Making a living online: Problem gambling and workaholism in high earning online Texas hold'em poker players

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Abstract

The skill component of Texas hold'em online poker (THOP) adds a unique element to the assessment of risk for problem gambling (PG). The current study examined whether PG among a high earning subgroup of THOP players was analogous to workaholism. Participants were self-selected online poker players ($N = 31$), and results revealed that participants played an average of 30.5 hours per week, and had an average annual online poker earning of CAD 29 995. Furthermore, 32% of the sample gambled problematically according to the PGSI. In accordance with previous findings, PG was uniquely predicted by time played and stress. However, PG in this subset of THOP players was associated with an external locus of control. Contrary to expectations, the personality variable of neuroticism was unrelated to PG and workaholism. Furthermore, workaholism was unrelated to any variables in the model, and no significant relationship emerged between workaholism and PG.

Résumé

Les habiletés requises pour s'adonner au jeu en ligne Texas Hold'em Online Poker (THOP) ajoutent un élément inédit à l'évaluation du risque associé aux problèmes de jeu. Nous avons cherché à déterminer s'il était possible d'établir une analogie entre le jeu problématique chez un groupe de joueurs de THOP qui remportent gros et l'ergomanie. L'échantillon (n=31) était composé de participants volontaires. Les résultats montrent que ceux-ci consacrent en moyenne 30,5 heures par semaine au jeu en ligne et que leurs gains annuels moyens s'élèvent à CAD 29 995. Par ailleurs, 32 % d'entre eux se classaient dans la catégorie des joueurs compulsifs suivant l'IGJC. D'après des résultats antécédents, le temps passé à jouer et le degré de stress seraient les seuls facteurs de prédiction du jeu problématique. Chez le groupe de joueurs de THOP, toutefois, les problèmes de jeu sont associés à un locus de contrôle externe. Contrairement à nos attentes, la variable du névrosisme n'était pas

associée aux problèmes de jeu et à l'ergomanie. De plus, aucun lien n'a été relevé entre l'ergomanie et les autres variables du modèle; aucun lien significatif n'est ressorti entre l'ergomanie et le jeu problématique.

Introduction

The worldwide play of online Texas Hold'em Poker (THOP) in the last decade raises concerns about the possibility of increased problem gambling rates in online poker players. However, the skill component of THOP may add a unique element to the assessment of risk of problem gambling in THOP players, in contrast to video lottery terminal players and players of other games solely based on chance (Bjerg, 2010; Hopley & Nicki, 2010). Hopley and Nicki (2010) reasoned that major differences exist between THOP players and other types of gamblers, and suggested that the Problem Gambling Severity Index (PGSI) (Ferris & Wynne, 2001) and other measures of problem gambling may not validly predict problem gambling in this demographic. In a direct comparison of professional and pathological gamblers, the latter score higher on problem gambling screeners, impulsivity, mental health symptomatology and Axis I diagnoses, and lower in quality of life, self-esteem, perceived social support, gambling self-efficacy, and past-90-day gambling frequency (Weinstock, Massura, & Petry, 2013). Consequently, the measurement of problem gambling among THOP players who either earn a living or supplement their income with winnings might better be reconceptualised to consider this fact: The motivational basis for excessive play by THOP players pertains more to work than to entertainment.

Hopley and Nicki (2010) investigated the association between variables regularly linked to problem gambling in general (i.e., impulsivity, boredom proneness, negative emotions, and dissociation) and problem gambling in online poker players. The authors found that hours played per week, dissociation, boredom proneness, impulsivity, and negative emotionality were all predictive of problem gambling among online poker players, as defined by the PGSI. Furthermore, the amount of hours spent playing THOP was significantly and positively correlated with PGSI scores. Noteworthy was the finding that on average, participants reported having won rather than lost money. Specifically, 34% of the sample made a living or supplemented their income with their online poker earnings. With respect to other kinds of gambling activity, such as blackjack, this outcome would be a rare one.

The findings of Hopley and Nicki (2010) were replicated and extended by Hopley, Dempsey, and Nicki (2012), who asserted that, because of the skill component of THOP, poker players differed from other types of gamblers. Furthermore, they proposed that certain questions of the current PGSI may not be applicable to this skilled and high-earning subset of the THOP population. For example, the question "thinking about the past 12 months, how often have you gone back another day to

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try to win back the money you lost?'' may not be relevant to poker players who earn a living or supplement their income with their online poker winnings, since the nature of their work requires them to continue playing to earn a living. This viewpoint is supported by the Orford, Wardle, Griffiths, Sproston, and Erens' study (2010), which revealed that the presence of the question pertaining to chasing the gambler's losses in both the PGSI and the Diagnostic and Statistical Manual Fourth Edition (DSM-IV) lowered the internal consistency of these measures. Therefore, the PGSI may incorrectly categorize this specific high-earning population as problem gamblers because of the nature of certain questions.

In the current study, we adopted a different approach to this issue, and investigated whether problem gambling among this specific population was analogous to workaholism. That is, poker players who consider online poker playing as a job that provides their primary or secondary source of income may have a different relationship to playing poker than people who play solely for enjoyment. Accordingly, THOP players who devote significant hours to online play may be better characterized as being overly absorbed in work. This argument is supported by the findings of Weinstock and colleagues (2013) who noted that professional gamblers had increased frequency of gambling in the previous 90 days compared to problem gamblers. For those players who use THOP as employment, playing for greater amount of hours might well be associated with increased earnings, similar to working increased hours. At the same time, because the high-earning population of THOP players spend many hours playing THOP, they would presumably be more prone to the development of problem gambling. Thus, the adoption of a complementary approach to the assessment of problem gambling in this special population is warranted, an approach that involves a consideration of how the construct of workaholism applies to THOP players.

Workaholism refers to the widely acknowledged phenomenon occurring when an individual becomes overly involved in work life, has difficulty disengaging from work, and continually thinks about work. As a result, other significant life aspects tend to suffer, such as relationships (Griffiths, 2005). However, workaholism is not associated with financial strain, much in the same way excessive online poker play may be linked to increased financial reward. This definition also relates to a number of diagnostic items of pathological gambling of the DSM-IV criteria: (A1) the individual demonstrates a preoccupation with gambling; (A3) the individual has repeated unsuccessful efforts to control, cut back, or stop gambling; (A7) the individual lies to family members, therapist or other persons to conceal the extent of involvement with gambling; and, finally, (A9) the individual has jeopardized or lost a significant relationship, job, educational, or career opportunity because of gambling (American Psychiatric Association, 2000). For a detailed comparison between problem gambling and workaholism, see Table 1.

Workaholism is typically conceptualized from a trait theory perspective. This viewpoint maintains that workaholic behaviour develops and progresses from stable

Table 1
Construct comparison between problem gambling and workaholism

Attribute	Construct	
	Problem Gambling	Workaholism
Time	Spend a lot of time devoted to gambling-related activities[1,2,3]	Spend a lot of time in work-related activities[4,5]
Salience	Preoccupation and cognitive distortions[1]	Preoccupation and cognitive distortions[4,5]
Cravings	Inability to control, cut back, or stop gambling[1]	Cravings to work[4,5]
Mood modification	Arousal or dissociation that is reinforcing[1,2,3]	Arousal or dissociation that is reinforcing[4,5]
Tolerance	Needs to gamble with increasing amounts to achieve mood modification[1]	Increased hours of work required to achieve mood modification[4,5]
Withdrawal	Restlessness or irritability when unable to gamble[1]	Unpleasant feelings/physical effects (e.g., shakes, moodiness, irritability if unable to work)[4,5]
Conflicts	Jeopardized or lost a relationship, job, educational or career opportunity due to gambling[1]	Interpersonal conflict or a work-life conflict with other activities as a consequence of neglect[4,5]
Relapse	Course of pathological gambling tends to be chronic[1]	Tendency to return to early patterns of excessive work after a period of control[4,5]
Illness	Prone to developing stress related illness (e.g., hypertension, migraines, ulcers)[1]	Prone to stress related illnesses, chronic fatigue and anxiety[4]
Concealment	Lying to others to conceal gambling involvement[1]	Workaholism is socially acceptable and less frequently hidden, in fact it can be praised or expected[4]
Chasing	Chasing to recuperate financial losses[1]	Not associated with financial loss—chasing does not occur
Illegal acts	Committing illegal acts to finance gambling[1]	Not associated with financial loss—illegal acts are not required
Reliance	Relying on others to relieve a desperate financial situation[1]	Not associated with financial loss—reliance on others is unnecessary

personality traits, as well as internal and external stressors, and is maintained by reinforcement (Burke, Matthiesen, & Pallesen, 2006; Griffiths, 2005). In addition, the personality variable of neuroticism may predispose individuals to workaholic behaviour by increasing the likelihood of experiencing negative emotional states, such as anxiety, anger, guilt and depressed mood (Burke et al., 2006; Myrseth, Pallesen, Molde, Johnsen, & Lorvik, 2009). Consistent with this viewpoint, stress was found by Spence and Robbins (1992) to be linked to workaholism, and also was found to be uniquely predictive of problem gambling by Hopley and colleagues (2012). The latter finding was consistent with earlier reports, by Coman, Burrows, and Evans (1997), of an association between negative mood states such as

depression, anxiety, and stress and the development and maintenance of problem gambling.

Spence and Robbins (1992) proposed the existence of three dimensions of workaholism: Work Involvement (WI), Enjoyment (E), and Drive (D) (McMillan, Brady, O'Driscoll, & Marsh, 2002). The WI dimension consists of the level of psychological involvement with work. As individuals high in workaholism can enjoy and be satisfied with their work, the E dimension pertains to the level of pleasure with work. Lastly, the D dimension refers to the degree of intrinsic personal ambition—that is, an internal demand rather than an external pressure to work and succeed. Burke and colleagues (2006) conducted a study examining the association between the Big Five personality factors (neuroticism, extraversion, conscientious-ness, agreeableness, openness) and the three components of workaholism. They found a significant relationship between neuroticism, extraversion, and conscien-tiousness, and the three workaholism components. In addition, Spence and Robbins (1992) found a moderate positive correlation between hours worked and overall workaholism levels, a finding comparable to the findings of Hopley and colleagues (2012) and Hopley and Nicki (2010), and which indicated that problem gambling was uniquely predicted by time played. Therefore, spending more time playing THOP may increase both the risk of workaholism and problem gambling in this population. However, the converse remains possible, as high levels of workaholism may also engender an increased risk of playing excessive amounts of online poker. Longitudinal research is lacking, and therefore, directionality has yet to be determined.

Finally, locus of control (LOC) refers to an individual's perception about the underlying causes leading to an outcome (Duttweiler, 1984; Rotter, 1954). High internal LOC involves the perception of personal control over the outcome, whereas high external LOC involves the perception that the outcome is dependent on external causes, such as fate, luck, or powerful others (Duttweiler, 1984; Rotter, 1954). Hopley and colleagues (2012) found that internal LOC was a unique predictor of problem gambling among THOP players: people classified as problem gamblers had greater internal LOC. This finding was supported by Lester's (1980) report that individuals with a high external LOC tend to play games of luck more frequently rather than games of skill, such as poker. With regard to THOP, a high internal LOC should foster the perception of greater control over the outcome of the game in skilled players.

This study aimed to examine whether problem gambling among people who earn a living or supplement their income with their online poker winnings was analogous to workaholism. Therefore, we investigated the relationship between the current PGSI (Ferris & Wynne, 2001) and Spence and Robbins' (1992) Work-BAT (Workaholism Battery). It was hypothesized that there would be a positive correlation between these two criterion variables, with high scores on the PGSI relating to high scores on the Work-BAT. Furthermore, an exploration of the relationship between stress,

neuroticism, and locus of control, with respect to the PGSI and the Work-BAT, was undertaken using a canonical correlation analysis in one model. We hypothesized that high scores among all of the three variables—stress, neuroticism, and LOC— would be related to high scores in both the PGSI and the Work-BAT.

Method

Participants

Participants were self-selected THOP players with average annual online poker earnings of at least $10,000 who were recruited from poker forums and advertising on social networking sites (all dollar figures in this article are presented as Canadian dollars). A total of 102 participants (80 males, 5 females, 17 undisclosed) started the survey; after screening, 31 male participants completed the entire survey and provided usable data. Participants were screened out if they were multivariate outliers, the questionnaires were unscorable, or they dropped out. The mean age of the screened sample was 28.77 (19–53, $SD = 8.81$). Participants primarily identified as being Caucasian (64.5%) or other (25.8%), and fewer participants identified as African-American (3.2%), Latino (3.2%), and bi- or multi-racial (3.2%). Approximately 39% of the sample supported themselves solely with THOP and 19% reported supplementing their incomes with their earnings. The highest 40% of the screened sample earned between $25,000–120,000; the middle 20% earned between $18,000–25,000; and the lowest 40% earned under $18,000 in net yearly income.

Materials

The online survey was hosted by SurveyMonkey (http://www.surveymonkey.com), a third party surveyor, and one which employs multiple layers of security, layers that maintain the privacy and security of data. The survey consisted of a general demographics questionnaire that included questions pertaining to age, sex, race and education, followed by a gambling demographics questionnaire that contained questions relating to the amount of hours spent playing poker in a typical week, multi-tabling (amount of games played at once), and yearly net profit. Specifically, participants were asked "on average, how much real money do you wager on Texas Hold'em poker in one day?" and "since starting to play Texas Hold'em poker, approximately what is your yearly net profit or net loss?" The criterion used to capture the specific high earning population was a cut-off value of players who earned at least $10,000 annually. This cut-off was chosen because Hopley & Nicki (2010) and Hopley and colleagues (2012) had discovered that $10,000 represented earnings at the 60th and 70th percentiles respectively. Furthermore, the aforementioned studies noted that THOP players report playing as a primary source or supplement to their income. A cut-off of $10,000 is roughly equivalent to yearly part-time work at minimum wage, and when paired with part-time income would

place the player above the Canadian after-tax low income cut-off rate (i.e., poverty line), according to Statistics Canada, for a one person family.

Depression Anxiety Stress Scales (DASS). The negative emotional symptom of stress was assessed using the stress subscale of the DASS (Lovibond & Lovibond, 1995). Overall, the DASS possesses strong discriminant and convergent validity, distinguishing between the three negative emotional syndromes, which supports the use of this subscale (Lovibond & Lovibond, 1995). Research reveals that the DASS is reliable and valid for use in an online format (Zlomke, 2009). The stress subscale of the DASS has been found to have very good internal consistency ($\alpha = .94$) (Zlomke, 2009). A Cronbach's Alpha value of .95 was found in the current study. Previous research has identified that the test-retest reliability of the online format across a six week period was adequate ($r = .57$–$.67$) (Zlomke, 2009). Furthermore, the means and standard deviations for the online administered DASS were not significantly different from the results of the paper-and-pencil form (Zlomke, 2009). The 14-item stress subscale of the DASS has participants rate themselves on a 4-point scale from "did not apply to me at all" to "applied to me very much, or most of the time." The scores on the stress subscale range from 0 to 42, with high scores reflecting more stress and low scores indicating less stress.

Internal Control Index (ICI). LOC was assessed using Duttweiler's (1984) ICI. The ICI has good reliability and convergent validity (Duttweiler, 1984; Goodman & Waters, 1987). It also enjoys good internal reliability ($\alpha = .84$) (Duttweiler, 1984). In this study, a Cronbach's Alpha value of .83 was found, a value that is a good level of internal consistency. The 28-item ICI has participants rate themselves on a 5-point scale from "rarely" to "usual," where half of the items are reversed scored. The scores on the ICI range from 28 to 140, with high scores indicating a higher internal LOC and low scores reflecting an external LOC.

Revised NEO Personality Inventory (NEO-PI-R). Neuroticism was assessed using the neuroticism subscale of Costa and McCrae's (1992) NEO-PI-R. The domains of the NEO-PI-R have shown good internal consistency ($\alpha = .88$–$.92$) (Gaughan, Miller, Pryor, & Lynam, 2009). Furthermore, the NEO-PI-R has demonstrated both convergent and discriminant validity across multiple empirical examinations (Costa & McCrae, 1992; Morey et al., 2002). However, in this study, a low Cronbach's Alpha value ($\alpha = .41$) was found for the neuroticism subscale; therefore, results pertaining to neuroticism herein must be interpreted with caution. The 20-item neuroticism subscale has participants rate themselves on a 5-point scale from "very inaccurate" to "very accurate." Scores on the neuroticism subscale range from 20 to 100, with high scores indicating a higher tendency towards emotional instability.

Workaholism Battery (Work-BAT). Workaholism was assessed using Spence and Robbins' (1992) Work-BAT. Spence and Robbins (1992) found that the Work-BAT contained face validity, adequate to good internal consistency ($\alpha = .67$–$.86$),

and adequate convergent validity. The WI component has been found to have good internal consistency ($\alpha = .80$) (McMillan et al., 2002). The E domain also has shown evidence of having high internal consistency ($\alpha = .85$) (McMillan et al., 2002). The D subscale has yielded acceptable internal consistency ($\alpha = .74$; Spence & Robbins, 1992). In this study, a Cronbach's Alpha value of $\alpha = .85$ was found for the Work-BAT. The 25-item Work-BAT has participants rate themselves on a 5-point scale from "very untrue of me" to "very true of me." Scores on the Work-BAT range from 25 to 125. High scores indicate a higher tendency to display workaholic behaviours.

Problem Gambling Severity Index (PGSI). Finally, gambling severity was assessed using the PGSI subsection of the Canadian Problem Gambling Index (Ferris & Wynne, 2001). The PGSI has shown evidence of high internal consistency ($\alpha = .90$), internal reliability, unidimensionality, and good item-response characteristics (Abbott & Volberg, 2006; Hopley et al., 2012). A Cronbach's Alpha value of $\alpha = .88$ was found in this study. The PGSI and DSM-IV measures of problem gambling are strongly correlated and distinguishes problem gamblers from non-problem gamblers to a reasonable extent ($r = .65$) (Ferris & Wynne, 2001). The 9-item PGSI has participants rate themselves on a 4-point scale from "never" to "almost always." A total score of zero indicates a non-problem gambler, total scores of one and two show a low risk for problem gambling, total scores of three to seven points towards moderate risk, and total scores eight and above reflect problem gambling (Ferris & Wynne, 2001).

Procedure

Individuals who viewed the online advertisement were offered a chance to win one of four $50 prizes. A random number generator was then used to select four participant ID numbers, who were then contacted by electronic mail and their inducements were transferred via Paypal. Once individuals clicked on the link, they were brought to the consent form outlining the nature of the study, the confidential and anonymous nature of their responses, and their right to withdraw. Participants then completed a demographics questionnaire, followed by a gambling demographics questionnaire. Participants then proceeded to complete the questionnaires measuring the variables of interest in the study; the order of the questionnaires was randomized. In total, participants answered 103 questions, a process which took approximately 30–45 minutes to complete.

Results

Data Screening

Prior to the analysis, the data were conditioned to meet the assumptions of regression. The assumption of normality was met, as skewness and kurtosis were absent. Furthermore, missing value analysis indicated that the overall pattern of

missing data corresponded to the pattern: missing completely at random (MCAR), as Little's MCAR Test was non-significant ($\chi^2 = 0.00$; $df = 1136$, $p > .05$). Therefore, listwise deletion was used to eliminate participants with incomplete data, as missing values were not dependent on any measured variables. One multivariate outlier was removed from the original sample, and no univariate outliers were found with regard to questionnaire scores.

Gambling and Workaholism Demographics

Participants reported a variety of hours played per week with minimum amount of 5 hours and a maximum amount of 70 hours ($M = 30.55$; $SD = 15.90$). The question relating to multi-tabling revealed that participants played from one to 17 games at one time ($M = 5.00$; $SD = 3.75$). Average annual online poker earning ranged from a minimum profit of $10,000 to a maximum profit of $120,000 with a median value of $22,000 ($M = 29,994.85$; $SD = 23,936.84$). PGSI scores varied from 0 to 21 ($M = 6.10$; $SD = 5.34$). Based on PGSI scores, 9.68% of the participants were non-problem gamblers; 22.58% were low-risk gamblers; 35.48% were moderate-risk gamblers, and 32.26% of the sample consisted of problem gamblers. Finally, total Work-BAT scores varied from a minimum score of 55 to a maximum score of 112 ($M = 82.29$; $SD = 15.01$). While no cut-off scores were proposed to distinguish workaholics from non-workaholics, participants in this study reported moderate-high elevations in workaholism levels.

Pearson Correlations

Pearson correlations were calculated for all pairs of variables. Moderate negative correlations were found between neuroticism and time spent playing online poker ($r = -.40$, $p < .05$), LOC and stress ($r = -.43$, $p < .05$), and PGSI scores and LOC ($r = -.56$, $p < .05$). PGSI scores were moderately positively correlated with stress ($r = .56$, $p < .01$), and time spent playing THOP ($r = .42$, $p < .05$). Workaholism was not significantly correlated with time spent playing online poker. Furthermore, workaholism and problem gambling were not significantly correlated. Problem gambling was not significantly correlated with the Drive subscale of the Work-BAT.

Linear Combinations

To examine the predictors of problematic gambling and their relationship to both problem gambling and workaholism, a canonical correlation analysis was conducted with two canonical variable sets. Canonical variate X consisted of PGSI total score and Work-BAT total score, whereas Canonical variate Y was made up of weekly hours played, DASS stress scores, ICI total score, and Neuroticism total score. This analysis determined which combination of predictors best related to problem gambling and workaholism through a linear combination of weighted measures (see Figure 1).

Figure 1. Canonical model representing the optimal linear combination of variables and their degree of overlap
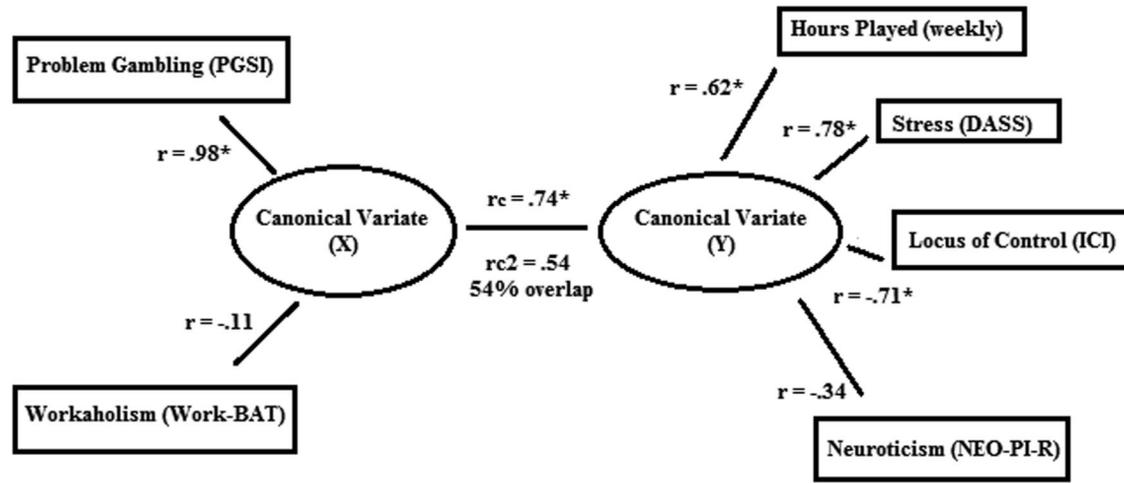
The Wilks multivariate test was significant (*Wilks* $\lambda = .37$, $F(8,50) = 3.92$, $p < .01$) with an overall effect size of $R^2 = .62$. Of two possible canonical correlations, only one was significant, $r_c = .74$ (54% overlapping variance). The relationship between dependent variables and Canonical variate X was strong for problem gambling scores ($r = .98$) and weak for workaholism scores ($r = -.11$). The relationship between predictors and Canonical variate Y was moderate for hours played ($r = .62$) and neuroticism ($r = -.34$) strong for stress ($r = .78$) and locus of control scores ($r = -.71$). The dependent variables account for 26.44% of the variance in Canonical variate X, whereas the predictors accounted for 21.75% of the variance in Canonical variate Y. The canonical function (i.e., the pair of canonical variates) consisted of a positive relationship between time played and stress, and a negative relationship between LOC and problem gambling scores, indicating that an external LOC was predictive of problem gambling in this subsample of THOP players. Both workaholism and neuroticism made only minimal contributions to the model.

Discussion

In this study, we investigated an alternative viewpoint of playing THOP involving workaholism in addition to problem gambling among THOP players who earned a living or supplemented their income with their online poker winnings. This was a novel step towards a greater understanding of problem gambling in this population. The relationship between the PGSI and the Work-BAT was examined. It was hypothesized that there would be a positive correlation between these two variables, with high scores on the PGSI relating to high scores on the Work-BAT. The respective relationships of three variables—stress, neuroticism, and LOC to the PGSI and the Work-BAT—were assessed. In accordance with the findings of Hopley and colleagues (2012), it was expected that stress and internal locus of

control would be significant predictors of problem gambling. Furthermore, we expected that scores among all of the three variables (locus of control, stress, and neuroticism) would significantly overlap with the canonical variate pertaining to the combined PGSI and Work-BAT.

The results of the current study partially replicated the findings of Hopley and colleagues (2012), in that we found that hours spent playing online poker, stress, and LOC were significant predictors of problem gambling. However, the personality variable of neuroticism was not found to significantly predict problem gambling as hypothesized. Furthermore, none of the variables were significant predictors of workaholism, contrary to expectations; nor did workaholism load onto the canonical variate with problem gambling. While LOC was related to problem gambling, a strong negative correlation was found. Therefore, among high earning online THOP players, an external LOC was predictive of problem gambling, contrary to the findings of Hopley and colleagues (2012).

In the current study, a large number of the participants were identified as problem gamblers (32.25% of the sample). This is approximately twice the amount that was found in both Hopley and Nicki (2010) and Hopley and colleagues (2012) studies. In this study, because our target population was high-earning THOP players, this finding reinforces our concerns about the validity of the PGSI as an assessment of problem gambling among this demographic. Alternatively, this may indicate that high earning THOP players are at increased risk for the development of problem gambling, when compared with casual players. At the same time, the findings of this study do not support the use of the Work-BAT as a measure of problem playing of THOP gamblers.

Time spent playing online poker was found to be a significant predictor of problem gambling in accord with Hopley and colleagues' (2012) findings; however, time was not related to workaholism in the canonical model. The former result supports previous research, a finding which suggests that the ease of access to online games may increase the opportunity to play. This increase may lead to greater risk for problem gambling (Hopley et al., 2012). Because Spence and Robbins (1992) found a moderate positive correlation between hours worked and Work-BAT scale scores, we expected that time spent playing online poker would be a significant predictor of workaholism. However, the results did not support this hypothesis, and indicate instead that an increased amount of hours playing THOP leads to problem gambling but not workaholism.

When the effect of stress was analyzed in relation to problem gambling and workaholism, it was found to be strongly related only to problem gambling, which replicated Hopley and colleagues' (2012) findings. This correspondence is consistent with research by Coman and colleagues (1997), who found that individuals use gambling as a way to reduce stress that is caused by other unpleasant emotional states, and the association between these variables hypothesized in this study. On the

other hand, Spence and Robbins (1992) found a link between stress and workaholism, one which was consistent with our hypothesis, but not supported by our findings. Therefore, the relationship between stress and problem gambling in THOP gamblers may be fundamentally different from the relationship between stress and workaholism in THOP gamblers.

LOC was found to be a significant predictor of problem gambling, but in the direction opposite to our expectations, and contrary to the findings of Hopley and colleagues (2012). That is, an external LOC was related to higher scores on the PGSI. Previous research has linked LOC to problem gambling, in that problem gamblers develop illusory perceptions of control over the outcome, and, as a result, develop an internal LOC (Carroll & Huxley, 1994). However, this explanation would not be applicable to THOP players, who differ from other types of gamblers because of the presence of a skill component in THOP, one where perceptions of control may indeed reflect reality. Therefore, it seems reasonable to expect that feelings of control would occur in situations where skillful players are controlling the games and consistently winning, and that losses would be attributed by them as chance-outcome events. Furthermore, among highly-skilled players, loss of this perception of control may reflect or precipitate movement towards problem gambling. Conversely, less skilled players may increase their vulnerability to problem gambling by possessing a strong internal locus of control (Hopley et al., 2012). A relationship between LOC and workaholism was not found. This would suggest that LOC is not a variable linked to workaholism, and that variations in LOC do not have an effect on workaholic behaviour, or vice versa.

The personality variable of neuroticism did not contribute to the canonical variates, and was unrelated to problem gambling and workaholism, contrary to hypotheses. Our hypothesis was partly based on Burke, and colleagues' (2006) findings that there was a significant relationship between neuroticism, extraversion, and conscientiousness, and the three workaholism components. Neuroticism, in particular, was positively related to feeling driven to work (Burke et al., 2006). However, in testing for this effect, we did not find any significant results. In regard to problem gambling, Myrseth and colleagues (2009) and Bagby and colleagues (2007) found the neuroticism was significantly related to problem gambling. In the current study, however, a moderate negative correlation was found between neuroticism and time spent playing online poker; therefore, neuroticism increased while time spent playing online poker decreased or vice versa. Unfortunately, conclusions about the relationship between neuroticism and both problem gambling and workaholism cannot be drawn because of the weak psychometric properties of the NEO-PI-R used in this study; therefore, replication is necessary.

The current study possessed several limitations that must be acknowledged. First, there was a large discrepancy between our target sample size of 100 participants and our obtained sample size of 31 participants, a discrepancy which reduced the statistical power of the study. Furthermore, the self-report nature of the

questionnaires limits the validity of the responses as response biases (e.g., social desirability, deception) may have influenced the nature of the responses. Moreover, although we had a large number of participants who initially began the survey, relatively few participants completed it; therefore, the sample may be biased and, consequently, the generalization of the findings is correspondingly reduced. This possibility may in turn indicate a limitation of our measures, and suggests that briefer measures should be adopted for future research. In addition, the entirety of participants in the study were male; therefore, the findings cannot be generalized to female THOP players. As noted above, the very low internal consistency found for the NEO-PI-R prevented conclusions to be drawn surrounding that measure, and this level of consistency may explain why we were unable to identify any significant relationships with the theoretically relevant variable or neuroticism. Lastly, as noted earlier, certain questions on the PGSI may not be appropriate, and may not predict with validity problem gambling in those THOP players who earn a living or supplement their income with their online poker winnings.

Although there are concerns with the validity of the PGSI, workaholism was found to be unrelated to problem gambling and, therefore, not a meaningful construct for triangulating problem gambling. The current study was the first to propose the possible connection between problem gambling among THOP players who earn a living or supplement their income with their winnings, and workaholism. The absence of any significant findings with regard to workaholism could be attributed to the small sample size, or that the two variables, problem gambling and workaholism, measure very different constructs, ones which may not in fact complement each other. In addition, to target the higher earning population of THOP players, we used a cut-off rate of $10,000 average annual online poker earnings. However, the use of this cut-off rate may have been too arbitrary, and may not have been the optimal way of recruiting participants who consider THOP as a primary source of income. A possible alternative approach to overcoming this issue would have been to use a screening test to capture a more detailed representation of the participants' work situation relating to poker, and to gain more information about their poker earnings. Furthermore, it may be beneficial to compare scores on the Work-BAT between THOP players and people in different occupations who work for a similar amount of hours and have approximately the same income. Such a project would allow us to identify if workaholism could, in fact, be applicable to THOP as a work occupation, and also control for certain extraneous variables.

As suggested by Hopley and colleagues (2012), a longitudinal study further investigating the development and maintenance of stress would help overcome the issue of causality. Furthermore, as mentioned above, high internal LOC feelings may be appropriate in this successful sample, and future investigations to explain this discrepancy between the current study and those of Hopley and colleagues (2012) are warranted. Future research should investigate this relationship among losing players, as well as the relationship between LOC and skill in THOP players. The pursuit of these questions would be consistent with the recommendation by

Bjerg (2010) that distinctions should be made among losing, break-even, and winning players to understand more fully problem gambling in poker players. With respect to the personality variable of neuroticism, it would be beneficial to examine other personality traits and dimensions suggested to be linked to problem gambling, such as openness and conscientiousness, with questionnaires that have stronger psychometric properties. Finally, time played has consistently emerged as a behavioural predictor of online problem gambling; therefore, gambling frequency and time played could be used to identify problematic gambling patterns and separate these from professional play, furthering the findings of Weinstock and colleagues (2013). Behavioural data centering on amount wagered or net income (i.e., regular versus high stakes online play), initially examined in this study, should be replicated with regard to differentiating between problem gamblers and normative play.

In brief, this study partially replicated the findings of Hopley and colleagues (2012) because it found that stress and time spent playing online poker were significant predictors of problem gambling; however, an external LOC was also strongly related to problem gambling. Furthermore, this study attempted to adopt a unique approach in the assessment of problem gambling among high earning THOP players, from a workaholism perspective. Consequently, we found that the two constructs were not related; therefore, workaholism is likely not an appropriate alternative or complementary measure of problem gambling. The results of this study, however, may further initiate the development of a valid measure of problem gambling among THOP players who earn a living or supplement their income with their online poker winnings.

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