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Original Research

Psychological Characteristics of Problem Gamblers With and Without Mood Disorder

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Objective: Problem and pathological gamblers are significantly more likely to experience mood disorders, compared with the general population. Our study examined the relation of psychological characteristics (personality, trait impulsiveness, and gambling motives) to current co-occurring mood disorder (major depression and dysthymia) status among problem and pathological gamblers.

Method: Problem and pathological gamblers (*N* = 150) underwent a clinical interview to assess current co-occurring mood disorders; participants completed measures of problem gambling severity, personality, impulsiveness, and gambling motives.

Results: Problem and pathological gamblers with a current co-occurring mood disorder were more likely to be female, older, and to report higher lifetime and past-year gambling severity. A co-occurring mood disorder was associated with higher personality scores for alienation and stress reaction, lower scores for well-being, social closeness, and control, as well as higher impulsiveness scores for urgency and lack of premeditation, and lower sensation seeking scores. Participants with a co-occurring mood disorder also reported higher coping motives for gambling. Multivariate logistic regression analyses demonstrated that personality factors (lower social closeness and higher alienation) contributed to the greatest likelihood of being diagnosed with a co-occurring mood disorder.

Conclusions: Mood disorders frequently co-occur with problem and pathological gambling, and they are associated with greater gambling severity. These findings highlight that interpersonal facets of personality contribute substantially to co-occurring mood disorder status. Implications for treatment will be discussed.

Caractéristiques psychologiques des joueurs à problèmes avec et sans trouble de l'humeur

Objectif : Les joueurs à risque et les joueurs pathologiques sont significativement plus susceptibles d'éprouver des troubles de l'humeur, comparés à la population générale. Notre étude a examiné la relation des caractéristiques psychologiques (personnalité, impulsivité-trait, et motivations à jouer) avec l'état du trouble de l'humeur co-occurrent actuel (dépression majeure et dysthymie) chez les joueurs à risque et pathologiques.

Méthode : Des joueurs à risques et pathologiques (*N* = 150) se sont prêtés à une entrevue clinique pour évaluer les troubles de l'humeur co-occurrents actuels. Les participants ont répondu à des mesures de la gravité du jeu problématique, de la personnalité, de l'impulsivité, et des motivations à jouer.

Résultats : Les joueurs à risque et pathologiques qui ont un trouble de l'humeur co-occurrent actuel étaient plus susceptibles d'être de sexe féminin, plus âgés, et de déclarer une gravité plus élevée du jeu durant leur vie et lors l'année précédente. Un trouble de l'humeur co-occurrent était associé à des scores de personnalité plus élevés pour l'aliénation et la réaction au stress, à des scores moins élevés pour le bien-être, la proximité sociale, et le contrôle, ainsi qu'à des scores d'impulsivité plus élevés pour l'urgence et l'absence de préméditation, et à des scores moins élevés de recherche de sensations. Les participants ayant un trouble de l'humeur co-occurrent déclaraient aussi des motivations d'adaptation plus élevées pour le jeu. Les analyses de régression logistique multivariée

ont démontré que les facteurs de personnalité (proximité sociale plus faible et aliénation plus élevée) contribuaient à la probabilité la plus élevée de recevoir un diagnostic de trouble de l'humeur co-occurrent.

Conclusions : Les troubles de l'humeur sont fréquemment co-occurrents du jeu problématique et pathologique, et ils sont associés à une gravité accrue du jeu. Ces résultats indiquent que les aspects interpersonnels de la personnalité contribuent substantiellement à l'état du trouble de l'humeur co-occurrent. Les implications pour le traitement seront discutées.

Problem and pathological gamblers are 2 to 3 times more likely to be diagnosed with major depression and (or) dysthymia, compared with the general population.[1–3] About one-half of problem and pathological gamblers report a lifetime history of a co-occurring mood disorder,[4–7] and nearly 1 in 5 report a current mood disorder.[7,8] Problem and pathological gamblers are also at an elevated risk for the onset of a mood disorder (subsequent to their gambling behaviour), compared with nongamblers.[9] These vulnerabilities are more pronounced among female problem and pathological gamblers.[10,11]

Co-occurring mood disorders among gamblers have been associated with negative consequences, including higher gambling severity[12]; greater likelihood of problem gambling following treatment[13]; needing more time to reach abstinence in treatment[7,8]; being more likely to spend a significant amount of personal income on gambling activities[14]; and reporting a heightened risk of suicidal ideation and attempt(s).[15,16] Despite these consequences, problem and pathological gamblers with co-occurring mood disorders are no more likely to initiate gambling treatment than gamblers without mood disorders,[17] suggesting this cohort may be particularly susceptible to continued negative consequences from their co-occurring psychiatric difficulties.

To date, research examining etiological factors and psychological characteristics associated with co-occurring mood disorders among problem and pathological gamblers has been limited. By comparison, clinical characteristic comparison research differentiating gamblers with and without AUDs,[18] SUDs,[19,20] anxiety disorders,[21] and PTSD[22] have shown more recent emphasis. Previous research comparing problem and pathological gamblers with and without mood disorders has primarily focused on gender differences.[10,11,23] Foundational work in the field highlighted that pathological gamblers with depression experience more negative life events than those without depression.[24,25] However, to date, research investigating the influence of personality, impulsiveness, and motivational variables to co-occurring mood disorder status among problem and pathological gamblers has been largely unexplored, despite a relative abundance of studies examining the relations between these psychological characteristics and problem gambling vulnerability.[26–30] This is the first study to investigate the relative contribution of each of these characteristics to co-occurring mood disorder status in problem and pathological gamblers.

Our study examines psychological characteristics in problem gamblers with and without co-occurring mood disorders, an important gap in the research literature on problem gambling. We hypothesized that problem and pathological gamblers with co-occurring mood disorder diagnoses would report differential scores for measures of personality (for example, lower well-being, lower social closeness, and higher alienation), higher scores for all impulsiveness variables, and differential scores for gambling motivations (for example, higher coping motive scores). We also hypothesized that discrete psychological characteristics (for example, personality variables) would remain significantly related to co-occurring mood disorder status in multivariate analyses after controlling for relevant demographic variables.

Clinical Implications

- Problem and pathological gamblers with co-occurring mood disorders represent a vulnerable group, reporting higher lifetime and past-year gambling severity.
- Clinicians should be mindful of personality, impulsiveness, and gambling motivation factors that increase mood disorder vulnerability in problem and pathological gamblers.
- Interpersonal-related facets of personality may be a particularly promising avenue for clinicians aiming to minimize mood and gambling problems.

Limitations

- This project relied on cross-sectional data and did not examine time sequence of mood disorders and gambling disorders.
- Participants were recruited from 2 nonclinical sources (community members and university students), but analyses accounted for recruitment source whenever possible.

Abbreviations

AUD	alcohol use disorder
DSM	Diagnostic and Statistical Manual of Mental Disorders
GMQ	Gambling Motives Questionnaire
MPQ	Multidimensional Personality Questionnaire
NODS	National Opinion Research Center DSM Screen for Gambling Problems
PTSD	posttraumatic stress disorder
SCID-P	Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition
SUD	substance use disorder
UPPS	Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking

Methods

Participants and Procedure

Participants (N = 150: male, n = 75; female, n = 75) with lifetime and (or) current problem or pathological gambling, 18 years or older, were recruited using numerous strategies. Study advertisements were posted in 2 Ontario newspapers and 2 websites to recruit community participants (n = 91, 60.7%). University participants (n = 59, 39.3%) were recruited using a psychological study portal and campus advertisement. Community participants were remunerated Can$45 in the form of a gift certificate from a local shopping centre; university-recruited participants were remunerated with course bonus points for participation. The only exclusion criteria were an inability to understand and (or) read English and a current and lifetime NODS score[31] of less than 3. The university research ethics board approved this study. All participants completed a written informed consent form prior to study enrolment.

Measures

Psychiatric Diagnoses and Demographics

Participants were clinically interviewed at a university-based problem gambling research group in Ontario by a trained clinician using the SCID-P,[32] which uses DSM-IV diagnostic criteria to ascertain current mood disorders (current major depression or dysthymia) and other Axis I psychiatric diagnoses (for example, anxiety disorders or SUDs). For the purposes of our study, we confined mood disorders to major depression and dysthymia. Problem and pathological gambling status and severity were measured using the NODS.[31] Participants who endorsed 3 or 4 criteria met classification for past-year problem gambling (n = 23, 15.3%); 5 or more criteria met pathological gambling classification (n = 110, 73.3%). Seventeen participants (11.3%) were classified as nonproblem gamblers in the past year. All study participants were classified as problem (n = 11, 7.3%) or pathological gamblers (n = 139, 92.7%) in their lifetime. We also assessed lifetime gambling-related suicidal ideation and (or) attempt, lifetime problem gambling treatment, current interest in problem gambling treatment, gender, age, race, educational attainment, employment status, marital status, and annual income.

Psychological Characteristics (Personality, Impulsiveness, and Gambling Motivations)

Personality was assessed using the MPQ.[33] The MPQ is a self-report inventory with 276 items, 11 primary trait subscales, and 3 higher-order broad traits. Our study focused on the 11 primary traits, which included the following: well-being (cheerful disposition), social potency (decisive and influential in social situations), achievement (hard-working and persistent), social closeness (sociable and enjoys interacting with others), stress reaction (tense and sensitive to stress), aggression (enjoys exploiting others), alienation (believes others are out to harm them), control (cautious and plans things out in detail), harm avoidance (prefer safe activities), traditionalism (high moral standards and value societal norms), and absorption (sensitive to evocative stimuli in environment).

We examined trait impulsiveness using the UPPS Impulsive Behaviour Scale.[34,35] The UPPS is a 45-item self-report measure of impulsiveness, comprised of 4 subscales: urgency (difficulty controlling urges during unpleasant emotions), lack of premeditation (tendency to act without contemplating future consequences), lack of perseverance (inability to complete boring or difficult tasks), and sensation seeking (tendency to pursue new, thrilling, and risky experiences).

Motivations for gambling were assessed using the GMQ.[30] The GMQ is a 15-item measure that measures 3 dimensions of gambling motivations: social (gambling as a means of social connection), enhancement (gambling to increase positive emotions), and coping (gambling to offset negative emotions).

Data Analysis

All statistical tests were conducted using IBM SPSS Statistics 22 (IBM SPSS Inc, Armonk, NY). Chi-square and independent sample Student t tests were conducted to examine bivariate group differences among the following demographic variables: gender, recruitment status (community or student), age, gambling severity, race, marital status, annual income, and years of education. Student t tests were conducted to assess group differences for psychological characteristics (personality, impulsiveness, and gambling motives) by co-occurring mood disorder status. The Kruskal–Wallis test was used for (non-normally distributed) annual income.

Multivariate analyses consisted of a 2-block binary logistic regression analysis, which was conducted to examine the unique contribution of predictor variables to co-occurring mood disorder status. All predictor variables included in multivariate analyses demonstrated significance ($P < 0.05$) in bivariate analyses. Block 1 included personality, impulsiveness, and motivations for gambling variables, and block 2 included control variables (gender, recruitment status, age, and gambling severity). Partial odds ratios and 95% confidence intervals were computed for all predictor variables.

Results

Sample Demographics

Both genders were equally represented (women: n = 75, 50.0%). The sample was composed primarily of Caucasian participants (n = 117, 78.0%). Age of participants ranged from 18 to 80 years old (mean 36.3, SD 15.5). Thirty-three per cent of participants had completed some or all schooling between Grade 8 and a high school degree or equivalent, 42% had attended college, and 25% of participants had a bachelor's degree or higher. Thirty-nine per cent of participants were students, 25% were employed part-time or full-time, and the remaining participants (37%) were either unemployed, retired, or on disability. Forty-seven per cent of participants were single, 28% were married, and

25% were divorced, widowed, or separated. The median income was Can$30 000 (IQR = $43 050).

The types of gambling participants most frequently gambled on (at least once per month) during the past year were as follows: lottery tickets (n = 79, 52.7%), casino slots (n = 72, 48.0%), and scratch tickets (n = 68, 45.3%). Monthly expenditure (Can$) by gambling type was the highest for the same 3 gambling activities: casino slots (median = 50.0, IQR = 345.0), lottery tickets (median = 10.0, IQR = 40.0), and scratch tickets (median = 10.0, IQR = 20.0). In terms of treatment, 24% of participants had a current interest in receiving problem gambling treatment, and 16% of participants reported a lifetime history of treatment for gambling problems.

Gambling Severity, Current Mood Disorders, and Other Psychiatric Comorbidities

On average, participants reported 6 past-year DSM-IV pathological gambling criteria (mean 6.0, SD 2.7) on the NODS. Nineteen per cent of participants met criteria for a current co-occurring mood disorder (major depression and [or] dysthymia). Thirteen per cent of participants met criteria for current major depression, the same number of participants met criteria for dysthymia, and 7% of participants were diagnosed with double depression (that is, current major depression and dysthymia). The majority of participants (71%) had a SUD history, and 25% of participants met criteria for a current SUD. Sixty per cent of participants had a history of AUD, and 19% had a current AUD. Current co-occurring SUDs rates were as follows: alcohol dependence (10%), alcohol abuse (9%), cannabis dependence (7%), opioid dependence (3%), cocaine dependence (2%), opioid abuse (1%), and cannabis abuse (1%). No participants were diagnosed with cocaine abuse, sedative abuse or dependence, stimulus abuse or dependence, or hallucinogen abuse or dependence. Nineteen per cent of participants were diagnosed with a current anxiety disorder; generalized anxiety disorder (11%) was the most prevalent co-occurring anxiety disorder, followed by PTSD (6%), specific phobia (3%), and social anxiety disorder (3%). Other anxiety disorder diagnoses were less frequently endorsed, but included panic disorder, agoraphobia, and obsessive–compulsive disorder. Relatively few participants reported current antisocial personality disorder (n = 8, 5.3%); we did not assess other personality disorders.

Bivariate Analyses

Table 1 presents bivariate analyses for demographic, gambling severity, psychiatric comorbidities, personality, impulsiveness, and gambling motivation variables by mood disorder status. Gamblers with a co-occurring mood disorder were more likely to be female, older, recruited from the community, reported higher lifetime and past-year gambling severity, reported a greater likelihood of gambling-related suicidal ideation and (or) attempt, to have a current interest in problem gambling treatment, and were more likely to be diagnosed with a current anxiety disorder. Gamblers with a co-occurring mood disorder reported lower scores for well-being, social closeness, and control, and higher scores for alienation and stress reaction. In addition, a co-occurring mood disorder was associated with differences on 3 UPPS subscales (higher urgency, higher lack of premeditation, and lower sensation seeking), and higher motivations to gamble as a means of coping. There were no significant bivariate differences for race, marital status, employment status, annual income, or years of education. Gamblers with a current mood disorder were no more likely to have received problem gambling treatment in their lifetime, report a lifetime or current AUD or SUD, or a past anxiety disorder.

Multivariate Logistic Regression Analyses of Mood Disorder Status

Multivariate analyses were conducted to examine the unique contribution of psychological characteristics and demographic variables that were significant predictors ($P < 0.05$) of current mood disorder status in bivariate analyses. To control for type I error due to multiple comparisons, we used Bonferroni correction calculations, which adjusted the alpha required for inclusion as a predictor in the multivariate analyses to $P = 0.003$. All psychological characteristics considered for inclusion in multivariate analyses were analyzed in a correlation matrix. Well-being and stress reaction were removed from multivariate analyses owing to being highly correlated (correlation coefficients ≥ 0.40) with other variables. The 2-block binary logistic regression included (in block 1) the following: social closeness, alienation, sensation seeking, and coping motives. Demographic control variables (gender, recruitment status, age, and past-year gambling severity) were included in block 2. We did not include co-occurring anxiety disorder status (which was the only co-occurring psychiatric disorder that differed significantly in bivariate analyses) owing to overlapping etiology and symptom presentation (for example, worry or rumination and fatigue) with mood disorders.

Results of block 1 indicated that for every point of increase in alienation, and point of decrease in social closeness, participants were 17% and 18%, respectively, more likely to be diagnosed with a co-occurring mood disorder. Following inclusion of demographic control variables in block 2, higher alienation and lower social closeness scores increased the likelihood of co-occurring mood disorder diagnosis by 19% and 18%, respectively. Sensation seeking and coping motives were not significant independent variables in either block 1 or 2, and all control variables were nonsignificant in block 2. In addition, block 2 of the model correctly classified 84% of cases, explained 45% of the variation in data (Nagelkerke R^2), and demonstrated an adequate chi-square goodness-of-fit (n = 150; $\chi^2 = 4.04$, $df = 8$, $P = 0.85$ [Hosmer–Lemeshow test]) (Table 2).

Discussion

Our data highlights important conclusions regarding the influence of psychological characteristics on co-occurring mood disorders among problem and pathological gamblers. First, problem and pathological gamblers with co-occurring mood disorders were more likely to be female, older

Table 1 Bivariate differences for demographic, gambling characteristics, psychiatric, personality, impulsiveness, and gambling motivation variables by co-occurring mood disorder status

Variable	No current mood disorder *n* = 121	Current mood disorder *n* = 29	χ^2 (*df* = 1) or *t* (*df* = 148)	*P*
Gender, women, *n* (%)	54 (44.6)	21 (72.4)	χ^2 = 7.22	0.007
Recruitment status			χ^2 = 5.24	0.02
Community, *n* (%)	56.2 (68)	79.3 (23)		
Student, *n* (%)	43.8 (53)	20.7 (6)		
Age, years	34.5 (15.6)	43.6 (12.9)	*t* = 2.36	0.004
Lifetime gambling severity (NODS)	7.3 (1.9)	8.8 (1.1)	*t* = 4.20	<0.001
Past-year gambling severity (NODS)	5.7 (2.6)	7.5 (2.2)	*t* = 3.47	0.001
Gambling-related suicidal ideation or attempt, *n* (%)	10 (8.3)	11 (37.9)	χ^2 = 17.10	<0.001
Current interest in problem gambling treatment, *n* (%)	25 (20.7)	11 (37.9)	χ^2 = 3.83	0.05
Lifetime psychiatric comorbidities				
Anxiety disorder	10.4 (23)	34.5 (10)	χ^2 = 3.26	0.07
SUD	67.8 (82)	82.8 (24)	χ^2 = 2.54	0.11
AUD	58.9 (71)	65.5 (19)	χ^2 = 0.46	0.50
Current psychiatric comorbidities				
Anxiety disorder	15.7 (19)	34.5 (10)	χ^2 = 5.29	0.02
SUD	22.3 (27)	34.5 (10)	χ^2 = 1.86	0.17
AUD	17.4 (21)	27.6 (8)	χ^2 = 1.57	0.21
Personality (MPQ)				
Well-being	15.8 (5.8)	7.3 (5.1)	*t* = 7.31	<0.001
Social potency	13.1 (5.7)	10.9 (5.1)	*t* = 1.85	0.07
Achievement	12.2 (4.5)	11.1 (4.6)	*t* = 1.20	0.23
Social closeness	13.0 (4.7)	7.7 (4.2)	*t* = 5.47	<0.001
Stress reaction	12.3 (6.4)	17.7 (4.5)	*t* = 4.23	<0.001
Aggression	6.4 (4.5)	6.7 (4.2)	*t* = 0.38	0.71
Alienation	6.9 (4.8)	12.1 (5.4)	*t* = 5.14	<0.001
Control	13.9 (5.3)	11.3 (5.9)	*t* = 2.30	0.02
Harm avoidance	16.6 (5.7)	16.4 (3.9)	*t* = 0.17	0.86
Traditionalism	16.8 (4.4)	17.4 (2.9)	*t* = 0.74	0.46
Absorption	16.5 (7.5)	16.6 (6.7)	*t* = 0.04	0.97
Impulsiveness (UPPS)				
Urgency	7.4 (3.7)	9.9 (2.1)	*t* = 3.51	0.001
Lack of perseverance	3.1 (2.7)	4.2 (3.1)	*t* = 1.88	0.06
Lack of premeditation	3.4 (3.4)	4.9 (3.6)	*t* = 2.16	0.03
Sensation seeking	7.6 (3.4)	5.4 (3.4)	*t* = 3.24	0.001
Gambling motives (GMQ)				
Social	10.5 (3.6)	9.9 (3.2)	*t* = 0.79	0.43
Coping	10.8 (4.0)	13.8 (4.8)	*t* = 3.47	0.001
Enhancement	14.5 (3.8)	14.0 (4.5)	*t* = 0.67	0.51

All values reported are means and standard deviations unless otherwise noted.

AUD = alcohol use disorder; GMQ = Gambling Motives Questionnaire; MPQ = Multidimensional Personality Questionnaire; NODS = National Opinion Research Center DSM Screen for Gambling Problems; SUD = substance use disorder; UPPS = Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking

Table 2 Multivariate logistic regression with and without control variables using personality, impulsiveness, and gambling motivation variables explaining co-occurring mood disorder status

Predictor variable	β	Standard error	Wald χ^2 (*df* = 1)	*P*	OR	95% CI
Without control variables						
Alienation	0.16	0.05	9.1	0.003	1.17	1.06 to 1.30
Social closeness	–0.16	0.06	8.5	0.004	1.18	1.05 to 1.32
Sensation seeking	–0.14	0.08	3.3	0.07	1.15	0.99 to 1.35
Coping motives	0.07	0.06	1.46	0.23	1.08	0.96 to 1.21
With control variables						
Alienation	0.17	0.06	8.82	0.003	1.19	1.06 to 1.33
Social closeness	–0.17	0.06	7.93	0.005	1.18	1.05 to 1.33
Sensation seeking	–0.04	0.09	0.23	0.63	1.04	0.88 to 1.24
Coping motives	0.04	0.07	0.35	0.55	1.04	0.91 to 1.20
Age	0.03	0.02	2.09	0.15	1.03	0.99 to 1.08
PY gambling severity	0.17	0.13	1.7	0.19	1.18	0.92 to 1.53
Sex	0.75	0.6	1.56	0.21	2.11	0.65 to 6.82
Community or student	0.81	0.8	1.03	0.31	2.24	0.47 to 10.67

All variables were significant predictors ($P < 0.05$) of co-occurring mood disorder status in bivariate analyses.

PY = past-year; student was coded as the reference for recruitment status

(relation became nonsignificant when controlling for recruitment status), and reported higher lifetime and past-year gambling severity scores. These findings build on prior research that has highlighted increased vulnerability to depression among females.[10,11] Twenty-eight per cent of female participants in our sample had a current co-occurring mood disorder, which was almost 3-fold the rate of male participants (11%). Participants with a co-occurring mood disorder reported lifetime gambling-related suicidal ideation or attempt nearly 5-fold as frequently as those without a co-occurring mood disorder, highlighting an even greater vulnerability to suicide among a population (problem and pathological gamblers) already at high risk.[15,16]

Our study is the first to examine the independent and relative influence of psychological characteristics on co-occurring mood disorder status among problem and pathological gamblers. Our findings indicate that personality variables are the most robustly associated characteristics to an increased vulnerability for co-occurring mood disorders. Not surprisingly, a less cheerful and optimistic personality (well-being) was the characteristic most strongly associated with a greater likelihood to be diagnosed with a current mood disorder in bivariate analyses; however, as well-being was highly correlated with numerous other predictors, the variable was removed from multivariate analyses. When examining the relative contribution of psychological characteristics on co-occurring mood disorder status, we found that as participants reported lower scores for being sociable and interacting with others (social closeness), and higher scores for thinking that others were out to harm or exploit them (alienation), the more likely participants were to experience a co-occurring mood disorder. Note, both of these personality facets highlight likely impairments to schemas and behaviours related to social and interpersonal connectedness, factors associated with depression in nongambling populations.[36,37] Also note, it is possible that reports for psychological characteristics (for example, coping motives) were influenced by the depressive mood state of gamblers with co-occurring mood disorders. However, both personality (MPQ[33]) and trait impulsiveness (UPPS[34]) measures have shown stability, especially by adulthood,[38–40] and are reliable trait-based measures that protect against state-dependent reporting biases.

People with co-occurring mood disorders reported differences for all 3 of the psychological characteristics measured: personality, trait impulsiveness, and gambling motivations. Past studies have investigated differences in these characteristics among problem and pathological gamblers[26,28,29]; our project represents the first explicit comparison of differences in problem and pathological gamblers with and without co-occurring mood disorders. These findings demonstrate that problem and pathological gamblers with mood disorders report differences on numerous personality measures, which adds to previous research demonstrating a relation between personality differences and mood disorder vulnerability in nongambling populations.[41] Our findings also build on prior work demonstrating an association between mood disorder and higher levels of gambling severity[12] and a greater likelihood for a current anxiety disorder.[21] We did not find a relation between current or lifetime diagnoses of AUDs or SUDs with current co-occurring mood disorders, although we previously identified higher rates of current mood disorders among problem and pathological gamblers when examining differences in alcohol dependence specifically (not collapsing alcohol abuse or dependence as AUDs).[18] Taken together, our study highlights problem and pathological gamblers with co-occurring mood disorders

as most emblematic of the emotionally vulnerable problem gambler.[27,42] Last, our sample of community-recruited problem gamblers, independent of mood disorder status, reported relatively high rates for co-occurring psychiatric disorders, compared with the general population. These rates demonstrate that recruitment status (community and clinical) alone may not well differentiate the levels of psychiatric impairment experienced by problem gamblers.

Our study was not without limitations. Notably, this was cross-sectional research; therefore, we could not fully control for all potential unexamined variables. We also did not examine the time sequence of mood and gambling disorder onset as our gambling severity measure (NODS) assessed time points of gambling behaviour (age of first gambling and age of regular gambling) and disorder status for past-year and lifetime. Future research using prospective data can examine psychological characteristics at baseline to distinguish which factors promote risk for co-occurring mood disorder development among problem gamblers, and whether these factors differentially influence the onset of mood and gambling disorders (when assessing gambling disorder onset). It is also possible that unexamined variables (for example, socioeconomic status, stress, and social support) may have influenced the relation between gambling and mood disorders. However, we feel the reliability of our personality variable findings is strengthened by our multivariate analyses, in which significant demographic variables contribute relatively less than personality variables to current mood disorders. We used different modalities to assess gambling severity (self-report) and co-occurring psychiatric disorders (clinician-administered interview). However, we felt that using the NODS,[31] the most widely used and validated gambling severity measure,[43] enhanced reliability, compared with using an adapted section of the clinical interview (SCID[32]). The number of participants with a current mood disorder was relatively small (n = 29); however, we felt using a current diagnosis was a more reliable outcome to examine than a current or lifetime mood disorder status (n = 77) that could increase recall bias. Last, our project relied on members recruited from the community and local universities. Despite this potential limitation, we feel our project translates well to the disciplines of clinical psychology and psychiatry as all of our participants met criteria for a lifetime diagnosis of problem gambling, 93% met criteria for lifetime diagnosis of pathological gambling, and 89% met criteria for past-year problem or pathological gambling.

Conclusions

In summary, these findings highlight the relations between psychological characteristics and current co-occurring mood disorder among problem and pathological gamblers. To date, the field of disordered gambling has given attention to the influence of psychological characteristics as risk factors for gambling disorder and higher levels of gambling severity, but our study represents the first examination of the influence of these factors to co-occurring mood disorders among this population. In addition, our project is the first to examine the relative contribution of personality, impulsiveness, and gambling motives on co-occurring mood disorder status among problem and pathological gamblers.

Our findings highlight the predictive role that facets of personality have in vulnerability to current co-occurring mood disorders. It is recommended that clinicians treating problem and pathological gamblers with mood disorders be mindful of obstacles that may result from particular personality factors (for example, impairments in interpersonal relationships owing to schemas related to alienation and social connectedness) and consider incorporating elements of empirically supported treatments (for example, interpersonal therapy,[44] short-term psychodynamic therapy,[45] and cognitive-behavioural therapy[46]) that work on changing schemas and representations of self and others. Future research should examine whether behaviours and (or) maladaptive consequences in the interpersonal domain mediate the relation between personality and co-occurring mood disorders among problem and pathological gamblers. It is also recommended that mental health workers (psychiatrists, clinical psychologists, and social workers) understand the differential influence that personality type, impulsiveness, and gambling motivations have on the likelihood of a current co-occurring mood disorder among problem and pathological gamblers. Clinicians treating problem and pathological gamblers with co-occurring mood disorders may enhance the therapeutic process by tailoring treatment protocols to address particular facets of personality (schemas related to feeling alienated and [or] socially disconnected), behaviours (urgent impulsiveness when in a negative mood state), and motivations (gambling to cope with negative moods) that are associated with increased vulnerability to co-occurring mood disorders among this population.

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