS. Higher scores relate to higher levels of depression, anxiety and stress. The measure has shown high internal consistency (depression  $\alpha = .81$ ; anxiety  $\alpha = .73$ ; stress  $\alpha = .81$ ) and good evidence of test-retest reliability and construct validity (Lovibond & Lovibond, 1995).

### **Boredom measurement**

The Boredom Proneness Scale (Farmer & Sundberg, 1986) is a 28-item true-false scale designed to capture the participant's tendency to become bored. The measure particularly relates to feelings of emptiness and loneliness associated with boredom. It also measures the ability of individuals to access adaptive resources and their level of connectedness to environments or situations. The measure has 18 positively scored items (e.g., *Time always seems to be passing slowly*) and 10 negatively scored items (e.g., *I am good at waiting patiently*). Items are summed and high scores indicate higher boredom proneness. The measure has good reliability ( $\alpha = .73-.79$ ; test-retest reliability at one week  $= .83$ ) and has shown validity via moderate to strong positive relationships with other boredom scales and self-reports of boredom (Farmer & Sundberg, 1986).

### **Coping measurement**

Billings and Moos' (1984) coping scale was used to assess avoidance coping.

This measure involves asking respondents to think of a stressful event that occurred in the last three months. It then asks them to indicate the frequency of use of 28 different coping strategies to resolve the event. The use of each strategy is rated on a four-point scale, where 1 = *never used* and 4 = *often used*. The measure has three subscales, two of which contain two individual factors. Scores for each factor are obtained by calculating the mean response of all items contained in the factor. However, as the focus of this study was on avoidance/escapist coping, only the avoidance factor (labelled emotional discharge) has been fully described here. Emotional discharge (avoidance coping) has six items and relates to attempts made by the individual to reduce tension by refocusing on potentially distracting behaviours, such as smoking or eating (e.g., *Tried to reduce tension by drinking more*). The fairly low alpha for this factor ( $\alpha = .41$ ) was argued by Billings and Moos (1984) to be due to the likelihood that only one or two distracting strategies would be utilised by an individual, thereby reducing the use of alternative responses and setting an upper limit on the reliability coefficients. For the purposes of this study, this level of internal consistency was considered sufficient.

### **Problem gambling measurement**

The South Oaks Gambling Screen (SOGS) is a 23-item instrument with 20 scored items designed to indicate the severity of problem gambling (Lesieur & Blume, 1987). The screen is based on the Diagnostic and Statistical Manual of Mental Disorders' (DSM-III) (American Psychiatric Association, 1980) problem gambling criteria and is consistent with later versions of the DSM. Questions cover problem gambling indicators such as chasing losses, gambling more than intended, feeling guilty about gambling, borrowing money to gamble and reactions of others to the individual's gambling. Scores range from 0 to 20. A score of 5 or more indicates problem gambling, and a score of 10 or more indicates severe problem gambling. The SOGS is a widely used measure of problem gambling and has shown high internal consistency and test-retest reliability as well as correlating highly with the DSM-III-R criteria for problem gambling (Lesieur & Blume, 1987).

### **Procedure**

The authors employed several methods to recruit participants for this study. From a Melbourne university, 95 first-year psychology students were recruited as part of their class requirement. From the wider community, 47 participants were recruited as a convenience sample and 13 problem gamblers were recruited through a Melbourne problem gambling counselling centre. Questionnaires were distributed either in classes, through a sample of gamblers available to the researchers or through counsellors at the gambling counselling centre. All questionnaires were completed voluntarily and

anonymously on the participants' own time and returned in a postage-paid return envelope to the researchers.

## Results

### Descriptive statistics

All participants were current gamblers. Scores on the SOGS ranged from 0 to 18 and had a mean score of 2.97 (SD=3.88). Thirty-two participants were designated as problem gamblers (a SOGS score of five or more): 21 were male and 11 female. The average SOGS score was significantly higher for male gamblers (Mean males = 3.65; Mean females = 2.39,  $F(1,153)=4.20$ ,  $p<.05$ ).

Alpha reliabilities of scales used in this study were as follows: Loneliness (.93), Boredom (.82), Depression (.91), Anxiety (.88), Stress (.87), Avoidance Coping (.49), Problem Gambling (.86). All reliabilities were considered adequate for research purposes while acknowledging that the low reliability for avoidance coping was related to the nature of this activity as previously discussed.

### Gambling behaviours

In order to gain an overall picture of their favoured forms of gambling, participants were asked to list the types of gambling they participated in most often. Percentages were calculated and are shown in Table 1.

**Table 1**  
**Percentage of female and male gamblers by their most frequent form of gambling**

	Females	Males
Gambling type	%	%
Poker machines	41	33
Lotto/scratch-it	31	21
Bet on horses/dogs	4	17

Play cards	11	10
Bet on sports	1	4
Table games at casino	4	7
Bingo	5	1
Other	4	6

Note: Percentages will not sum to exactly 100% due to rounding.

As the table illustrates, poker-machine gambling was by far the most popular form of gambling for both males and females, and lotto and scratch-it tickets were also popular for both genders. However, betting on horse or dog races appeared to be popular only with male gamblers. Table 2 highlights the favoured forms of gambling for problem gamblers.

**Table 2**  
**Number of female and male problem gamblers by their most frequent form of gambling**

Gambling type	Females	Males	n <sup>a</sup>
Poker machines	6	8	56
Lotto/scratch-it	4	2	40
Bet on horses/dogs	0	8	15
Play cards	1	0	16
Bet on sports	0	0	4
Table games at casino	0	1	8

Bingo	0	1	5
Other	0	1	7

Note: Problem gambler= SOGS score of 5+

n<sup>a</sup> = Total number of participants who designated this as their favourite form of gambling.

This pattern of popularity is similar to other gamblers, albeit with more sharply defined gender preferences. As illustrated, a substantial proportion of men and women who prefer to play poker machines displayed problematic gambling behaviours. Male problem gamblers also showed a strong preference for horse or dog races, while female problem gamblers showed a preference for lotto or scratch-it tickets.

### Initial analysis of measures

In order to partially replicate prior research, a series of initial analyses were conducted. A two-way multivariate analysis of variance (MANOVA) was performed on participants' levels of dysphoric mood. The independent variables were gender (male, female) and gambler type (problem gambler, non-problem gambler). A two-way analysis of variance with the same independent variables was performed on avoidance coping scores. Table 3 shows the means of the dependant variables.

**Table 3**

**Mean scores for male and female problem and non-problem gamblers on dysphoric mood and avoidance coping**

	Non-problem gamblers (n ranges from 119-123)			Problem gamblers (n ranges from 31-32)		
	Females	Males	Total	Females	Males	Total
Variables	M	M	M	M	M	M
Anxiety	6.39	8.12	7.11	13.45	12.29	12.69
Depression	8.13	9.76	8.80	17.45	14.86	15.75
Stress	14.42	12.75	13.72	20.55	17.24	18.38
Boredom	8.92	11.27	9.89	12.91	14.33	13.84
Loneliness	34.24	37.10	35.43	46.50	45.10	45.55

Avoidance	2.04	2.02	2.04	2.45	2.23	2.31
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Note. SOGS scores 0–4 = non-problem gamblers, SOGS scores 5+ = problem gamblers

Results indicated that problem gamblers differed significantly from non-problem gamblers on dysphoric mood (Pillai's Trace = .130,  $F(5,145)=4.35$ ,  $p<.01$ ,  $R^2=.13$ ). Univariate analyses revealed that problem gamblers were significantly more anxious ( $F(1,149)=10.38$ ,  $p<.01$ ,  $R^2=.07$ ), depressed ( $F(1,149)=16.14$ ,  $p<.001$ ,  $R^2=.10$ ), stressed ( $F(1,149)=8.71$ ,  $p<.01$ ,  $R^2=.06$ ), bored ( $F(1,149)=12.42$ ,  $p<.01$ ,  $R^2=.08$ ) and lonely ( $F(1,149)=20.23$ ,  $p<.001$ ,  $R^2=.12$ ) than non-problem gamblers. Problem gamblers also used significantly more avoidance coping ( $F(1,147)=8.80$ ,  $p<.01$ ,  $R^2=.06$ ) than non-problem gamblers.

There were no significant differences between the genders on dysphoric mood or avoidance coping, nor any significant interactions between gender and gambler type on these variables. A power analysis indicated that the study had sufficient power to detect a moderate interaction effect.

### Regression analyses

A series of hierarchical multiple regressions were used to test the hypothesised model that the relationship between dysphoric mood and problem gambling would be moderated by avoidance coping. It was expected that participants who scored high on a measure of dysphoric mood and high on the use of avoidance coping would exhibit substantially more problems than those who scored high on only one of the predictors. These regressions also assessed predicted relationships between problem gambling and (a) dysphoric mood and (b) avoidance coping. Separate regressions were performed for each mood state and all independent variables were centred to prevent problems with multicollinearity (Tabachnick & Fidell, 2001). For each regression, mood state and avoidance coping were entered at stage one and the interaction between mood state and avoidance coping were entered at stage two (Cooper, Russell, Skinner, Frone & Mudar, 1992). All analyses were performed separately for males and females in order to examine the relationships between mood, coping and problem gambling for each gender.

To facilitate interpretation, one of the significant interactions has been presented graphically, using the regression equation to generate a predicted score on problem gambling for each group, which represents all possible combinations of low and high (Cohen & Cohen, 1983). Low and high scores were operationalised using one standard deviation below and one standard



deviation above the mean, respectively, giving two regression lines.

### Hierarchical regression analyses for females

**Table 4**

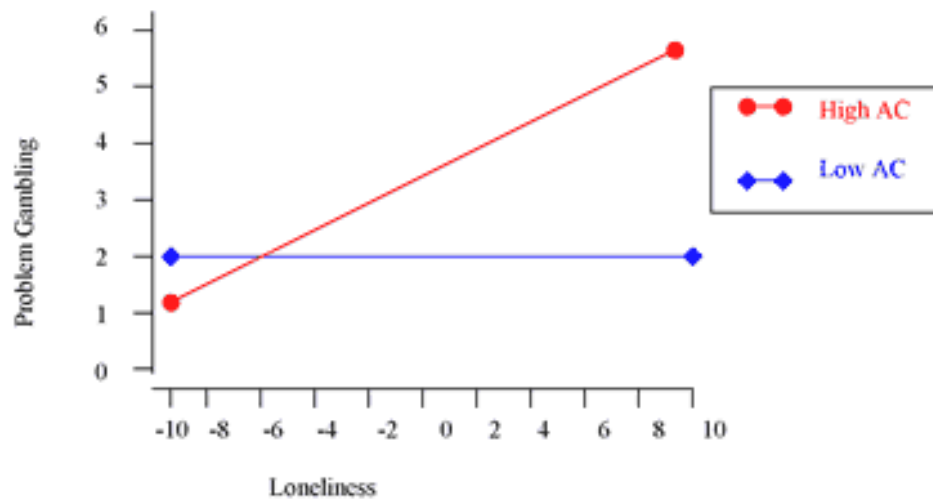
**Summary of hierarchical regression analyses showing main and interactive effects of dysphoric mood and avoidance coping on problem gambling for females**

Predictor variables	Loneliness	Anxiety	Depression	Boredom	Stress
	R <sup>2</sup> Δ    β	R <sup>2</sup> Δ    β	R <sup>2</sup> Δ    β	R <sup>2</sup> Δ    β	R <sup>2</sup> Δ    β
<b>Stage 1</b>	.31***	.23***	.25***	.19***	.17**
<b>Mood</b>	.41***	.34**	.37**	.30*	.21+
<b>AC</b>	.28*	.27*	.22*	.21+	.30**
<b>Stage 2</b>	.10**	.10**	.04*	.06*	.03+
<b>Mood</b>	.31**	.34**	.32**	.22+	.20+
<b>AC</b>	.28**	.18+	.18+	.20+	.26*
<b>Mood x AC</b>	.33**	.32**	.21*	.26*	.18+
<b>Total R2</b>	.41**	.33***	.28***	.25***	.20**

Note. N=83, R<sup>2</sup>Δ=R<sup>2</sup> change, β=Beta, AC=Avoidance Coping, p<.10+, p<.05\*, p<.01\*\*, p<.001\*\*\*

A summary of the regression results for female gamblers is shown in Table 4. In the first regression, loneliness and avoidance coping at stage one accounted for 31% of the variation in problem gambling, and as expected, both factors significantly predicted problem gambling. Lonely women and women who had a tendency to use avoidance coping tended to experience more gambling problems. At stage two, the interaction between loneliness and avoidance coping was entered. It accounted for an additional 10% of the variation in problem gambling, over and above what was explained by loneliness and avoidance coping directly. Together the model was able to explain 41% of the variance in problem gambling. The interaction (shown in Figure 1) is now the strongest predictor of problem gambling. As illustrated, female gamblers who scored high on both avoidance coping and loneliness showed substantially more symptoms of problem gambling than female gamblers showing high scores for either variable.

**Figure 1**  
Interaction between avoidance coping (AC) and loneliness for female gamblers



Click diagram for larger image.

An examination of the other regressions showed a similar pattern of results. Avoidance coping and all mood states, except stress, significantly predicted problem gambling. In all cases, women who scored high in negative mood or who had a tendency to cope by avoiding were more likely to show more symptoms of problem gambling than those who scored low in those variables. The introduction of the mood by avoidance coping interaction enabled an additional 3% to 10% of the variation in problem gambling to be accounted for, over and above what was accounted for by the mood or avoidance coping directly (see Table 4). All interactions between mood and avoidance coping were significant with the exception of the interaction involving stress. An examination of the significant interactions revealed that, as was the case with loneliness, women who scored high in negative mood and who showed a strong tendency to cope by avoiding showed substantially more symptoms of problem gambling than women who scored high in just one variable.

It should be noted that the addition of the interaction term did not substantially increase the predictive ability of the model for the regressions involving depression and boredom. However, the pattern of relationships was consistent for all regressions, and in each case, the total model accounted for a substantial percentage of the variance.

#### **Hierarchical regression analyses for males**

#### **Table 5** **Summary of hierarchical regression analyses showing main and**

## interactive effects of dysphoric mood and avoidance coping on problem gambling for males

Predictor variables	Loneliness R <sup>2</sup> Δ    β	Anxiety R <sup>2</sup> Δ    β	Depression R <sup>2</sup> Δ    β	Boredom R <sup>2</sup> Δ    β	Stress R <sup>2</sup> Δ    β
<b>Stage 1</b>	.10*	.04	.06	.07+	.07+
<b>Mood</b>	.31*	.18	.24+	.25*	.26+
<b>AC</b>	.02	.03	.03	.02	.02
<b>Stage 2</b>	.02	.02	.01	.03+	.01
<b>Mood</b>	.34*	.27+	.26+	.23+	.27*
<b>AC</b>	.00	.03	.02	.00	.02
<b>Mood x AC</b>	-.16	-.17	-.08	-.17	-.08
<b>Total R<sup>2</sup></b>	.12*	.06	.07	.10+	.08

Note. N=72, R<sup>2</sup>Δ=R<sup>2</sup> change, β=Beta, AC=Avoidance Coping, p<.10+, p<.05\*

A summary of regression results for male gamblers is shown in Table 5. The picture is quite different for males compared to females. None of the mood by avoidance coping interactions were predictive of problem gambling. Also, contrary to expectations, avoidance coping failed to predict problem gambling in any of the regressions. A power analysis indicated that the study had a 73% chance of detecting even weak correlations in the population.

Loneliness and stress were the only mood states able to significantly predict problem gambling, although the relationship between problem gambling and the predictors of depression, boredom and anxiety approached significance. Men who scored high on these negative emotions tended to show more symptoms of problem gambling than those who scored low.

## Discussion

This study provides important insights about the gambling processes of males and females; however, this data needs to be viewed in the light of several limitations. The sample was drawn from disparate sources, so it may not accurately represent the general population. Of particular concern is the over-representation of university students who may differ from the general population in terms of age, gender or education. It is possible that the inclusion of so many university students has biased the results of the study.

The rationale for the broad recruiting strategy was (a) to over-represent the number of problem or potential problem gamblers in the sample (those scoring five or more on the SOGS) through targeting a source of known problem gamblers; and (b) to target a wide range of adults who gamble, using both student and community recruitment. A second limitation was the cross-sectional nature of the study. Cause-effect relationships cannot be assumed between the key variables of coping, mood and problem gambling. Findings of the current study should be seen as supporting other work that suggests cause and effect. A third limitation of the study concerned the measure of avoidance coping. This measure was less than optimal as it questioned coping on a single occasion, targeted only a few of the many possible avoidant coping behaviours and was not a highly reliable measure. Replication of this study with a range of more developed scales would be of value. Finally, given the practical difficulties of sampling, this study did not focus on any particular gambling type, and factors predicting problem gambling may vary across gambling types. Nevertheless, it was clear that poker-machine gambling was the most favoured form of gambling in the sample and by problem gamblers. It is within the context of these limitations that the following discussion and conclusions must be viewed.

The results of this study revealed that problem gamblers, both male and female, were significantly more likely to be depressed, anxious, stressed, bored or lonely than non-problem gamblers and were more likely to use an avoidance coping style to deal with stressful events or feelings. This initial analysis supported prior research findings (e.g., Becoña et al., 1996; Getty et al., 2000; Ohtsuka et al., 1997), suggesting that avoidance coping and dysphoria are important variables associated with problem gambling for both males and females. Such a conclusion, however, does not tell the whole story, and should not be used to justify the application of a "male model" of problem gambling to female gamblers. Further investigation with more sensitive methods of analysis revealed substantial differences in the way avoidance coping and dysphoria predicted problem gambling for males compared to females. It is to a discussion of these analyses that we now turn.

### **An interactional model of dysphoric mood and avoidance coping**

An interactional model of problem gambling predicts that the effects of dysphoric mood on problem gambling will be moderated by avoidance coping. From such a model it would be expected that gamblers who scored high on both dysphoric mood and avoidance coping would show substantially more symptoms of problem gambling than gamblers who scored high on only one of these variables. These predictions were strongly supported for female but not for male gamblers.

As expected, female gamblers with high levels of dysphoria tended to experience more symptoms of problem gambling than those with low dysphoria. This prediction was supported for all mood states, except stress, giving strong support to prior research that found that women with gambling problems experience higher levels of negative mood (Brown & Coventry, 1997; Trevorrow & Moore, 1998). Secondly, as expected, female gamblers who scored high on avoidance coping tended to exhibit more problems with their gambling. Again, these results were consistent with prior research (Getty et al., 2000; Scannell et al., 2000).

Thirdly, the hypothesis that there would be a significant interaction between avoidant coping and dysphoria, such that female gamblers with high dysphoria and high avoidance coping would tend to show more symptoms of problem gambling than those high in just one variable, was supported. The introduction of a variable representing the mood by avoidance coping interaction significantly improved prediction of problem gambling for women. Again, this was true for all mood states except stress. Overall, these results gave strong support to the interactional model of avoidance coping and dysphoric mood for female gamblers. They suggest that while avoidance coping and dysphoric mood are both important factors in problem gambling, female gamblers who score high on both variables may be particularly vulnerable to problem gambling. These results are in tune with prior qualitative research that found that female problem gamblers reported gambling specifically as a means of escaping emotional problems (Brown & Coventry, 1997; Loughnan et al., 1996; Pierce et al., 1997).

The results of regressions involving male gamblers were markedly different to those involving female gamblers. Male gamblers who experienced loneliness or stress tended to have more symptoms of problem gambling. However, none of the other mood states were significantly correlated with problem gambling. Therefore, these results show very little support for prior research that found evidence of elevated loneliness, boredom, depression and anxiety in male problem gamblers (McCormick et al., 1984; Ohtsuka et al., 1997). These inconsistent findings cast some doubt on the applicability of negative mood in explaining male problem gambling.

Secondly, contrary to expectations, there was no relationship between avoidance coping and problem gambling for the male gamblers. These results appear to be contrary to prior research that found that male problem gamblers use significantly more avoidance coping than male non-problem gamblers (Getty et al., 2000; McCormick, 1994). One explanation for these apparently contradictory findings may be the use of more sophisticated methods of analysis in the current study. The regression analyses used in this study scrutinised the relationships between avoidance coping and problem

gambling separately for male and female gamblers rather than simply comparing the average level of avoidance coping. Possibly, avoidance coping is high (on average) in male problem gamblers but is not predictive of problem gambling.

Thirdly, the hypothesis that there would be a significant interaction between avoidance coping and dysphoria, such that male gamblers with high dysphoria and high avoidance coping would tend to show more symptoms of problem gambling than those high in just one variable, was not supported. None of the regressions were able to significantly predict the dependent variable via an interaction between mood and avoidance coping. These results cast considerable doubt on the applicability of this interactional model for male gamblers.

### **Gendered avoidance strategies?**

The tendency for female gamblers to see gambling as a form of distraction rather than a source of excitement or money may, in part, be due to social restrictions on gambling access for females. There is some evidence that female gamblers tend to gamble on a narrower range of activities compared to male gamblers; many showing a strong preference for poker machines over other forms of gambling (Hraba & Lee, 1996; Productivity Commission, 1999; Slowo, 1997). The tendency for female gamblers, particularly regular gamblers, to play poker machines rather than other forms of gambling may be because these venues are seen as more socially acceptable for females. Local hotels and clubs have made considerable efforts to ensure that their poker-machine venues are attractive and comfortable for women, even for women who are alone (Błaszczynski, Walker, Sagris & Dickerson, 1999). In contrast, it doesn't appear that other betting venues such as horse racing outlets have made the same sort of efforts to encourage female gamblers.

Different forms of gambling may satisfy different psychological needs. People who play poker machines often cite "escape" as their reason for gambling while racing and casino gamblers report gambling for "excitement" (Hraba & Lee, 1996; Slowo, 1997). If women are regularly exposed to a form of gambling that lends itself to escapism rather than excitement, it is possible that women who are searching for a socially acceptable means of escape find it in gambling—or in other words, poker-machine gambling. Indeed, a study investigating gambling in Australia (Productivity Commission, 1999) found that the vast majority of female problem gamblers seeking help had problems with poker machines. The Commission even went so far as to say that the "feminisation" of problem gambling appears strongly associated with the spread of gaming machines in Australia.



In contrast, male gamblers who relied heavily on avoidance coping did not show any particular tendency to display more problems with their gambling than those who showed less reliance on avoidance coping. Prior research has found that male gamblers tend to see their gambling as a source of excitement or money rather than as a means of escape (Pierce et al., 1997; Slowo, 1997), although this information is controversial (Blaszczynski, Wilson & McConaghy, 1986). Perhaps males who rely on avoidance strategies have a tendency to turn to other forms of avoidance.

It is widely accepted that many people drink alcohol to regulate negative emotions and that those who do so tend to drink more often and may be at greater risk of developing drinking problems than purely social drinkers. However, although this stressor-drinking model is quite popular, Cooper et al. (1992) found that the effect of negative life events on drinking behaviour was moderated by coping in a manner similar to what is discussed in this study. They found that negative life events only predicted alcohol use and drinking problems in men who relied heavily on avoidance coping. In contrast, men who scored low in avoidance coping did not display additional drinking problems when faced with more stressors.

It is possible, therefore, that socialisation encourages men and women to choose different methods of avoidance coping. Drinking and particularly drinking to excess are generally more socially acceptable for men than women (Broom, 1994; Cooper et al., 1992). Similarly, gambling and gambling on poker machines have become acceptable forms of entertainment for women (Blaszczynski et al., 1999). Societal values that play a big part in determining which behaviours are acceptable for men and women may also be indirectly influencing which behaviours are more likely to become maladaptive forms of coping for each gender.

## Counselling implications

The results of this study have implications for the counselling methods used with women. In terms of female problem gamblers, ongoing battles with gambling and other maladaptive behaviours may be an indication that some therapies focus too narrowly on overt gambling behaviours or cognitions and too little on underlying factors, such as poor coping strategies or dysphoria. If, for instance, a woman is gambling to escape loneliness, then counselling strategies that focus entirely on her gambling behaviour are unlikely to be successful in the long term. Even if problem gambling is successfully halted, it is possible that she may simply turn to another form of avoidance, such as excessive drinking or eating to cope with her ongoing loneliness.

The results of this study have also shown that effective counselling for female

problem gamblers should include an active search for underlying factors such as dysphoric mood or maladaptive coping strategies. Female problem gamblers who display a lack of sophistication in their use of coping strategies may find that counselling that integrates an element of coping enhancement provides long-term assistance. This may involve expanding a limited coping repertoire or simply increasing understanding around the appropriate use of various coping strategies. Counselling of female problem gamblers may also need to include an active search for underlying emotional problems. If women are gambling because of dysphoric emotions then the overt behaviours should be seen as symptoms rather than the cause of problems.

McCorrison (1999) argues that if counsellors can identify the "needs" that are satisfied by gambling, they can then work with clients to find alternate methods of satisfying these needs. In this way, they can help clients make problematic gambling behavior redundant.

## Conclusion

The results and conclusions of this research are starkly different from previous research that investigated the relationship between avoidance coping and problem gambling for male gamblers (Getty et al., 2000; McCormick, 1994). It is possible that these contrasting results are an aberration of the current sample. However, the sample size was quite large and the results of the initial analysis supported those of prior research, which suggested that male and female problem gamblers had elevated levels in avoidance coping. This implies that the current sample was not substantially different to past samples. It seems that the deviation of the results and conclusions of this research stemmed directly from the differing methods of analysis used. It is therefore important for future studies to replicate the research methodology with other samples of male and female gamblers.

Future research replicating the current study's interactional model may also find that controlling gambling type (perhaps restricting participation to current poker machine gamblers) would ensure that gender differences observed are not confounded by gambling preference (Delfabbro, 2000). Additionally, where possible, coping tendencies should be assessed on several occasions rather than the single episode measured in the present study, ensuring a more accurate assessment of stable coping tendencies (Folkman, Lazarus, Gruen & DeLongis, 1986). Of course, there are likely to be many different causal paths to problem gambling; this study has attempted to isolate one potentially causal relationship between mood, coping skills and problem gambling.

In summary, this study indicates that the motivations of female problem

gamblers may differ from those of male problem gamblers. Female gamblers who were high in both avoidance coping and dysphoric mood showed substantially more symptoms of problem gambling than those high in just avoidance or dysphoria. These results supported prior qualitative research and suggest that some female gamblers may be gambling to escape dysphoric mood, and that these females may be particularly susceptible to problem gambling (Brown & Coventry, 1997). In contrast, there was no evidence that this combination of high avoidance coping and high dysphoric mood substantially increased the risk of problem gambling for males suggesting this model may not be applicable to male gamblers.

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*For correspondance:*

*Ms. Anna Thomas*

*School of Mathematical Sciences (Mail H44)*

*Swinburne University of Technology*

*P.O. Box 218, Hawthorne, Victoria*

*Australia 3122*

*Phone: (613) 9214 5897 or (613) 0412 866 524*

*E-mail: [athomas@swin.edu.au](mailto:athomas@swin.edu.au)*

*Anna Thomas recently completed her honours in psychology at Swinburne University in Melbourne, Australia. Her thesis research formed the basis of the current article. Anna intends to extend her research into escape coping and problem gambling as part of her PhD studies, beginning in 2002.*

*Susan Moore is the inaugural research professor in psychology at Swinburne University, Australia. She has a BSc (Hons) and MEd from the University of Melbourne, Australia and a PhD from Florida State University, U.S.A. Her research focuses on adolescent development, particularly identity, well-being, sexuality and risk-taking, and includes studies of gambling as a form of risk-taking. She is the co-author of two recent books on adolescent sexuality and has over 80 articles in peer-reviewed journals. Her articles on young people's and women's gambling have been published in the Journal of Gambling Studies and Psychology of Addictive Behaviour.*

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### Problem-solving skills in male and female problem gamblers

*By Diane Borsoi, MSc*

*Centre for Addiction and Mental Health*

*Toronto, Ontario, Canada*

*E-mail: [Diane\\_Borsoi@camh.net](mailto:Diane_Borsoi@camh.net)*

*Tony Toneatto, PhD*

*Centre for Addiction and Mental Health*

*Toronto, Ontario, Canada*

#### Abstract

The current study was designed to compare the self-reported problem-solving skills of male and female gamblers. In total, 148 females and 112 males (mean age = 43.6 years, SD = 12.0), responding to an advertisement for people concerned about their gambling, completed the Problem Solving Inventory (Heppner, 1988). The PSI consists of three factors related to self-perception of problem-solving: confidence, personal control and approach-avoidance style. Gamblers were categorized into three subgroups according to their DSM-IV scores: Asymptomatic, Problem, and Pathological. Results from a series of analyses of co-variance (co-varying for the confounding

effects of current emotional distress) revealed that gender had no significant effect, but problem severity on appraisal of problem-solving confidence and sense of personal control had a significant effect. Pathological gamblers were less confident and felt less in control than the other subgroups while engaging in problem-solving activities. Problem gamblers tended to have more negative appraisals of control than Asymptomatic gamblers. Problem-solving skills were also a significant predictor of DSM-IV scores for pathological gambling (i.e., negative appraisals were associated with higher DSM-IV scores). The results suggest that problem-solving skills are deficient in pathological gamblers and problem gamblers, but are not related to gender.

## Introduction

In a meta-analytic study of gambling disorders in Canada and the United States, Shaffer, Hall and Vander Bilt (1997) estimated that the lifetime prevalence rate of pathological gambling for women in the general population is approximately 1%. Another 3% of women experience a variety of adverse consequences from their gambling activities, despite not meeting diagnostic criteria for pathological gambling. Their analyses, which included studies spanning 20 years of empirical research, suggested that up to a third of pathological and problem gamblers in the general population were women.

The vast majority of empirical studies on gambling have either included only male gamblers or an insufficient number of women to permit meaningful comparisons. Mark and Lesieur (1992), in reviewing this literature, found very few studies that addressed pathological gambling in women. Furthermore, where sizeable numbers of female gamblers have been studied, differences in sampling, methodology, representativeness (e.g., GA membership) and assessment have made comparisons with other studies including women difficult. The available data suggest that women when compared to men generally experience a later onset of gambling (Lesieur & Rosenthal, 1991), report a shorter duration between non-problem and problem gambling (Rosenthal, 1992; Lesieur, 1988), tend to gamble within a social context, focus on games that are not considered to require skill (e.g., bingo, slot machines) or intended to enhance social functioning or self-esteem (Lorenz, 1990; Rosenthal, 1992), tend to wager smaller amounts and adopt gambling as a means to cope with dysphoric emotions (Rosenthal, 1992). This suggests that there may be important gender differences in problem-solving behaviours that may produce different patterns and characteristics of gambling behaviour. The purpose of the current study is to compare the problem-solving skills of male and female gamblers.

Cognitive behaviour therapy (CBT) is among the most validated treatment

approaches to addictive behaviours (e.g., Walters, 2000). CBT interventions tend to be goal-oriented, practical and problem-focused. Commonly, distortions in thinking and perception and/or behavioural deficiencies or excesses are targeted. Motivational interventions intended to reduce ambivalence are also routinely used. Cognitive-behavioural treatment of alcohol problems often target deficits in problem-solving skills (Heather, 1995). While the evidence to date is not yet strong, a recent review of randomized control studies found CBT to be the most effective therapeutic modality for problem gambling (Toneatto & Ladouceur, in press). Since CBT can be viewed as a form of problem-solving therapy, a greater understanding of the problem-solving characteristics of problem gamblers might be important in informing CBT approaches for problem gambling and may guide the development of gambling-specific CBT interventions. Unfortunately, little is known about the problem-solving behaviours of problem gamblers. After a CBT intervention that included a specific problem-solving training component, Ladouceur and Sylvain (1999) found that treatment outcomes improved in pathological gamblers compared to a wait-list control group. Clearly, more research is needed to directly examine problem-solving skills in gamblers.

## **Method**

### **Participants**

In total, 148 female and 112 male gamblers, age 18 or older, volunteered to participate in a confidential survey about gambling. Participants were recruited primarily from advertisements placed in major urban newspapers seeking people concerned about their gambling.

### **Procedure**

Individuals interested in the study contacted the research coordinator by telephone. The coordinator described the study, answered any questions and screened individuals to see if they met the primary study criteria: Are they concerned about their gambling behaviour? Those consenting to participate were mailed a self-administered questionnaire booklet. Participants who returned completed booklets received \$40 in gift certificates.

### **Measures**

#### **Gambling severity**

The Diagnostic and Statistical Manual (American Psychiatric Association, 1994) criteria for pathological gambling was used to assess gambling severity. Participants answered 10 questions related to symptoms experienced within



the past 12 months. Scores ranged from zero to 10, and individuals scoring five or higher met criteria for pathological gambling. For the current study, gamblers were categorized into one of three levels of gambling-problem severity based on their DSM-IV gambling scores: asymptomatic (score of 0), problem (1 to 4) and pathological (5 or higher).

### **Problem-solving skills**

The Problem Solving Inventory (PSI) (Heppner, 1988) was administered as the key measuring device of problem-solving skill. The PSI is a 35-item instrument measuring how individuals believe they react to personal problems encountered in their daily lives. The instrument consists of three sub-scales: Problem-Solving Confidence (scores range from 11 to 66), Approach-Avoidance Style related to problem-solving activities (scores range from 16 to 96) and degree of Personal Control of emotions and behaviours while engaging in problem-solving activities (scores range from 5 to 30). Low scores are associated with a positive view of problem-solving skills. This instrument possesses good internal consistency (alphas range from .72 to .85 on the sub-scales and .90 on the entire test) and there is good test-retest reliability. The validity of the PSI has been evaluated in various populations including adolescents, psychiatric populations and university students. For example, validity studies have shown that the PSI is linked to psychological well-being (e.g., Heppner & Anderson, 1985); symptoms of generalized anxiety disorder (Ladouceur, Blais, Freeston, & Dugas, 1998); hopelessness, depression severity and dysfunctional attitudes in depressed outpatients (Cannon et al., 1999; Otto et al., 1997); depression, hopelessness, and psychosocial impairment in patients with chronic low back pain (Witty, Heppner, Bernard, & Thoreson, 2001).

### **Current psychiatric distress**

The Brief Symptom Inventory (BSI) (Derogatis, 1993; Derogatis & Melisaratos, 1983) consists of 53 symptoms designed to measure nine dimensions of psychopathology experienced by individuals within the past week. The Global Severity Index (GSI), based on the mean rating for all 53 items, is scored on a five-point scale, ranging from zero, meaning "not at all," to four, meaning "extremely," and provides an overall index of current emotional distress. Internal consistency coefficients for the nine sub-scales cluster around .80 with test-retest correlations ranging from .68 to .91 over a two-week period (Derogatis & Melisaratos, 1983). The GSI has a stability coefficient of .90 over a two-week period.

### **Data analysis**

A series of 2x3 analyses of covariance (ANCOVAs) were conducted to explore the effects of gender and gambling severity on each of the measures of problem-solving skills while controlling for current psychiatric distress (measured by the GSI on the BSI) that may confound coping activities (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). The alpha level was set at .05 for main effects and interaction effects. Observations that were two or more standard deviations away from the mean were considered outliers, and were excluded from the analyses of covariance. A regression analysis using the STEPWISE method (SPSS 10.0) was also conducted to determine whether self-perception of problem-solving skills predicted DSM-IV scores when other demographic variables, psychiatric variables and gambling frequency were included in the regression equation.

## Results

Demographic characteristics of the sample are found in Table 1. There were significantly more unmarried men (68.8%) than women (54.1%) in the sample ( $\chi^2$ ,  $p = .016$ ).

**Table 1. Demographic characteristics by gender**

	<b>N</b>	<b>Males</b>	<b>Females</b>	<b>Total sample</b>
<b>Age (M years [SD])</b>	260	42.9 (11.4)	44.2 (12.4)	43.6 (12.0)
<b>Marital status:<sup>1</sup> n (%)</b>	260			
<b>Married/partnered</b>		35 (31.3%)	68 (45.9%)	103 (39.6%)
<b>Not married/partnered</b>		77 (68.8%)	80 (54.1%)	157 (60.4%)
<b>Education level: <sup>2</sup> n (%)</b>	260			
<b>Secondary or less</b>		50 (44.6%)	79 (53.4%)	129 (49.6%)
<b>Post-secondary</b>		62 (55.4%)	69 (46.6%)	131 (50.4%)
<b>Employment status: <sup>3</sup> n (%)</b>	258			

<b>Employed</b>		59 (53.6%)	76 (51.4%)	135 (52.3%)
<b>Not employed</b>		51 (46.4%)	72 (48.6%)	123 (47.7%)
<b>Gross annual income (\$); n (%)</b>	258			
<b>&lt; 20 000</b>		44 (39.6%)	78 (53.1%)	122 (47.3%)
<b>20 000 —39 000</b>		32 (28.8%)	44 (29.9%)	76 (29.5%)
<b>40 000 —59000</b>		23 (20.7%)	19 (12.9%)	42 (16.3%)
<b>60 000 +</b>		12 (10.8%)	6 (4.1%)	18 (7.0%)
<b>Gambling categories n (%)</b>	260			
<b>Asymptomatic</b>		16 (14.3%)	18 (12.2%)	34 (13.1%)
<b>Problem</b>		44 (39.3%)	57 (38.5%)	101 (38.8%)
<b>Pathological</b>		52 (46.4%)	73 (49.3%)	125 (48.1%)

$\chi^2$ ,  $p = .016$

$\chi^2$ ,  $p = .163$

$\chi^2$ ,  $p = .716$

Otherwise, there were no other gender differences. About half of the sample was employed, reported some post-secondary education and earned more than \$20,000 per year. The proportion of men and women whose gambling severity was asymptomatic, problem and pathological is also reported in Table 1. Within each severity category, there were comparable proportions of men and women. Almost half of the sample consisted of gamblers whose problem severity was pathological while approximately 13% were asymptomatic.

Table 2 shows the frequency of gambling behaviours for the male and female participants. Lottery, scratch tickets, casino slot machines and bingo were popular gambling activities.

**Table 2. Description of gambling behaviour by gender**

Gambling activity	Number of times per year Mean (SD)			
	N	Males	N	Females
Lottery	97	97.6 (69.4)	129	126.3 (131.4)
Scratch tickets	64	104.2 (108.8)	101	130.6 (147.3)
Pull tabs	25	106.5 (129.2)	50	76.6 (116.0)
Card games (private)	34	54.9 (62.7)	28	45.0 (72.7)
Casino card games	37	56.9 (87.3)	22	31.1 (48.6)
Casino table games	19	58.2 (74.5)	8	40.3 (69.1)
Casino slot machines	42	54.6 (77.6)	79	61.7 (89.4)
Casino video gambling	11	55.3 (112.0)	16	37.2 (53.1)
Stock market	10	45.3 (33.8)	11	23.5 (53.1)
Race track	39	50.7 (84.8)	29	59.8 (123.0)
Real estate	2	3.0 (1.4)	2	53.0 (72.1)
Sports lotteries	53	148.4 (125.0)	16	91.4 (123.0)
Sports betting	25	92.6 (116.3)	5	56.1 (61.3)
VLTs	9	129.7 (145.1)	12	44.0 (50.2)
Bingo	25	41.2 (64.3)	98	96.3 (85.2) <sup>1</sup>
Charity	15	76.4 (99.5)	15	47.7 (99.5)
Internet gambling	1	4 (--)	3	160.3 (183.1)

<sup>1</sup> excludes one extreme outlier

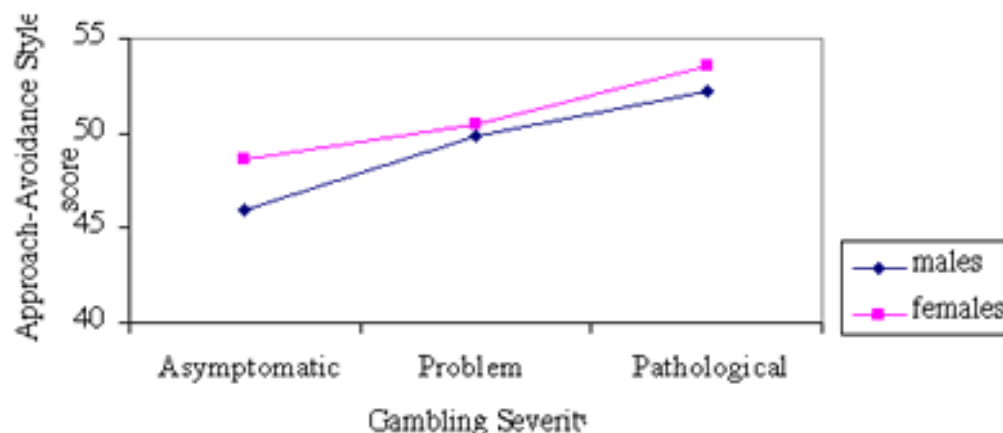
Male and female participants playing lottery, scratch tickets or pull tabs were playing on average between 1.5 and 2.5 times per week. Participants also reported playing a variety of casino games between 30 and 60 times per year. About twice as many women reported playing bingo than men. Few participants engaged in real estate or Internet gambling. The gambling

activities that were identified as causing the biggest concern for men were casino card games (23.2%), lotteries/scratch tickets (13.7%), sports lotteries (13.7%) and race track betting (12.6%). For women, the gambling activities that caused the most concern were bingo (34.1%), casino card games (27.8%) and lotteries/scratch tickets (15.0%).

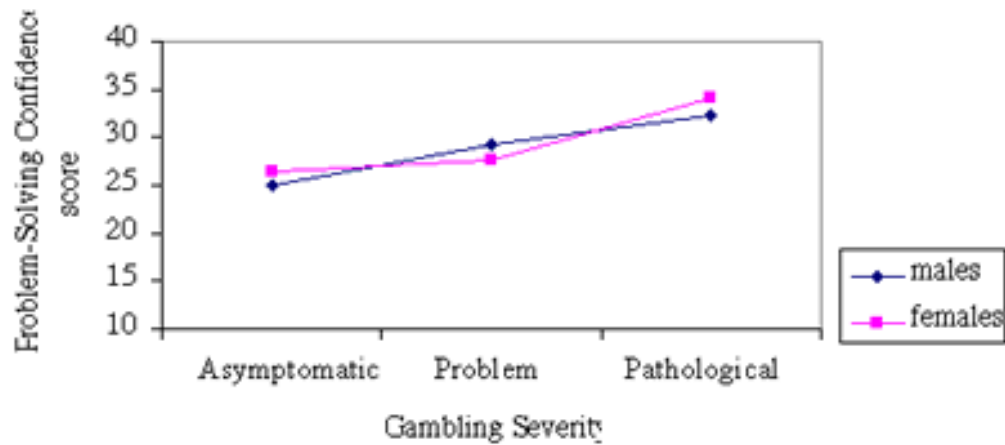
Treatment by a psychiatrist was reported by 40.2% of the sample while 45.6% reported receiving treatment by a psychologist or other mental health professional. Almost one-third had been prescribed anti-anxiety medication, 42.9% prescribed anti-depressants and 7.7% prescribed anti-psychotic medication or mood regulators. Almost one-fifth (18%) of the sample reported having been hospitalized for a mental health problem. No gender differences were found on any of these variables.

Figure 1 displays the mean scores for problem-solving confidence, personal control and approach-avoidance sub-scales of the PSI by gender and gambling severity. Results of the ANCOVA on the Problem-Solving Confidence sub-scale revealed that there was a significant main effect of gambling severity ( $F_{2,250} = 5.02$ ,  $p = .007$ ) and no significant gender or interaction effects. Simple contrasts of the severity subgroups revealed that the pathological gamblers rated themselves as significantly less confident in their problem-solving skills than both the asymptomatic subgroup (mean difference = 4.41; 95%CI = 1.52 to 7.30;  $p = .003$ ) and the problem gambler subgroup (mean difference = 2.20, 95%CI = 0.16 to 4.23;  $p = .035$ ). The difference in confidence scores between the asymptomatic and problem groups was not significant ( $p > .10$ ).

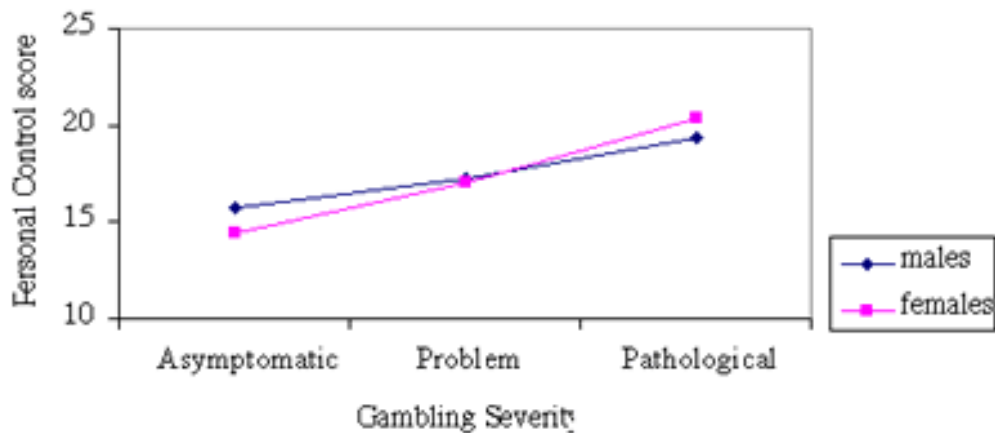
**Figure 1. PSI problem-solving confidence, personal control and approach-avoidance style sub-scale scores by gender and gambling severity.**



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On the Personal Control sub-scale, there was also a significant effect of gambling severity ( $F_{2,247} = 13.09$ ,  $p < .001$ ), but no significant gender or interaction effects. Simple contrasts revealed that pathological gamblers felt significantly less personal control during problem-solving than the problem gamblers (mean difference = 1.66; 95%CI = 0.67 to 2.65;  $p = .001$ ), and the problem subgroup, in turn, reported less control than the asymptomatic subgroup (mean difference = 1.83, 95%CI = 0.49 to 3.18;  $p = .008$ ).

Figure 1 shows that the pathological gambling subgroup had a higher mean score on the Approach-Avoidance Style sub-scale (higher scores signify a more avoidant style to problem-solving activities) than the other gambling subgroups; however, the ANCOVA revealed no significant effects of gambling severity ( $p = .13$ ), gender, and gender by severity interaction effects.

To examine whether problem-solving skills predicted DSM-IV scores for pathological gambling, the following variables were entered into a stepwise



regression: age, gender, employment status, GSI from the BSI, history of treatment by psychiatrist (yes/no), gambling frequency (frequency of the gambling activity with the highest level of participation within the past year) and total score on the PSI. The PSI total score measures perception of general problem-solving abilities and was included instead of the individual PSI sub-scale scores to avoid problems of multicollinearity. (Pearson correlation coefficients ranged from .51 to .69 among the various sub-scales in this sample.) The Global Severity Index, gambling frequency and total PSI score were the only variables retained in the final regression model (Table 3). Higher psychiatric distress, higher gambling frequency and more negative views of

**Table 3. Predictors of DSM-IV pathological gambling scores**

		Stepwise multiple regression <sup>2</sup>				
Predictors <sup>1</sup>	Step	b	D R <sup>2</sup>	df	Total R <sup>2</sup>	Adjusted R <sup>2</sup>
<b>BSI —Global Severity Index</b>	1	.370	-	1,251	.227	.224
<b>Gambling frequency measure</b>	2	.223	.062	1,250	.288	.283
<b>PSI total score</b>	3	.183	.026	1,249	.315	.306

<sup>1</sup> Variables entered into the stepwise regression but excluded from the final regression equation include: age, gender, employment status, psychiatric treatment.

<sup>2</sup>  $\beta$  denotes standardized beta coefficients of the final regression equation.

problem-solving ability predicted higher DSM-IV scores. The final regression model explained 31.5% (adjusted  $R^2 = 30.6\%$ ) of the variance in DSM-IV gambling scores, with PSI scores contributing to a small ( $\Delta R^2 = 2.6\%$ ) but significant increase in explained variance. If instead the three sub-scales scores (in place of the PSI total score) are allowed to compete for entry into the regression, the Personal Control sub-scale enters as the third step in the model following the BSI global index severity and gambling frequency, and predicts 4.4% of the total (33.2%) explained variance.

## Discussion

This study revealed that there were differences in perceived problem-solving skills among gamblers with different levels of problem severity. However, there were no significant gender differences. Both male and female pathological gamblers reported being less self-assured while trying to solve problems they encountered in their lives and felt less in control over their emotions and behaviours during problem-solving activities than either the asymptomatic or problem gamblers. The problem gamblers perceived themselves to have less control over their emotions and behaviours during problem-solving compared to the asymptomatic gamblers.

A comparison of PSI scores observed in the pathological gamblers, and to some extent the problem gamblers, were quite similar to those reported in other clinical populations (e.g., inpatient males with alcohol problems, Larson & Heppner, 1989; generalized anxiety disorders, Ladouceur, et al., 1998). These clinical populations tended to have more negative appraisals of problem-solving skills than undergraduate student populations or adult populations. This suggests that pathological gamblers and patients with substance use disorders or psychiatric disorders might benefit from interventions addressing these deficits. Both male and female gamblers in this study appear to require some problem-solving skills training.

The absence of significant gender differences in various aspects of problem-solving skills also suggests that CBT gambling-treatment interventions for men and women do not need to be drastically different with respect to problem-solving skills training. CBT interventions for problem gamblers and especially pathological gamblers may also benefit from targeting problem-solving skills that need attention (e.g., enhancing emotional and behavioural control when handling high-risk gambling situations). The relatively high avoidance scores observed in the pathological gamblers also seem to indicate that CBT interventions may be a good treatment approach in teaching gamblers a more effective style of dealing with problems.

A limitation of the study is that the PSI measures perceived and not actual problem-solving skills; however, there is some evidence that they are related (Heppner, Hibbel, Neal, Weinstein & Rabinowitz, 1982). Furthermore, there does seem to be a pattern among clinical populations to report negative appraisals of problem-solving skills, suggesting that these problem-solving skills warrant attention. While Dixon, Heppner, Burnett, Anderson and Wood (1993) found that PSI scores were both an antecedent and predictor of a depressed mood, it not possible in this study to determine whether deficits in problem-solving appraisal was a symptom of or precursor to gambling

problems. Deficits in problem-solving skills may contribute to vulnerability in the development of gambling problems, or conversely, having a gambling problem may, over time, negatively influence problem-solving skills. The current study was correlational in nature, and additional controlled research is needed to further explore problem-solving abilities in problem gamblers.

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*For correspondence:*

*Diane Borsoi*

*Clinical Research Department*

*Centre for Addiction and Mental Health*

33 Russell St.  
Toronto, Ontario, Canada M5S 2S1  
Phone: (416) 535-8501 x4540  
Fax: (416) 595-6619  
Email: [Diane\\_Borsoi@camh.net](mailto:Diane_Borsoi@camh.net)

*Diane Borsoi is a research associate at the Centre for Addiction and Mental Health. She received her MASc with a specialization in addictions at the University of Waterloo in 1995. Her current research interests are the characteristics of problem gamblers and the treatment of addictive behaviours.*

*Tony Toneatto received his doctorate in clinical psychology from McGill University in 1987 and is a registered psychologist in the province of Ontario. He is presently head of the addiction section of the clinical research department at the Centre for Addiction and Mental Health. He is also an assistant professor in the departments of psychiatry and public health sciences at the University of Toronto. His research interests include pathological gambling, concurrent disorders and cognitive-behavioral therapy.*

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### Gender differences in psychiatric comorbidity and treatment-seeking among gamblers in treatment

*By James R. Westphal, MD*

*Department of Psychiatry*

*University of California, San Francisco*

*San Francisco, California, U.S.A.*

*E-mail: [jrwestp@itsa.ucsf.edu](mailto:jrwestp@itsa.ucsf.edu)*

*Lera Joyce Johnson, PhD*

*Department of Psychology*

*Virginia State University,*

*Petersburg, Virginia, U.S.A.*

#### Abstract

**Objectives:** To assess the effects of gender on comorbid problems and treatment-seeking among gamblers in treatment and the effects of comorbid problems on participants' gambling

**Method:** Participants completed a survey on comorbid problems and the

effects of comorbid problems on their gambling

**Sample:** Seventy-eight adults (40 males, 38 females) enrolled in state-supported outpatient programs or Gamblers Anonymous

**Results:** The majority of participants (53%) had multiple comorbid problems and 38.5% said they had a comorbid problem related to their gambling. Eleven different types of comorbid problems were reported. Females had significantly more comorbid problems than males; females reported problem drinking and both genders reported that depression increased the severity of their gambling problems.

**Conclusion:** Patterns of comorbid problems and treatment-seeking are consistent with well-known gender differences in health behaviors. Clinicians involved in gambling treatment may wish to assess for depressive syndromes and problem drinking and investigate their interaction with their patient's gambling.

**Keywords:** comorbidity, alcohol, gamblers, gender, treatment, career length, depression

## Introduction

Gender has been a determinant of many health-related behaviors, such as treatment utilization, substance use, and psychiatric symptoms and diagnoses (Robins & Regier, 1991; Verbrugge, 1985). Males tend to have earlier and higher mortality rates (Verbrugge, 1985) and use substances (alcohol, tobacco and street drugs) more than females (Robins & Regier, 1991). Females tend to use physical and mental health services more (Verbrugge, 1985) and use more proscribed drugs than males (Verbrugge, 1985). Gender is also important in psychiatric disorders, where males tend to have higher rates of disordered substance use, with the exception of prescription drug use (Robins & Regier, 1991) and females tend to have more psychiatric disorders, especially in the anxiety and mood disorder cluster (Robins & Regier, 1991).

Historically, in studies of the prevalence of gambling disorders, males have significantly outnumbered females. Volberg (1994), in a paper summarizing prevalence studies from five states in the United States, estimated males to be 76% of pathological gamblers in the community. The most current diagnostic manual states that females comprise only 33% of pathological gamblers (American Psychiatric Association, 2000). However, the expansion of legalized gambling in the United States has changed this ratio. The most

recent U.S. national survey of gambling behavior, completed in 1999, shows gambling disorders more equally distributed by gender. Although the National Opinion Research Center (1999) found higher prevalence rates of problem and pathological gambling among men than women —male lifetime rates: problem 1.6%, pathological 0.9%; female lifetime rates: problem 1.0%, pathological 0.7% —in their initial (RDD) survey, the differences were not statistically significant.

Studying the patterns of comorbid disorders can lead to better treatment and understanding of the causal factors in the disorder. Additional disorders of all types have implications for treatment. The presence of comorbid diagnoses makes it more likely that the patient will seek treatment (Andrews, Slade & Issakidis, 2002; Noyes, 2001). The presence of comorbid diagnoses also increases the likelihood of treatment failure in many psychiatric disorders: depression (Bagby, Ryder & Cristi, 2002), bipolar disorder (Frangou, 2002), obsessive-compulsive disorder (Ruppert, Zaudig, Hauke, Thora & Reinecker, 2001), generalized anxiety disorder (Noyes, 2001), post-traumatic stress disorder (Breslau, 1999) and panic disorder (Mennin & Heimberg, 2000). The presence of comorbid diagnoses affects cognitive-behavioral therapies (Mennin & Heimberg, 2000), inpatient treatment (Haettenschwiler, Rueesch & Modestin, 2001) and pharmacotherapy (Bagby et al., 2002).

The National Comorbidity Survey (Kessler et al., 1994) was the first survey to administer a structured psychiatric interview to a national probability sample of non-institutionalized people in the United States. The study found that psychiatric morbidity was highly concentrated in one-sixth, or approximately 16% of the adult population with a lifetime history of three or more comorbid disorders.

The most well-studied comorbid relationships among psychiatric disorders are the (misnamed) dual disorders, or the association between substance use disorders and psychotic, anxiety and mood disorders. The interactions can be very complex. To generalize: 1) the two disorders may occur by chance, 2) substance use may cause or exacerbate the psychiatric disorder, 3) the psychiatric disorder may cause or increase the severity of the substance use, 4) both disorders may be caused by a third condition, and 5) substance use or withdrawal may mimic the psychiatric disorder.

Studies of dual disorders often attempt to determine the temporal relationship of the onset of the different disorders to clarify causation. However, the comorbidity pattern can differ by the substance used and the specific other psychiatric disorder or disorders as well as by the population studied. For example, the National Comorbidity Study found that alcohol use problems and dependence consistently occurred after the onset of the psychiatric disorder

(Kessler et al., 1997). However, nationwide studies of psychiatric comorbidity and both alcohol and drug use disorders in six countries found that only anxiety disorders consistently preceded substance use disorders; mood disorders and substance use disorders had no consistent temporal pattern (Merikangas et al., 1998). Despite the theoretical complexity, the temporal relationship among comorbid disorders can be useful clinically, in deciding which of several disorders is primary, which have implications for treatment priorities and plans.

The study of other psychiatric diagnoses occurring with gambling disorders is early in its development. The Harvard Division of Addictions gambling disorder prevalence meta-analysis (Shaffer, Hall & VanderBilt, 1997) established psychiatric comorbidity as a risk factor for gambling disorders. Their analysis established significantly higher prevalence rates for gambling disorders among samples of adults with psychiatric or substance dependence disorders and those in prison than among community samples of adults. The relative risk varies from four to seven, depending on the population studied (Shaffer et al., 1997).

Comorbidity patterns change based on the population studied and site of assessment (Berkson, 1946). Clinical studies of patients in treatment with gambling disorders have found that other psychiatric disorders occur consistently. Ibañez et al. (2001) found comorbidity in 43% of gamblers seeking treatment. There have been more studies of treatment populations than community populations in the study of comorbid disorders in gambling. However, the number of subjects studied is usually small, especially in studies of anxiety and personality disorders. Clinically useful information, such as the nature and relevance of the specific comorbidity associations, is limited. See Table 1 for a summary of the relevant studies.

**Table 1**

**Summary table of research on comorbid diagnoses in community and treatment samples**

Disorder	Total number of studies	Community studies		Treatment studies	
		Number	Total subjects	Number	Total subjects

<b>Mood disorders</b>	20	3	9,100	17	3,200
<b>Anxiety disorders</b>	5	1	7,200	4	250
<b>Antisocial personality disorder</b>	2	1	7,200	1	109
<b>Substance use disorders</b>	12	2	9,200	10	3,200

Substance dependency has been relatively well established as a significant comorbidity with pathological gambling (Crockford & el-Guebaly, 1998; Ibañez et al., 2001; National Research Council, 1999; Shaffer et al., 1997). Approximately 50% of pathological gamblers will have a substance use or dependency diagnosis. Affective symptoms have also been found to be associated with pathological gambling (Crockford & el-Guebaly, 1998; Maccallum & Blaszczyński, 2002; National Research Council, 1999; Shaffer et al., 1997); however, the results have been inconsistent. One analysis proposed that affective disorders were a significant comorbidity in only a subgroup of problem gamblers (Crockford & el-Guebaly, 1998). Personality disorder comorbidity has also been studied, with antisocial personality disorder being the strongest association (Crockford & el-Guebaly, 1998; Ibañez et al., 2001). However, the strong association between substance use disorders and antisocial personality disorder confounds the association between gambling disorders and antisocial personality disorder (National Research Council, 1999).

There are many unanswered questions about the influence of comorbid psychiatric disorders in problem gamblers. Because of the historical predominance of males in populations with gambling disorders, the effect of gender on comorbidity patterns in gambling disorders is unstudied. In addition, since treatment populations for any psychiatric disorder are more likely to have other psychiatric disorders (Berkson, 1946), the clinical relevance of comorbid disorders in problem gambling has been minimally studied. Only one study has determined that comorbid disorders increase the severity of the gambling disorder (Ibañez et al., 2001). But do the comorbid disorders only add to disease burden and make it more likely for the patient to seek treatment or do they directly affect the gambling behavior and need to be



considered in the formulation of treatment plans for problem gamblers?

The objectives of this study were to assess (1) the effect of gender on comorbid problems and (2) treatment-seeking behavior of gamblers in treatment and (3) the interactive effects of the comorbid problems on the participants' gambling.

## **Method**

### **Participants**

An anonymous, voluntary questionnaire was distributed to all state gambling disorder treatment sites and Gamblers Anonymous meeting sites in the state of Louisiana in January of 1999 as part of a study on the social cost of gambling (Ryan et al., 1999). Seventy-eight questionnaires were returned in time for statistical analysis.

### **Materials**

Participants completed a survey that included a screen for gambling disorders, demographic questions, and questions about types and frequency of gaming activities, quantifiable consequences of gambling disorders, comorbid conditions, illicit substance use, gambling career and treatment-seeking history. Questions covered gambling behavior and work and legal and other consequences of disordered gambling based on Lesieur's model (Lesieur, 1998). Gender differences in these behaviors are under study. The questionnaire inquired about the types of other mental health and substance use problems that the participants had experienced. The questionnaire specifically asked, "Did any of these problems ever make your gambling problems worse?" Each participant's history of gambling, substance use disorder and psychiatric treatment was also reported.

### **Design and procedure**

Chi-square analyses were performed on the types of comorbid problems, total number of comorbid problems, types of mental health or substance use treatment sought and the response to whether or not gambling had been worsened by comorbid problems. A one-way ANOVA was performed on total number of comorbid problems by gender. The chi-square on each comorbid condition was analyzed separately by gender and by the dichotomous variable that reflected their worsening of the gambling problem.

## **Results**

## Previous treatment

Males reported larger treatment costs for gambling treatment and more substance abuse treatments. Females reported significantly more outpatient mental health treatment ( $\chi^2 (1, N = 78) = 5.198, p < .05$ ).

## Comorbid problems

Sixty-one of the 78 respondents (78%) reported other substance use or mental health problems. A total of 168 comorbid problems in 11 categories were reported by the sample. Twice as many males (30.7% of the total sample) as females (16.7%) had one or no other comorbid problems. See Table 2 for the distribution of the number of comorbid problems by gender. More females (32%) than males (20.6%) had two or more comorbid problems. A one-way ANOVA on total number of comorbid problems by gender showed that females (mean 2.42) had more comorbid problems than did males (mean 1.6) ( $F (1,76) = 3.948, p < .05$ ).

**Table 2**

**Total number of comorbid problems by gender with percentages of total sample**

Number of comorbid problems  Count/per cent of total	Males		Females	
0	14	17.9%	7	9.0%
1	10	12.8%	6	7.7%
2	7	9.0%	10	12.8%
3	2	2.6%	3	3.8%
4	3	3.8%	6	7.7%
5	2	2.6%	3	3.8%
6	2	2.6%	3	3.8%

Table 3 presents the percentages of males and females reporting specific

problems. Males reported significantly more alcohol problems ( $\chi^2 (1, N = 78) = 5.641, p < .05$ ) and problem use of other drugs ( $\chi^2 (1, N = 24) = 4.8, p < .05$ ) than females and showed tendencies to greater marijuana use ( $\chi^2 (1, N = 78) = 3.486, p = .062$ ). Females reported significantly higher problems with overeating ( $\chi^2 (1, N = 78) = 7.453, p < .01$ ), eating disorders ( $\chi^2 (1, N = 78) = 4.438, p < .05$ ), compulsive shopping ( $\chi^2 (1, N = 77) = 16.896, p < .001$ ) and tranquilizer use ( $\chi^2 (1, N = 24) = 10.667, p < .001$ ).

**Table 3**

**Per cent of sample reporting comorbid problems by gender**

	Per cent of total sample	
Disorder	Males	Females
Alcohol use	20.5**	7.7
Overeating	12.8	26.9**
Eating disorder	0	5.1*
Compulsive shopping	1.3	19.5***
Depression	28.2	30.8
Any drug use	14.1	14.1
	Per cent of drug users	
Substance	Males	Females
Marijuana	39.1	17.4
Tranquilizers	8.3	41.7***
Stimulants, "uppers"	8.3	8.3
LSD	4.2	0
Narcotics	8.3*	4.2
Other drugs	16.7	0

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## Effect of comorbid problem on gambling

Forty-nine per cent of those reporting comorbid problems (38.5% of the total sample) indicated that a comorbid problem had increased the severity of their gambling behavior. Eleven different types of comorbid problems were reported. Only two, depression and problem drinking, were identified as exacerbating gambling behavior. Females were significantly more likely than males to report that problem drinking ( $\chi^2 (1, N = 34) = 5.13, p < .05$ ) had increased the severity of their gambling. About the same percentage of males and females reported depression had increased the severity of their gambling. Chi-square analyses on depression by gender and by the variable that measured a worsening of gambling problems found that depression exacerbated gambling problems independent of gender. Both males ( $\chi^2 (1, N = 38) = 5.546, p < .01$ ) and females ( $\chi^2 (1, N = 34) = 5.903, p < .01$ ) reported that depression significantly worsened their gambling problems.

## Discussion

Many of the comorbid and treatment-seeking behaviors reported by this sample are consistent with well-known and studied gender differences in health behaviors. Males reported more alcohol and drug use problems and females reported more psychiatric problems, tranquilizer use and outpatient psychiatric treatment, which is consistent with previous reports (Kessler et al., 1994; Robins & Regier, 1991; Verbrugge, 1985).

The majority of the gamblers in this treatment sample from Louisiana had other psychiatric or substance use problems in addition to their gambling disorder. Comorbid problems were the rule rather than the exception in this population of gamblers in treatment. However, only a minority of patients with comorbid disorders answered positively to the question that the comorbid disorder had ever increased the severity of their gambling. This study partially supports the findings of Ibañez et al. (2001) that comorbid disorders increase the severity of gambling problems.

One finding of this study is that, from the participants' viewpoint, only two of the multiple comorbid problems reported had ever affected the severity of their gambling. Unfortunately, the effects were inconsistent: only about half of the patients with comorbid problems identified that depression or problem drinking had increased their gambling behavior. Most of the males with comorbid problem drinking and some of the participants with depression did not identify these problems as ever negatively affecting their gambling.

Although preliminary, this study provides more evidence of the need for

careful attention to diagnosing and investigating the interactions of comorbid alcohol (Maccallum & Blaszczyński, 2002) and affective disorders. Clinicians should further investigate the interaction of the comorbid disorder with gambling behavior and the order of onset of the disorders. For example, a patient who developed depressive symptoms after the onset of pathological gambling in response to financial, legal or marital problems should be treated differently than a patient who developed depressive symptoms, and later, found that gambling temporarily relieved the symptoms of depression. In this example, the clinical approach should be different, even if both patients reported that their depressive symptoms increased their desire to gamble or their gambling behavior.

In addition, this study provides some perspective on the inconsistent results of pharmacological treatments for gambling disorders. Inconsistent and possibly gender-related effects of comorbid disorders may be confounding the results of these trials. Several agents that affect mood and alcohol use behavior have shown inconsistent, mixed results in treatment trials. It may be necessary to sub-type gambling populations in treatment trials by both the presence and type of comorbid disorders as well as the effect of the comorbid disorder on the gambling behavior.

This study needs to be replicated with larger numbers and independent confirmation of comorbid diagnoses, rather than self-report alone. Family or other collateral information on the interaction of the comorbid disorders and the gambling would also be useful to supplement the patient's perceptions of the interactions. In addition, information on the onset of the comorbid disorders in relation to the gambling disorder would be crucial to determine causality. Further, more targeted studies are needed to clarify the clinical relevance of comorbid disorders for gamblers in treatment programs and to determine the role of these disorders in the development of gambling disorders.

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*For correspondence:*

*James R. Westphal, MD*

*Department of Psychiatry*

*San Francisco General Hospital*

*1001 Potrero Avenue*

*San Francisco, California, U.S.A. 94110*

*Phone (415)-206-4068*

*Fax: (415)-206-6159*

**E-mail: [jrwestp@itsa.ucsf.edu](mailto:jrwestp@itsa.ucsf.edu)**

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## Figure 1

### Interaction between avoidance coping (AC) and loneliness for female gamblers

