

**Gambling as stress recovery? A new perspective on the stress – gambling relationship**

**By**

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**A Thesis Submitted to  
Saint Mary's University, Halifax, Nova Scotia  
in Partial Fulfillment of the Requirements for  
the Degree of Msc in Applied Psychology**

**June, 2011, Halifax, Nova Scotia**

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*Your file* *Votre référence*  
ISBN: 978-0-494-80938-9  
*Our file* *Notre référence*  
ISBN: 978-0-494-80938-9

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## **Acknowledgements**

I would like to acknowledge several individuals who have been integral to the successful completion of my M.Sc. thesis. Most importantly, I would like to thank my supervisor, Dr. E. Kevin Kelloway for his dedication to this research and his guidance throughout the entire process. In addition, I would like to thank my thesis committee members, Dr. Steven Smith and Dr. Sonya Stevens as well as my external examiner Dr. Catherine Loughlin for their insight and valuable feedback.

I would also like to thank Gambling Awareness Nova Scotia for their generous financial support. This research project would not have been possible without it.

## Gambling as stress recovery?

A new perspective on the stress – gambling relationship

By:

**Luc R. Bourgeois**

**Abstract:** This study examined the relationship between a work stressor (i.e., job demands) and gambling activity, as well as the moderating role of gambling activity in the relationship between job demands and short-term strain. Principal components analysis showed that gambling activities form three components: gambling – skill, gambling – chance, and playing the lottery. Results showed that relations did exist between job demands and gambling – chance but not gambling – skill. Moderation analysis showed that partaking in gambling activity, regardless of the activity, is related to lower levels of short-term strain in the face of increased job demands. In addition, recovery experiences had a significant positive relationship with gambling – skill and with gambling – chance. Altogether, the study suggests that the work environment (e.g., job demands) is related to employee gambling behaviour and that gambling is related to lower levels of employee strain in the short term.

June 24, 2011.



## Gambling as Stress Recovery?

### A New Perspective on the Stress – Gambling Relationship

Gambling, defined as placing a wager on the outcome of an uncertain event, is undoubtedly a popular form of entertainment among the adult population of Nova Scotia. Recent statistics published by the Nova Scotia Department of Health Promotion and Protection (Nova Scotia Adult Gambling Prevalence Study, 2007) indicate that a high percentage of adults gamble regularly in some shape or form. For example, 94% of adults surveyed had gambled at least once in their lifetime, with 87% having gambled in the past year. In addition, 53.6% of adults surveyed were considered regular gamblers (i.e., gambling once a month or more) while 33.6% reported gambling, on average, once a week or more. In 2007, \$1.5 billion had been wagered with gross revenues exceeding \$369 million in Nova Scotia.

In view of the popularity of gambling, developing a better understanding of the drivers behind an individual's motivation to gamble is important. Many biological, psychosocial, and individual correlates of gambling have been identified; however, a clear picture of why an individual decides to gamble has not yet been achieved. In an effort to extend research in this area, the main goal of the current research is to explore the relationships between workplace demands, gambling, and short-term strain. Specifically, the direct relationship between job demands and gambling frequency as well as the moderating role of gambling in the relation between job demands and short-term strain is investigated.

Job demands are stressors that may place increased strain on workers, meaning that an individual's ability to recover from job demands is crucial to avoid or negate strain symptoms. It is well known that individuals partake in gambling activities for a variety of reasons including to escape from the reality of their everyday life (Wood & Griffiths, 2007). Therefore, job demands may prompt an individual to escape those demands by gambling. Escaping from everyday life, including the workplace, by gambling could be an individual's attempt to negate the impact of these stressors. In this context, the suggestion that individuals gamble to reduce or recover from stress is an interesting, and previously unexplored, possibility with far reaching implications for the prevention of problem gambling.

### **Negative Consequences of Gambling**

Gambling can have negative consequences on individuals when they risk their money on these activities. For example, gambling has been found to negatively impact problem gamblers' physical and mental health (Productivity Commission, 1999). Financial difficulties may arise such as bankruptcies, unaffordable loans, or criminal acts to obtain money (Ladouceur et al., 1994). These financial hardships and actions can negatively impact the community through criminal victimization and loan defaults (Productivity Commission, 1999). Problem gamblers' interpersonal relationships may be damaged through domestic violence, relationship breakdowns, and neglect of family (Lorenz & Shuttlesworth, 1983). Problem gamblers' family members may suffer negative physical and mental health impacts including serious psychosocial problems in children

such as substance abuse, delinquency, depression, and suicide (Lorenz & Yaffee, 1988). Problem gambling is also purportedly related to negative workplace outcomes such as lowered on-the-job productivity and increased absenteeism (Collins & Lapsley, 2003), an increase in employee theft and other counterproductive workplace behaviours (Ladouceur et al., 1994), fatigue, lowered morale and occupational risk for other employees (Paul & Townsend, 1998).

Studies on the negative consequences associated with gambling, as well as most studies focusing on gambling, evaluate problem or pathological gamblers. While these studies are crucial to the understanding of problem gambling, they do not focus on why adults who are considered recreational or non-problem gamblers gamble. As noted above, there is a large proportion of adults who gamble on a regular basis but only a small portion of those qualify as “problem” gamblers. Recent estimates of the percentage of problem gamblers vary from 0.6% in the UK, 1.1% to 1.9% in the USA, 2.3% in Australia (Wardle et al., 2007), and 2.5% in Nova Scotia (Nova Scotia Adult Gambling Prevalence Study, 2007). Therefore, by only focusing on problem or pathological gamblers, the majority of individuals who gamble are being ignored.

Pathological gambling is used as a clinical term and is defined as “a progressive and chronic disorder that encompasses an unrelenting failure to resist impulses to gamble and where this maladaptive behaviour disrupts, or damages personal, family, or vocational pursuits” (American Psychiatric Association, 1994, p. 615). Problem gambling is used to define someone whose gambling is at an earlier stage and to a lesser degree

than required by the diagnostic criteria for pathological gambling (Raylu & Oei, 2002). Problem gambling can be identified through gambling questionnaires such as the Canadian Problem Gambling Index (CPGI) or the South Oaks Gambling Screen (SOGS). These problem gambling measures have cut-off points separating problem gamblers and non-problem gamblers. For example, a respondent who obtains a score of 8 or more out of a possible 27 on the CPGI is classified as a problem gambler (Ferris & Wynne, 2001). Regular non-problem gambling can be characterized as an individual who gambles regularly yet does not meet the aforementioned problem gambling cut-off points. Finally, recreational or social gamblers are individuals who gamble but not on a regular basis.

As previously mentioned, the vast majority of gambling research has focused on problem gamblers. It is true that problem gamblers have greater levels of negative consequences than non-problem gamblers; however, Australian researchers have recently indicated that non-problem gamblers face similar, albeit less extreme, consequences (Productivity Commission, 2010). For example, the most immediate source of harm to gamblers is excess spending. Furthermore, excess spending is thought to be primarily resulting from control problems and false cognitions (Productivity Commission, 2010). Control problems arise when an individual gambles more and for longer periods of time than they had originally intended. False cognitions (e.g., illusion of control) are beliefs that they are due for a win or that they can beat the game. Thus, they either continue or increase their wagering due to these erroneous beliefs. These sources of harm have traditionally been attributed solely to problem gamblers (Raylu & Oei, 2002). However, these are also possible concerns for recreational and non-problem gamblers. For example,

in a questionnaire representative of the Australian adult population, 2% of recreational gamblers, 53.2% of non-problem (yet regular) gamblers, and 74.7% of problem gamblers reported gambling after reaching their self-imposed limit (Productivity Commission, 2010). It is clear that problem gamblers are most at risk; however, there are far fewer of them than individuals who fall in the recreational or non-problem categories. To put these numbers into perspective, the share of the entire gambling population accounted for by these groups were 91%, 8.4%, and 0.5%, respectively. While 74.7% of the problem gamblers had difficulty ending their gambling session, this equated to only .37% of the entire gambling population. Conversely, while only 2% of recreational gamblers had difficulty ending their gambling session, this equated to 1.82% of the entire gambling population. Similar results are found when considering false beliefs (Productivity Commission, 2010). These statistics demonstrate the importance of conducting research on all gamblers in an effort to identify gambling antecedents, processes, and consequences of individuals who fall in any of the gambling “categories”.

### **Positive Consequences of Gambling**

The focus of the current study is to examine gamblers who can be classified as recreational or non-problem gamblers. Despite the negative consequences associated with gambling, it has been conceptualized as having both negative and positive consequences, the latter being primarily present for recreational gamblers (Back, Lee, & Stinchfield, 2010). While the vast majority of research is focused on the negative consequences associated with problem or pathological gambling, there is indeed evidence of positive

outcomes associated with recreational gambling (fulfilling psychological needs; Loro, 2004; increased self-esteem; Platz & Millar, 2001).

The distinction between recreational and problem gambling is often conceptualized as a difference in motivation, antecedents, outcomes, and consequences associated with gambling itself (Back, Lee, & Stinchfield, 2010). For example, a recreational gambler will differ from a problem gambler by gambling for different reasons, deriving different feelings from gambling, and experiencing different psychological consequences. In a general sense, gamblers of all categories report gambling for fun, excitement, winning, the thrill of risk, socializing with others, escaping daily routines, and autonomy (among others; Productivity Commission, 2010; Platz & Millar, 2001). However, recreational gamblers report higher levels of gambling for excitement, being with friends, being with similar people, and observing others than problem gamblers (Platz & Millar, 2001). A study of non-problem senior gamblers found that gambling fulfilled psychological needs (Loro, 2004). For example, gambling was identified as a means for which seniors can retain command over personal goals and life experiences. Through experiences of leaving the home, making and maintaining social contacts, and fantasizing about winning, gambling provides the opportunity to escape from reality. While reality may be filled with physical and emotional constraints, gambling allows seniors to be released from inhibition and worries which often results in increased self-esteem (Platz & Millar, 2001).

The complex and seemingly contradictory consequences of gambling for non-problem gamblers exemplify the challenges researchers and policy-makers face. On one hand, gambling may lead to unwanted negative physiological, psychological, and emotional consequences yet on the other hand; gambling can provide fun, excitement, and an escape from daily routines all within the same category of individuals.

### **Transition from Recreational to Problem Gambling**

Little is known about the determinants that influence the progression from recreational/non-problem gambling to problem gambling. Prospective studies on the topic demonstrate the difficulty in identifying these determinants (Clarke et al., 2006). In New Zealand, very few non-problem gamblers subsequently developed gambling problems at a seven year follow up. In addition, the majority of individuals identified as problem gamblers no longer met the criteria seven years later (Abbott et al., 2004). In Ontario, Canada, individuals classified as at-risk gamblers were gambling less during a one year follow up, whereas individuals with severe gambling problems did not have much variation in their gambling behaviour (Wiebe et al., 2003). The complex and potentially progressive relationship between recreational and problem gambling is not well understood and continued efforts are needed to address the issue.

## **Stress as an Antecedent of Gambling**

Stress as an antecedent of gambling is an emerging area of research that has provided fruitful results. Researchers have identified that stressful life events are associated with greater gambling involvement and severity (Bergevin et al., 2006) and the development of gambling problems (Coman, Burrows, & Evans, 1997). However, the stress-gambling relationship remains largely unexplored.

## **Conceptualization of Stress**

The current research is meant to expand upon existing knowledge of the stress-gambling relationship by focusing on everyday workplace stressors. Common workplace stressors include: job demands, job insecurity, and lack of job control. Workplace stressors have been identified as having a negative impact on physiological and psychological health (Warr, 2005). These common and potentially chronic stressors are present to some extent in the lives of most working adults, and managing these stressors is crucial in order for an individual to avoid experiencing both physiological and psychological strain symptoms.

Work stress can be conceptualized by the job demands-resources model (Demerouti et al., 2001). The job demands-resources model posits that environmental factors associated with the workplace can be classified into two general categories; namely, job demands and job resources. *Job demands* refer to physical, psychological, social, or organizational aspects of a job that require continuous effort and have an



impact on physical and psychological health. When managing these demands requires high effort, they become job stressors. *Job resources*, on the other hand, refer to physical, psychological, social or organizational aspects of the job that offer a protective function against the physical and psychological costs associated with job demands (Bakker & Demerouti, 2007).

When job demands outweigh job resources the body reacts by developing unwanted strain symptoms. These symptoms can initially appear as emotional exhaustion, irritability, tiredness, or a depressive state (Kelloway & Day, 2005). With the advent of increased demands outside of the workplace (e.g., childcare, eldercare) in combination with the increased reliance on technology to complete work tasks outside of normal working hours, individuals may not have time available to properly recover from the stressors experienced during the workday. Consequently, short-term and immediate strain symptoms can develop into serious physiological and psychological problems.

Stressful events, in the majority of existing gambling research, are characterized as events in one's life that negatively affect that person (Raylu & Oei, 2002). Stress is typically measured in one of two ways 1) using scales that question participants about major life events (e.g., the death of a parent, Lightsey & Hulsey, 2002; the end of a romantic relationship, Bergevin et al., 2006); or 2) a question asking participants to assess the amount of daily stress in their lives (Afifi et al., 2010). The first of these measurement strategies, while identifying potentially traumatic and stressful events, are identifying events that are generally few and far between. The second measurement strategy, being

broad in nature, does not allow for the detailed investigation of stress from a specific source. Stressors that are associated with the workplace are largely ignored within gambling research. An individual who works full-time may have regularly occurring stressors (e.g., chronic stressors) that inflict a detrimental toll on his/her health. Therefore, it is appropriate to investigate the work stress-gambling relationship in an effort to provide added clarity and specificity to our understanding of the stress-gambling relationship.

### **Recovery Experiences**

The stress recovery literature is used as a backdrop for the present study. Recovery, in this context, refers to the reversal of the strain process as a result of experiences while one is away from work. As proposed in the job demands-resources model, when faced with demands in the workplace workers are psychologically taxed which may lead to strain symptoms. Recovery is a process whereby recovering or unwinding from work replenishes resources used up by stressors (Sonnentag & Fritz, 2007). It is not the activities themselves that allow for recovery but rather the experience underlying those activities. For example, watching television and going for a walk are two different activities that may be used to recover from work but they both provide relaxing experiences.

Originally, four recovery experiences were identified, namely: psychological detachment, relaxation, mastery experiences, and control during leisure time (Sonnetttag & Fritz, 2007). Psychological detachment refers to disengaging oneself mentally from

work. Detachment goes beyond being physically absent from work, it means not thinking about work or anything related to the workplace. Relaxation refers to the process associated with leisurely activities. Relaxation is often characterized as a state of low activation and increased positive affect (e.g., reading, going for a walk; Stone et al., 1995). Mastery experiences refer to challenging oneself, either physically or mentally, by performing non-work related activities (e.g., climbing a mountain, learning a new language). Finally, control during leisure time refers to the extent that an individual has the ability to choose actions performed during leisure time as well as how to perform these activities (Sonnentag & Fritz, 2007).

The recovery construct, as defined above, while useful is narrow in scope. Recent research has expanded the recovery construct to include experiencing social affiliation, physical activity, fun/humour, and hope/optimism (Stevens, 2010). Social affiliation refers to socializing and affiliating with others. Social affiliation is characterized as any social activity undertaken with friends or family. Physical activity refers to activities that involve high physical activation, such as exercising or participating in sporting events. The experience of fun/humour refers to any activity that an individual finds pleasurable. Pleasure is characterized as the aspect of an activity that one finds amusing and humorous. Finally, hope/optimism refers to having a sense of optimism and hope. Hope/optimism is characterized as the cognitive process of believing that current or future activity will lead to positive outcomes.

### **Recovery Experiences in Relation to Gambling Activities**

Gambling is often conceptualized as a singular activity. That is to say, researchers often generalize from one form of gambling (e.g., VLT's) to all other possible activities associated with gambling (e.g., table games, sports betting). Generalizing from one form of gambling to another could lead to gross misidentification of the antecedents and consequences associated with each activity (Raylu & Oei, 2002). For example, playing the lottery and playing card games at the casino are two very different activities; they have differing consequences, and are likely performed for different reasons. The current research acknowledges these differences and conceptualizes the different activities as providing differing experiences. I argue that individuals encounter stressors during the workday and gamble during off-work time to recover depleted resources.

Activities normally associated with gambling are wide ranging and I propose that individuals will engage in one or more of these activities in an effort to recover from work stress. Evidence of gambling providing recovery experiences can be found in existing research. For example, sport- or horse-race bettors are often challenging themselves in an effort to successfully predict outcomes (Wood & Griffiths, 2007). The knowledge that is gained and the strategy used to win can be referred to as mastery experiences. Gambling is also reported as providing an escape from reality (Loroz, 2004) which may provide recovery in the form of psychological detachment. An example of VLT machines used as psychological detachment was provided by a participant in Wood & Griffiths' (2007) qualitative study: "Gambling is a great fill in for making you forget

about everything that is maybe going on in your life...Where you can put the blinkers on, focus on a \*VLT\*, just forget about everything". Gambling is also reported as providing individuals command over personal life goals (Loroz, 2004) which may provide recovery in the form of control during leisure time. Friedland, Keinan, & Isreal (1992) report that elevated levels of stress can influence activity selection based on perceived controllability, indicating that the desire for control over activities is associated with elevated levels of stress. Gambling is also commonly reported as providing social interaction (Wood & Griffiths, 2007; Platz & Millar, 2001) which may provide recovery in the form of social affiliation.

The idea that gambling provides a sense of relief from stress is not new; however, it has not been framed in these terms. To reiterate, focusing on recreational gamblers as subjects, previous studies have found that gambling can have psychological benefits such as enhancing one's self-concept and self-esteem (Loroz, 2004). Gambling is also reported as providing persons with social interaction (Lee et al., 2006), challenge (Cotte, 1997), pleasure (Jang et al., 2000), and excitement (Platz & Millar, 2001). Therefore, I propose that individuals report experiencing recovery when they gamble.

### **The Current Study**

The current study extends research on individual stress and gambling behaviours in four ways. First, existing research indicates that some types of gambling are much more strongly associated with problem gambling than others (Abbott & Volberg, 2000; Productivity Commission, 1999). These results have recently prompted some researchers

to consider different forms of gambling separately. A number of conceptual frameworks have been developed to group together gambling activities that possess common attributes and differentiate them from other forms (Clarke et al., 2006). Gambling researchers that have adopted these conceptual frameworks have traditionally used the skill/luck dimensions or some sort of event frequency dimensions to group activities together. However, to my knowledge, no studies have empirically verified the acceptability of utilizing these conceptual frameworks. The present study will extend existing research by conducting a Principal Components Analysis on the gambling activity data in an effort to empirically verify that gambling activities do in fact group together as separate components, leading to the first hypothesis:

*Hypothesis 1.* Gambling activities will cluster into two components. The components will be characterized as a skill-based and a chance-based component.

Second, the present study extends previous research by investigating whether individuals report experiencing recovery experiences while gambling. Past research has conceptualized gambling as a means of coping with stress; however, as implied above, evidence suggests that conceptualizing the process as recovering from stress may be more appropriate. Conceptualizing the mechanism underlying the stress-gambling relationship as recovery experience allows for a detailed account of how separate gambling activities serve as distinct recovery experiences. It is proposed that individuals will experience differing recovery experiences depending on which gambling activity that they may participate in, leading to the second hypothesis:

*Hypothesis 2.* There will be a positive relationship between the gambling components and recovery experiences. Specifically, games of skill gambling will have a strong positive relationship with mastery and control while games of chance gambling will have a strong positive relationship with psychological detachment and relaxation.

Third, this study explores the relationship of a workplace stressor, namely, job demands and gambling frequency. Existing research has not explored the relationship between work stress and gambling behaviour. The prominent role that work plays in the lives of most adults signifies the importance of investigating its relationship with gambling. General life stress or stressful moments have been identified as being related to gambling behaviours; however, simply investigating stress in a general manner provides an incomplete picture of the mechanisms underlying this relationship. Stress may come from a variety of sources and those sources must be individually investigated in order to fully understand how stress relates to gambling. Furthermore, extending previous research that has found that general life stress is related to an individual's decision to partake in gambling activities, to the specific proposition that work stress may have the same relationship will provide clarity and allow for increased theoretical accuracy as to the motivators of gambling. Regarding the selection of the particular stressor, job demands are explored in this study because they are mentioned as one of the most common sources of work stress by employees (MacDonald, 2003) and they are consistently found to be related to poor emotional and psychological health (Kelloway & Day, 2005; MacDonald, 2003; Siltaoppi, Kinnunen, & Feldt, 2009). To reiterate, the

present study is, in part, meant to explore the relationship between job demands and gambling behaviour which led to the third hypothesis:

*Hypothesis 3.* Job demands are positively related to the frequency of participating in both skill-based and chance-based gambling components.

Finally, existing research has identified that gambling can lead to positive outcomes for individuals who gamble (i.e., primarily recreational gamblers). The present study extends past research by investigating the buffering effects of gambling on worker's short-term strain (i.e., need for recovery) in the presence of elevated job demands. In terms of the job demands-resources model of stress, need for recovery represents an indicator of the health impairment process. Elevated levels of need for recovery can be seen as a consequence of lack of recovery, that is, in those cases, recovery experiences have not occurred (Siltaoppi, Kinnunen, & Feldt, 2009). It is proposed that gambling moderates the job demands – strain relationship. In other words, non-problem gambler's level of need for recovery stemming from job demands will change as a function of the amount that they gamble, leading to the fourth hypothesis:

*Hypothesis 4.* Participation in gambling activities will moderate the job demands-strain relationship. Specifically, higher frequency gambling will be associated with reduced levels of short-term strain serving as a buffer to job demands.



## **Method**

### **Study Design**

The 200 study participants took part in a telephone survey. This telephone survey was administered by a marketing research firm and conducted by four trained interviewers. The population from which the study participants were sampled included Nova Scotia adults whose household had a working telephone number. Respondents were required to be of legal age to gamble (19 years of age), employed full-time (32 hours or more per week), and have gambled at least twice over the past year. Telephone numbers were called to screen for a working household number, determine eligibility of the household (i.e., to ensure that it is a residential household and that it is occupied by one or more adults), and select an eligible respondent. Of all selected eligible individuals, 19% participated in the study. Before being interviewed, informed consent was obtained from all participants by being read a detailed and standardized informed consent form and agreeing to participate. Participants, if willing, were placed in a draw for a \$250 Visa Gift Card for their time.

### **Respondent Characteristics**

Of the participants, 58% were female and 90% were Caucasian. The average age of the participants was 41.8 years with a standard deviation of 12.56. In terms of highest level of education, 6.5% had not graduated high school; 19% graduated high school or obtained a GED; 20.5% attended trade, technical or vocational training beyond high

school; 46% had some university education or graduated with a bachelor's degree or university certificate; 7% had some graduate school experience or graduated with a master's or doctoral-level degree; and 1% refused to provide educational information. Only three out of the 200 respondents were identified as problem gamblers. Of those, two scored 8/27 and the other 9/27 on the Canadian Problem Gambling Index. These low scores indicate that the most problematic gamblers in the sample barely "qualify" as problem gamblers, scoring the lowest possible qualifying score (i.e., 8/27). Consequently all 200 participants were included in the analyses<sup>1</sup>.

## Measures

**Recovery experiences.** Recovery experiences were assessed with the Recovery Experiences Questionnaire (Sonnentag & Fritz, 2007). The items assess the extent to which individuals unwind and recuperate from work during leisure time. The scale introduction (i.e., question stem) was changed to ensure that participants responded to the items with respect to their time spent gambling (i.e., "while engaging in gambling activities...") and not for leisure time in general. Specifically, psychological detachment (four items), relaxation (three items), mastery experiences (four items), and control during leisure time (four items) are assessed. Each item is rated on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Example questions include: "I use the time to relax" (relaxation), "I seek out intellectual challenges" (mastery), "I distance

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<sup>1</sup> The analyses were re-run without these respondents to ensure that they did not skew the results. All regression results remained the same without the three respondents who were categorized as problem gamblers.

myself from my work” (psychological detachment), and “I decide my own schedule” (control). One item is removed from the original relaxation scale (i.e., I kick back and relax) based on previous research (Siltaloppi, Kinnunen, & Feldt, 2009). Additionally, a fifth scale, social affiliation was included based on previous research (Stevens, 2010). Example items include “I spent time with people I care about” and “I socialized with others”. Internal consistency (Cronbach’s alpha) was .76 for psychological detachment, .87 for relaxation, .80 for mastery, .77 for control, and .91 for social affiliation.

**Job demands.** Job demands were assessed with the Job Content Questionnaire (Karasek, 1985). The original version’s job demands component was used which contains five items measuring job demands at work. The items include “my job requires working very hard”, “my job requires working very fast”, “I am not asked to do an excessive amount of work”, “I have enough time to get the job done”, and “I am free from conflicting demands others make”. Each item was rated on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). Internal consistency for the job demands scale was .61. The low Cronbach’s alpha coefficient for the job demands scale was expected. The observed internal reliability coefficients in six major international studies ranged from .51 to .72 with a mean alpha of .63 (Karasek et al., 1998). In an effort to obtain proper content validity while maintaining a concise measure of job demands, concessions can be made for a borderline internal reliability coefficient.

**Strain.** To assess the short-term effects of a typical workday, nine items from the Need for Recovery Scale was used (Sluiter, Van der Beek, & Frings-Dresen, 1999). All items used focused on the time spent after the working day (e.g., “By the end of the working day, I feel really worn out”, “I find it difficult to concentrate in my free time after work”). The items were rated on a 4-point scale ranging from 1 (never) to 4 (always) in which higher scores reflect higher need for recovery. Internal consistency was .89.

**Gambling activity and frequency.** Gambling activities and frequencies were assessed using activities identified on the South Oaks Gambling Screen (SOGS). The SOGS is primarily used to identify potential problem gambling and is scored on a 1-20 scale. However, only the first question was utilized which asks if and how often respondents partake in various gambling activities. The ten activities identified were “played cards for money”, “bet on horses, dogs, or other animals”, “bet on sports”, “played dice games, including craps, over and under or other dice games”, “went to casinos”, “played the numbers or bet on lotteries”, “played bingo”, “played slot machines, poker machines, or other gambling machines”, “bowled, shot pool, played golf, or some other game of skill for money”, and “played pull tabs or “paper” games other than lotteries”. The response scale used for each of these activities consisted of a 7-point frequency response scale: 0 (never), 1 (less than once per year), 2 (1 to 3 times per year), 3 (4 to 5 times per year), 4 (1 to 3 times per month), 5 (once per week), and 6 (more than once per week).

**Problem gambling.** Problem gambling was assessed with a section of the Canadian Problem Gambling Index (CPGI). The section utilized was aimed at identifying respondents who would be classified as problem gamblers. Problem gambling is identified with nine items scored on a 4-point scale (i.e., 0 – never to 3 – almost always). Example items include “when you gambled, did you go back another day to try to win back the money you lost?” and “have you borrowed money or sold anything to get money to gamble?” Internal consistency was .78.

**Control variables.** In the analyses, control variables included gender (0 = female, 1 = male), age (in years), and education (categories ranging from “1 – less than high school” to “5 – doctoral or post-doctoral degree”). These variables have been shown to be significantly related to gambling behaviour (e.g., Johansson et al., 2009; Raylu & Oei, 2002).

### **Data Analysis**

The gambling frequency data were heavily zero-inflated. All ten activities, apart from playing the lottery, were only performed by a minority of participants (see Table 1 for percentages of respondents who reported never participating in the activity and those who reported weekly participation). Given the small sample size and zero-inflated distributions present in the gambling frequency measure, it was necessary to use various regression techniques in an effort to ensure statistical validity. Treating the gambling data as continuous poses a number of problems; however, it allows for the effective interpretation of existing relationships including interactions between variables. Of

primary concern is the non-normal nature of the gambling data distributions. A fundamental assumption of linear regression using ordinary least squared estimation is that each variable must have a normal distribution. The gambling data is zero-inflated because respondents were included whether they participated in a particular gambling activity or not, resulting in a majority of “0 – never” responses for each factor. There are two alternatives available for such distributions. Negative Binomial Regression may be used if the data are treated as count data (Long, 1997) and Ordinal Probit Regression may be used if the data are treated as discrete ordinal data (Long, 1997). Therefore, analysis was conducted using all three techniques to determine if comparable results would be found, consequently justifying the use of multiple linear regressions.

In light of the above information, in order to test hypothesis 3, hierarchical multiple regression analyses were performed for each dependent variable (i.e., skill-based and chance-based gambling component). The following procedures were utilized: the demographic variables (gender, age, and education) were entered at step 1 to control for their effects and the job demands variable was entered at step 2. Negative binomial regressions and ordinal probit regressions were performed using the generalized linear models function available on the Statistical Package for the Social Sciences (SPSS) program. For these analyses, all of the variables were entered on one step with the demographic variables entered as covariates. Testing hypothesis 4, the Mplus statistical modeling program was used to investigate moderation effects.

Table 1.

*Percentages Reported for Each Category in the Gambling Frequency Data*

Activity	Never played	Less than once per year	1 to 3 times per year	4 to 5 times per year	1 to 3 times per month	Once per week	More than once per week
Playing card games for money	75.5%	2%	9.5%	3%	7%	2%	1%
Betting on horses, dogs, or other animals	98%	0%	1.5%	0%	0%	0%	.5%
Betting on sports	83%	2%	6%	3%	3%	2%	1%
Playing dice games	97.5%	0%	2.5%	0%	0%	0%	0%
Casino gambling	65.5%	5.5%	23%	3.5%	2.5%	0%	0%
Playing bingo	85.5%	2%	6.5%	2%	2.5%	1%	.5%
Playing video lottery terminals	74%	3%	15.5%	1.5%	4.5%	.5%	1%
Playing skill games for money	90%	1%	2.5%	2.5%	2.5%	1.5%	0%
Playing pull tabs and scratch tickets	74%	1%	8.5%	5.5%	9%	.5%	1.5%
Playing the lottery	5%	1%	11.5%	16.5%	28.5%	28.5%	9%

## Results

### Gambling Activities Component Structure

In order to address hypothesis 1, a principal components analysis was conducted on the data obtained with the gambling frequency measure. Principal components analysis was needed in order to identify commonalities among the gambling activities included in the overall measure of gambling frequency. This particular method of extraction was chosen because of the exploratory nature of the current study and the relatively small sample size. Principal components analysis is best suited for pure data reduction and to provide a descriptive account of the current data (Meyers, Gamst, & Guarino, 2006). The gambling frequency measure included ten activities; however, the activities “betting on horses, dogs or other animals” and “playing dice games, including craps, over and under, or other dice games” were only performed by four and five respondents, respectively. Consequently, these activities were removed from further consideration.

The initial principal components analysis was conducted using direct oblimin rotation in order to identify eigenvalues over 1 and to determine if the components were correlated. Three components had eigenvalues over 1 which accounted for 59% of the variance. Intercorrelations among components ranged from  $-.15$  to  $.12$  indicating that they are not sufficiently correlated to justify the oblimin rotation method. The minimally correlated components suggested that varimax rotation is appropriate (Meyers, Gamst, & Guarino, 2006). Repeating the process with varimax rotation, consideration of the initial



eigenvalues (i.e., three over 1) and the scree plot (see Figure 1) suggested a three, four, or five component solution. The component structures of all three were examined in order to determine the best fitting solution.

The three-component solution accounted for 59% of the variance and communalities were all high apart from “played pull tabs or other paper games other than lottery” (.179). The rotated components matrix indicated that two activities loaded above .33 on two separate components. The four-component solution accounted for 71% of the variance; however, multiple activities cross-loaded within the components. The five-factor solution accounted for 81% of the variance; however, similar cross-loading problems arose. All of the solutions had one common problematic activity: “going to the casino”. Due to the multitude of activities possible at a casino it was deemed appropriate to disregard this activity as it appears that its contribution is limited.

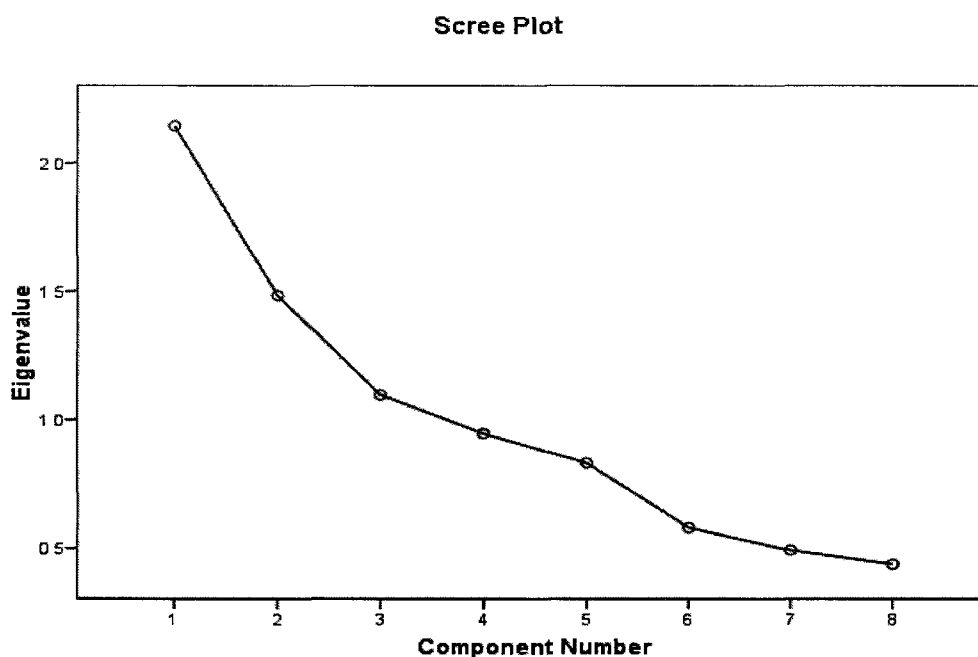


Figure 1. Initial Scree Plot for the Principles Components Analysis of gambling activities

The three-component solution provided the most interpretable solution and was re-analyzed without “going to the casino”. The solution was greatly improved accounting for 61% of the variance with communalities ranging from .36 to .86. The scree plot was relatively neutral yet demonstrating the acceptability of maintaining a three-factor solution (see Figure 2).

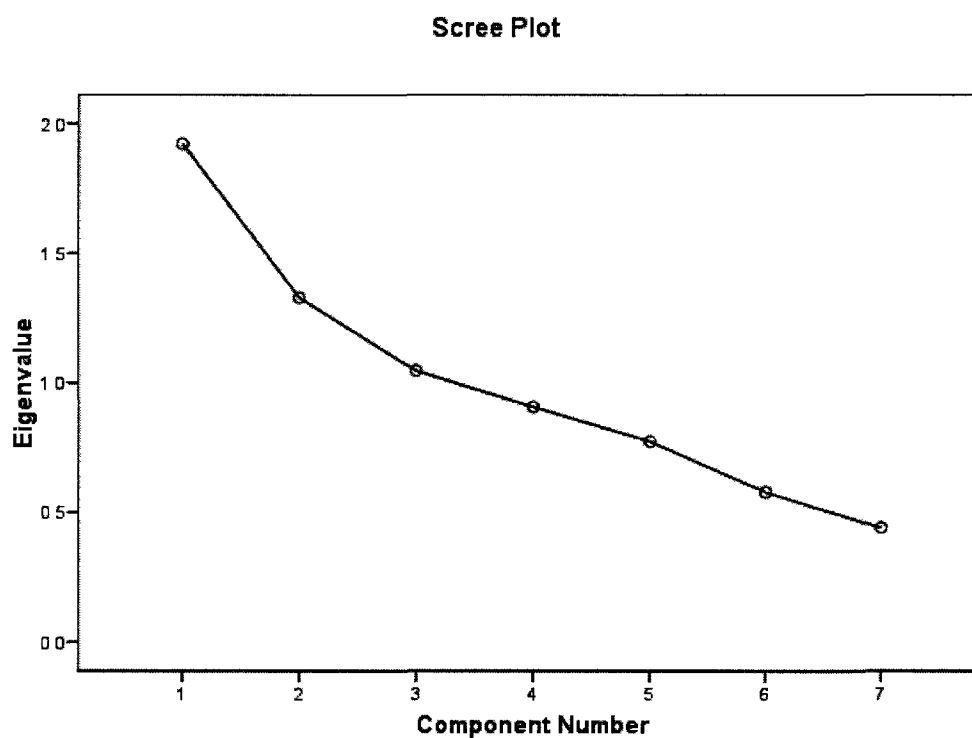
The three-component solution comprised: 1) *a skill gambling component*<sup>2</sup>: playing card games for money (e.g., poker), betting on sports, and skill games for money (e.g., golf, bowling); 2) *a chance gambling component*<sup>3</sup>: slot machines, poker machines,

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<sup>2</sup> Component will be referred to as “gambling-skill” in the remainder of this article

<sup>3</sup> Component will be referred to as “gambling-chance” in the remainder of this article

or other gambling machines, bingo, and pull tabs or paper games other than lottery (e.g., scratch tickets); and 3) *playing the lottery* (see Table 2 for item loadings and communalities). Due to the third component (i.e., playing the lottery) being a singlet and the fundamental differences between playing the lottery and other activities (e.g., less time consuming), further analyses will not include playing the lottery.



*Figure 2.* Scree Plot for the Principles Components Analysis with seven gambling activities

Table 2.

*Communalities and Rotated Components Matrix for Gambling Activities (N = 200).*

Component					
	Activity	Communalities	1	2	3
	Played cards for money	.712	<b><u>.84</u></b>	-.04	.01
	Bet on sports	.627	<b><u>.77</u></b>	.06	.18
	Bowled, shot pool, played golf, or some other game of skill for money	.675	<b><u>.75</u></b>	-.03	-.33
	Played slot machines, poker machines, or other gambling machines	.538	.17	<b><u>.71</u></b>	-.10
	Played bingo	.527	-.04	<b><u>.65</u></b>	.32
	Played pull tabs or “paper” games other than lotteries	.358	-.10	<b><u>.59</u></b>	-.06
	Played the numbers or bet on lotteries	.862	.00	-.01	<b><u>.93</u></b>

*Note: Loadings above .39 are bolded, italicized, and underlined.*

Means, standard deviations, and correlations of study variables are provided in Table 3. The regression analyses for job demands on gambling – skill and gambling – chance are presented in Table 4 and 5 respectively.

Table 3

*Descriptive Statistics and Correlations for Study Variables*

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Job Demands	32.96	5.51	—											
2. Gambling – Skill	1.56	2.98	-.01	—										
3. Gambling – Chance	1.86	2.51	.17*	.01	—									
4. Need for Recovery	1.83	0.63	.33**	.10	.17*	—								
5. Psychological Detachment	2.71	0.95	-.20	.13	.24**	.11	—							
6. Relaxation	2.80	1.08	-.06	.16*	.34**	.10	.60**	—						
7. Mastery	2.16	0.83	.04	.20**	-.01	.04	.30**	.53**	—					
8. Control	3.27	0.93	-.02	.14*	.18**	.07	.52**	.60**	.51**	—				
9. Social	2.93	1.16	-.02	.21**	.28**	-.01	.44**	.67**	.65**	.68**	—			
10. Gender	0.42	0.49	-.05	.42**	-.04	.05	-.01	-.02	.02	-.08	-.07	—		
11. Age	41.8	12.56	-.04	-.11	-.10	-.06	.04	-.11	-.09	-.11	-.06	.02	—	
12. Education	3.15	1.03	.12	-.11	-.03	.04	-.02	-.03	-.08	.01	-.04	-.22	-.09	—

Note: N = 200. \*Correlation is significant at  $p < .05$ ; \*\*Correlation is significant at  $p < .01$

## Descriptive Results

As shown in Table 3, the intercorrelations showed, first, that job demands were significantly related to the hypothesized gambling-chance component ( $r = .17, p < .05$ ) and need for recovery ( $r = .33, p < .01$ ). Second, the majority of recovery experiences correlated with the gambling – skill component (relaxation and gambling skill,  $r = .16, p < .05$ ; mastery and gambling skill,  $r = .20, p < .01$ ; control and gambling skill,  $r = .14, p < .05$ , social and gambling skill,  $r = .21, p < .01$ ) and the gambling – chance component (psychological detachment and gambling chance,  $r = .24, p < .01$ ; relaxation and gambling chance,  $r = .34, p < .01$ ; control and gambling chance,  $r = .18, p < .01$ ; and social and gambling chance,  $r = .28, p < .01$ ). A distinction can be made between the pattern of correlations among recovery experiences and each gambling component. Gambling – chance most uniquely and strongly correlated with relaxation and psychological detachment while gambling – skill uniquely correlates with mastery. Both gambling components similarly correlated with the recovery experiences of control and social affiliation. Thus, hypothesis 2 is partially supported.

Among the recovery experiences, the highest correlation ( $r = .68$ ) was between social and control while other recovery experiences also strongly correlated with each other (range of  $r = .30 - .68$ ). Despite the high correlations among recovery experiences, previous research has established that they are distinct constructs (Stevens, 2010; Siltaloppi et al., 2009; Sonnentag & Fritz, 2007).

Finally, the control variables, apart from gender and gambling – skill ( $r = .42$ ), showed only weak correlations with all study variables. The strong correlation between gender and gambling – skill indicates that it is primarily males who participate in those particular gambling activities.

### **Direct Effect of Job Demands on Gambling – Skill and Gambling – Chance**

Regression analyses are reported in Table 4 for gambling – skill and in Table 5 for gambling – chance. The consistency in unstandardized coefficients in Tables 4 and 5 provides evidence for the suitability of utilizing multiple linear regressions for the analyses. Coefficients are closely matched regardless of regression technique utilized. The availability of  $R^2$  provided by multiple linear regression and its easily interpretable and communicable results provide ample reason to report these findings. Looking at the second column of coefficients under the linear regression section (i.e., standardized coefficients) provides partial support for a relation between job demands and gambling behaviours.

Job demands predicted gambling – chance ( $\beta = .13, p < .01$ ) but not gambling – skill ( $\beta = .00, p > .05$ ), providing partial support for hypothesis 3. As shown in Table 5, adding job demands to the equation ( $R^2$  change) adds 3% of the variance in the prediction of gambling-chance.

Table 4.

*Regression Results Predicting Gambling - Skill.*

Predictor	Linear regression				Ordinal probit regression	Negative binomial regression
	Unstandardized	Standardized	R <sup>2</sup>	$\Delta R^2$	Unstandardized	Unstandardized
Step 1:			.20**	.20**		
Demographics						
Gender	.87**	.43**			1.09**	1.5**
Age	-.01	-.13			-.01	-.01
Education	-.02	-.02			-.07	-.14
Step 2: Job			.20**	.00		
Demands						
Job Demands	.00	.00			.01	.02

*Note: N = 188. \*\* Coefficient is significant at  $p < .01$ .*



Table 5.

*Regression Results Predicting Gambling - Chance.*

Predictor	Linear regression				Ordinal probit regression	Negative binomial regression
	Unstandardized	Standardized	R <sup>2</sup>	ΔR <sup>2</sup>	Unstandardized	Unstandardized
Step 1:			.02	.02		
Demographics						
Gender	-.14	-.08			.17	-.21
Age	-.01	-.10			.01	-.01
Education	-.09	-.11			.15**	-.17*
Step 2: Job Demands			.05*	.03*		
Job Demands	.03*	.18*			-.04**	.05*

*Note: N = 188. \* Coefficient is significant at  $p < .05$ ; \*\* Coefficient is significant at  $p < .01$*

### **Moderator Effects of Gambling Components on the Job Demands - Need for Recovery Relationship**

As shown in Table 6 and 7, moderating effects were detected. The interaction terms between job demands and gambling – skill ( $b = .09$ ) and job demands and gambling – chance ( $b = .07$ ) on need for recovery were significant. These effects are shown graphically in Figures 3 and 4. The graphical representation of the interactions were derived using unstandardized regression coefficient estimates of the regression lines for respondents who are high (1 *SD* above the mean) and low (1 *SD* below the mean) on

gambling frequency for each gambling factor. As Figures 3 and 4 show, respondents who gamble more frequently reported less need for recovery, both generally and especially in a low job demands situation, compared to those who gamble less frequently.

Furthermore, while respondents who gamble less frequently have similar need for recovery scores for both gambling – skill and gambling – chance groups, respondents who report high frequency gambling – skill have lower scores on need for recovery regardless of the job demands faced at work. However, respondents who report high gambling frequency have a more dramatic increase in need for recovery scores than their low gambling counterparts, albeit while maintaining lower need for recovery scores overall. Thus, hypothesis 4 is supported.

Table 6.

*Moderator Effect of Gambling – Skill on the Job Demands - Need for Recovery*

*Relationship*

	Estimate	Standard error	Estimate/Standard error	Two-tailed p-value
Need for recovery on:				
Job demands	.25	.08	3.07	.00
Gambling – skill	-2.63	1.02	-2.58	.01
Interaction	.09	.03	2.77	.01

Table 7.

*Moderator Effect of Gambling – Chance on the Job Demands – Need for Recovery Relationship*

	Estimate	Standard error	Estimate/Standard error	Two-tailed p-value
Need for recovery on:				
Job demands	.20	.09	2.24	.03
Gambling – chance	-2.04	.97	-2.10	.04
Interaction	.07	.03	2.45	.01

Figure 3.

*Interaction Effect of Job Demands and Gambling – Skill on Strain*

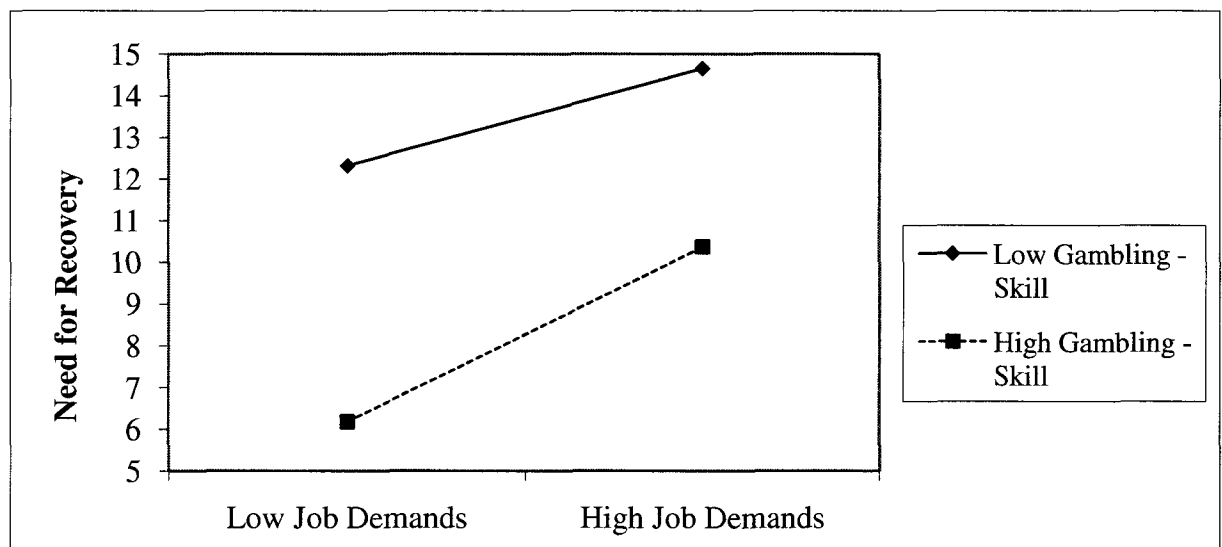
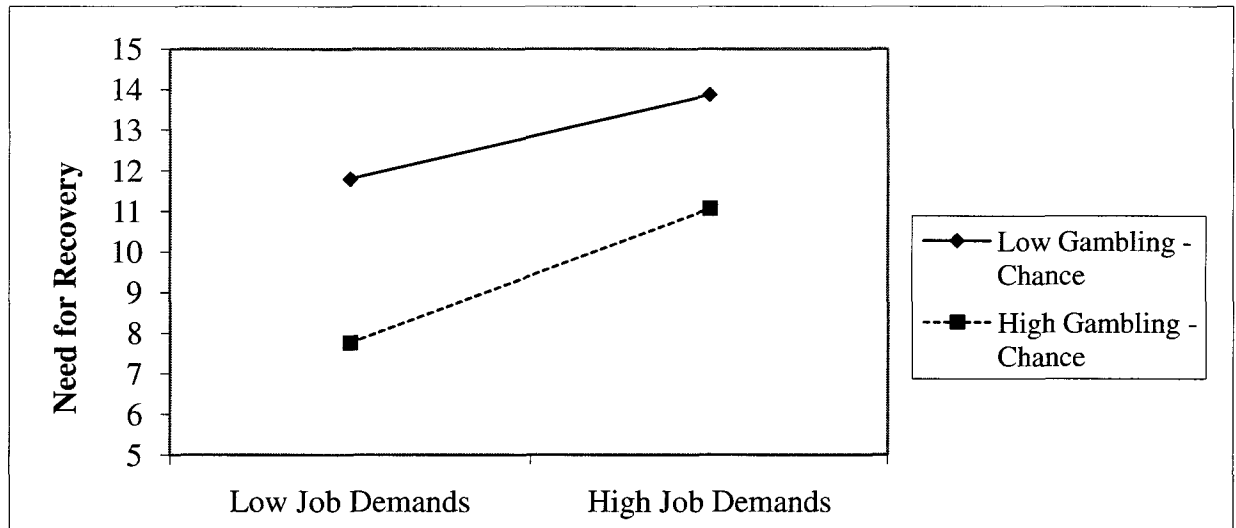


Figure 4.

*Interaction Effect of Job Demands and Gambling – Chance on Strain*



## Discussion

The primary goal of the present study was to examine the direct association between job demands and gambling frequency as well as the moderating role of gambling in the relation between job demands and strain. The first hypothesis, related to the component structure of the gambling activities, was supported. Principal components analysis suggested that there were three factors and those factors mapped onto the skill and chance dimensions as predicted. After the removal of “betting on horses, dogs, or other animals” the remaining three activities that require some amount of skill in order to make gains grouped together to form the gambling – skill dimension. After the removal of “playing dice games, including craps, over and under, or other dice games” the

remaining three activities that rely purely of random events grouped together to form the gambling – chance dimension. Unsurprisingly, “playing the lottery” made up its own component. Playing the lottery, while gambling, does not share the same characteristics as the other activities mentioned. An individual may play the lottery once or more per week without dedicating more than five minutes of their time doing so. A lottery ticket may be acquired while purchasing gasoline or household items without any significant thought or effort. It is possible that playing the lottery is related with the hope/optimism subscale of the expanded recovery experiences questionnaire (Stevens, 2010).

Unfortunately, due to questionnaire size constraints, it was not possible to include most of the new subscales in the questionnaire.

Hypothesis 2, relating to the correlation-based relationships between the gambling components and the recovery experiences, was partially supported. Gambling – skill significantly correlated with relaxation ( $p < .05$ ), control ( $p < .05$ ), mastery ( $p < .01$ ), and social affiliation ( $p < .01$ ) while gambling – chance significantly correlated with psychological detachment, relaxation, control, and social affiliation (all  $p < .01$ ). Two noteworthy patterns of results emerged. First, as partially hypothesized, these results indicate that the only unique recovery experience significantly correlated with skill-based gamblers is mastery; as well as the only unique recovery experience significantly correlated with chance-based gamblers is psychological detachment. Second, social affiliation, control, and relaxation were all significantly correlated with both gambling factors. These results indicate that while there are commonalities to both gambling types

(e.g., gambling to socialize, relax), there may be fundamental differences regarding the type of recovery that individuals receive.

Hypothesis 3, relating to the direct relationship of job demands with the gambling components, was partially supported. Job demands predicted gambling-chance but not gambling-skill. The correlation between the gambling-chance and gambling-skill components with the various recovery experiences may shed some light on these findings. Gambling-skill is related to mastery experience. Individuals who engage in these activities (i.e., sport betting, card games, and skill games) may decide to gamble regardless of what might or might not have happened during the day. For example, an individual who places bets on a game of golf with friends may have regularly scheduled games of golf and will participate because of the confidence that he/she feels in his/her golfing skills. In addition, these individuals may gamble as a form of supplementary income. It is possible that gamblers will decide to go play a game of poker at the local casino for financial reasons if they truly feel that they are skilled enough to win money. These examples illustrate that a frequency measure of gambling-skill may capture variability in gambling behaviour that is unrelated to job demands during the workday. On the other hand, gambling-chance activities may be more reliant on the happenings of an individual's day. As the results indicate, individuals who partake in gambling-chance activities may do so more often if they perceive more job demands during the workday.

Hypothesis 4, relating to the moderating role of gambling components in the relationship between job demands and strain, was supported. High frequency of gambling

activities was related to lower short-term strain symptoms when both low and high levels of job demands are present. These findings indicate that individuals who gamble more often report lower levels of short-term strain when compared to those who gamble less frequently. Importantly, the relationship between job demands and short-term strain remains as expected: as demands at work increase, levels of strain also increase regardless of the amount of gambling. These results suggest two things. First, gambling frequency is related to lower levels of reported short-term strain symptoms. Second, individuals who gamble more frequently have a more pronounced relationship between job demands and short-term strain. In other words, their level of reported short-term strain increases more rapidly as job demand levels are higher. Albeit, regardless of the amount of perceived job demands, higher frequency gamblers report lower levels of short-term strain than lower frequency gamblers. These results may partly be due to the fact that the respondents were primarily recreational gamblers with few regular (i.e., weekly) gamblers. It is widely accepted that gambling may become a stressor in and of itself if too many financial resources are expended or if any number of stressful events take place while gambling. Therefore, these findings may not generalize to all non-problem gamblers.

A potential alternative explanation is that other variables are influencing the results. For example, it is possible that individual differences (e.g., personality traits) account for both lower levels of experienced short-term strain and higher frequency gambling. In this case, some third variable would be the cause of higher frequency gambling while simultaneously predisposing someone to experiencing lower levels of

short-term strain symptoms. Alternatively, it is possible that other actions that individuals perform while gambling result in lowered levels of short-term strain. For example, gambling activities are often performed while drinking alcohol. In this case, perhaps the consumption of alcohol is resulting in lower levels of short-term strain and not the gambling activities themselves. These potential alternative explanations would need to be tested in future research.

The current study provides evidence that gambling activities are not all conceptually similar. The distinction made between activities based on a certain amount of skill and those based primarily on chance can and should be conceptualized as distinct activities. Similarities may exist such that an individual may gamble on certain activities to be social, relax, or to have control over how they spend their leisure time, however, the amount of energy and thought placed into these activities may differ. An individual who decides to partake in a gambling activity based on skill may make this decision based on a need to be intellectually stimulated and challenge oneself while an individual who decides to partake in a gambling activity based on chance may make this decision to detach from reality and simply unwind without intellectually taxing thoughts. These differences imply that there may be differing mechanisms driving the decision to gamble in the first place. The distinction between different types of gambling, and perhaps gamblers, can be further utilized to identify antecedents and consequences for varying types of gambling activities. For example, an individual may decide to bet on sports because he/she is not intellectually challenged in the workplace. Consequently, failure to succeed (i.e., make financial gains) may be devastating on a psychological level in



addition to the negative outcomes reported for gambling in general. These possibilities cannot be confirmed based on the results of the current study. Future research is needed to investigate causal relationships.

The current study demonstrated that individuals, regardless of specific activities, report experiencing recovery experiences while gambling. It is not known if individuals explicitly gamble in an effort to recover from the workday; however, these results suggest the possibility that experiences gained during a gambling session may allow individuals to recover from job demands. Coupled with the results indicating that higher frequency gambling is associated with lower short-term strain indicators, it is probable that the recovery gained through gambling reinforces that behaviour. The long-term consequences remain unknown; however, the current results provide a glimpse into the motivation behind non-problem gamblers decision to gamble.

Overall, the results indicate that increased job demands do predict increased gambling frequency. Gambling frequency, in turn, buffers (i.e., moderates) the level of short-term strain associated with elevated levels of job demands. It is proposed that the recovery gained through gambling is the underlying driver of these moderation results.

### **Study Limitations**

Five potential limitations in this study should be noted. The first potential limitation is the sample utilized. Distinctions are often made between gamblers of different categories (e.g., problem, recreational) and comparisons between these different gamblers were not possible in the current study. The focus was intended to be on non-

problem gamblers, however, the Canadian Problem Gambling Index can be utilized to identify gamblers of additional categories such as low risk and moderate risk gamblers. A more selective sampling strategy allowing the recruitment of participants who gamble with more frequency than those in the current sample would have helped to draw comparative conclusions among various categories of non-problem gamblers. The current sample also contributed to zero inflated non-normal data. All participants were included in the analyses whether they had reported gambling in the particular activity being analyzed or not. Due to their inclusion, the distributions were highly skewed. Additional participants who would report gambling on each activity, through a stratified sampling procedure, would have nullified this limitation.

The second potential limitation is the low response rate. The telephone survey technique is not ideal in order to achieve high response rates; however, the need for a province-wide survey including a diverse population provided ample justification for utilizing this technique. In a general sense, marketing research firms anticipate one completed survey for every 10 outgoing calls. Evidence of this is provided by the fact that the particular marketing research firm hired to collect data for this study charged their fee based on this assumption. Thus, the actual response rate of 19% is an improvement over the original expectation. In addition, there is no reason to believe that the data are biased in any way. As stated above, the participants were closely split between males and females, ages varied, every education category was well represented, and the ratio of non-problem gamblers to problem gamblers was consistent with previous research.

The third potential limitation is the use of cross-sectional data. The present study does not provide a strong basis to support conclusions regarding causal direction. However, the exploratory nature of the current research provides a sound basis for continued research into the influence of work stressors on gambling behaviours.

The fourth potential limitation is the use of the particular gambling frequency measure. The gambling activities measured were general activities available to wider society; however, it is possible that within the population of interest (i.e., Nova Scotia adults) there are additional types of gambling which were not identified. Qualitative investigations of gambling habits and frequencies would have provided validation evidence for the measure used. Additionally, with the advent of online gambling, distinctions between in-person and online gambling behaviours would have provided a complete picture of gambling among the study participants.

The fifth and final potential limitation is the use of a principal component analysis with the current data. As previously mentioned, the data were highly skewed making the principal components analysis results unreliable. A fundamental assumption of this analysis is normally distributed data, an assumption that was violated. The results were in line with previous conceptualizations (Clark et al., 2006) of gambling activity dimensions (i.e., skill, chance) which provide confidence in the current results. Additionally, the regression analyses performed indicated that utilizing the current data to perform these analyses was acceptable, providing additional confidence in the principal components analysis results.

### **Directions for Future Research**

Consistent with the study limitations above, there are many avenues for future research. First, a comprehensive investigation of the relationships identified with a larger and varied sample would provide needed confirmation of the current results. In addition to the relationships identified, the inclusion of additional variables such as other work stressors (e.g., job control, job security), individual (e.g., job commitment), situational (e.g., norms), and outcome (e.g., exhaustion) variables would provide added clarity. It is unclear which work stressors are related to gambling, if any individual or situational factors moderate the stressor – gambling relationship, or if gambling is related to or causes work-related consequences. A comprehensive investigation is needed in order to fully explore these relationships. Furthermore, a larger sample would allow for a formal factor analysis on gambling activities. Exploratory and confirmatory factor analysis on a wide range of gambling activities would allow for the formation of an accurate and universal gambling frequency measure. Collecting data based on such a measure would allow for the investigation of antecedents, outcomes, and consequences associated with gamblers who partake in the differing gambling dimensions (i.e., skill and chance-based activities).

Second, longitudinal investigation is needed in order to confirm causality. A prospective study spanning multiple years would not only allow future researchers to identify work stressors' causal relationship to gambling but would also allow for the identification of the development of problem gambling. Modeling the pattern of gambling

behaviours exhibited by individuals from year to year would provide strong evidence for the role of workplace stressors in the progression from recreational to problem gambling. There is reason to believe that while recreational gambling provides short term recovery from work stressors, increased gambling activity may negate these outcomes and lead to long term negative consequences for gamblers, their work, and their social lives.

### **Practical Implications**

A number of practical implications can be derived from the current study. First, it is possible that managing workplace stressors, especially job demands, may help reduce the likelihood of gambling during employee's leisure time. The finding that gambling can be a form of recovery and that job demands predict gambling frequency imply that as job demands are reduced in the workplace, individuals are less likely to gamble. In other words, reducing the need for recovery in the first place may help individuals avoid gambling when the opportunity presents itself.

Second, workplace programs such as an employment assistance program aimed at improving employee's psychological health should consider gambling treatment along the same lines as alcohol or substance use treatment programs. Gambling is an addictive behaviour and education aimed at informing employees of the pitfalls associated with increased gambling may help negate the urge to gamble when demands in the workplace are high.

## **Conclusion**

By studying the job demands – gambling relationship, the current study contributed to a better understanding of the motivations behind gambling. The current study is the first to investigate a work stressor and its relationship with gambling frequency. The results indicate that this area of research is one that will increase the understanding of the stress – gambling relationship.

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