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# Understanding motivation to abstain from Pathological Gambling: The influence of negative expectancies and moderation inefficacy

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Understanding motivation to abstain from Pathological Gambling: The influence of  
negative expectancies and moderation inefficacy

by

Amanda E. R. Robinson

A Thesis  
Submitted to the Faculty of Graduate Studies  
through Psychology  
in Partial Fulfillment of the Requirements for  
the Degree of Master of Arts at the  
University of Windsor

Windsor, Ontario, Canada

2010

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by

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## DECLARATION OF ORIGINALITY

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## ABSTRACT

The present investigation aimed to test a theory-guided model of problem gambling cessation in a sample who were quitting without professional assistance. The main hypothesis was that higher levels of moderation inefficacy (MIE) and higher levels of negative outcome expectancies (NOE) would combine to produce higher levels of both readiness to change (RTC) and commitment to abstinence (CTA). Respondents consisted of 62 community-dwelling problematic gamblers whose change goal was abstinence. Regression and moderation analyses were performed. Results showed that higher levels of NOE predicted residual criterion variance in RTC, but not CTA. MIE was not found to be a significant predictor, and the predicted interaction between NOE and MIE was non-significant. Post-hoc analyses revealed that there may be significant gender differences. Results of the present study have important implications for the development of brief online motivation enhancements which aim to reduce the public health burden of problematic gambling.

## DEDICATION

I would like to dedicate this thesis to my loving husband Fred Howard for always being the source of my strength.

## ACKNOWLEDGEMENTS

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## LIST OF ABBREVIATIONS

AA	Alcoholics Anonymous
ASPM	Addicted Self Process model
CR	consciousness raising
CTA	commitment to abstinence
DB	decisional balance
DFC-DCS	Desire for Control - Desire for Control Scale
DSM-IV-TR	Diagnostic and Statistical Manual – Fourth Edition – Text Revision
ERE	environmental re-evaluation
GA	Gamblers Anonymous
GRTC	Gamblers Readiness to Change
HBM	Health Belief Model
LNCG	Lifetime Negative Consequences of Gambling
LOCTA	Level of Commitment to Abstinence
MIE	moderation inefficacy
NGOE	Negative Gambling Outcome Expectancy
NOE	negative outcome expectancies
PCOG	Perceived Control Over Gambling
RTC	Readiness to Change
SDS-BIDR	Self-Deception Scale – Balanced Inventory of Desirable Responding
SRE	self re-evaluation
TTM	Transtheoretical Model

# CHAPTER I

## INTRODUCTION

### 1.1 Overview

**Introduction.** Addictions-related scholarship aimed at understanding psychological processes that contribute to the cessation of pathological gambling is currently underdeveloped. This paucity of research stands in stark contrast to escalating rates of problem gambling (Raylu & Oei, 2002). Lifetime prevalence rates, primarily from the United States, range from 0.1% up to 5.4% (Volberg, 1996; Petry & Armentano, 1999; Raylu & Oei, 2002). While many people who choose to gamble recreationally are able to remain in control of the amount of time and money spent on gambling, those who develop disorders will experience serious negative life consequences as a result. Aversive life consequences include financial and relationship problems, loss of work, and even criminal involvement (Dickerson & O'Connor, 2006, pp. 39). Despite the prevalence and seriousness of the problem, few pathological gamblers seek professional treatment.

In order to understand a person's motivation to change researchers have examined negative outcome expectancies as a possible contributor. Motivation to resolve substance abuse and dependence disorders has been shown to be significantly increased by the anticipation of higher levels of negative consequences (Jones & McMahon, 1994; 1996), and other studies have suggested that negative future expectancies concerning substance use may play a role in the desire to restrain one's use of these substances (Gadon, Bruce, McConnochie, & Jones, 2004).

While mixed in nature, there is preliminary evidence that negative expectancies also play a role in motivation to change for problem and pathological gamblers. The

expectation of negative outcomes in relation to engaging in gambling behaviour was found to be a significant predictor of desire and motivation to change in several studies (Hodgins, 2001; Walters & Contri, 1998; Gillespie, Derevensky, & Gupta, 2007). However, these studies suffer from methodological weaknesses related to the assessment of negative expectancies. Studies have primarily asked about short-term consequences of minor importance, whereas the current study focuses on serious long-term consequences. In addition, these studies do not take into account factors which may interact with negative expectancies to produce greater motivation to change. Finally, research in this area has neglected to study natural changers. In order to better understand the role that negative expectancies play, it is important to improve the construct validity of assessment methods and to identify factors that might moderate expectancy effects. These types of methodological issues could help explain why the influence of negative expectancies has not been found to be equally powerful across all samples.

The current investigation aims to address a number of gaps in the literature. First, the way that negative expectancies may interact with moderation inefficacy, otherwise known as doubt in one's ability to engage in an addictive behaviour in moderation, will be considered. Moderation inefficacy has been shown to have an effect on motivation to change within the alcohol literature. Research has suggested that problem drinkers who felt as though they were unable to control their intake of alcohol or other drugs were found to be more likely to seek treatment. Of special relevance to the current study, higher levels of moderation inefficacy were also found to be related to greater commitment (Fiorentine & Hillhouse, 2000; 2001; 2003; 2004). To summarize, results

from substance abuse research suggests the subjective perception of loss of control may be an important contributor to the cessation of addictive behaviours.

The current study hopes to extend the alcohol and other drug research by Fiorentine and Hillhouse. In particular I will seek to adapt the Addicted Self Process Model (ASPM) to the area of gambling. The ASPM takes into account both NOE and controlled use self-efficacy, which has been termed moderation inefficacy (MIE). Previous research has shown that there is a relationship between the doubt a person has in their ability to moderate their behaviour and their belief that there will be negative consequences of engaging in that behaviour (Fiorentine & Hillhouse, 2000; 2001; 2004). However, this research has not considered the moderating effects of MIE on NOE.

In the current study I will examine two outcome variables, readiness to change and commitment to abstinence. Both RTC and CTA have been shown to be indicators of improved long-term outcomes. Commitment to abstinence refers to the level of resolve to refrain from engaging in wagering behaviour. Readiness to change has been conceptualised as the level of motivation to change. This stems from the Transtheoretical Model (TTM; Prochaska, DiClemente, & Norcross, 1992). While most of the evidence bearing on the predictive validity of RTC measures comes from the alcohol literature, recent research has begun to show that RTC is useful in predicting improved gambling outcomes as well (Petry, 2005). To summarize, in the current study, I expect to find that higher NOE and higher MIE will be significant predictors of both RTC, and of CTA. In a unique departure from prior research, I also predict that there will be a significant interaction between MIE and NOE.

**Methods.** Respondents consisted of 62 Canadian community-dwelling problem and pathological gamblers who were pursuing, without professional assistance, the change goal of abstinence. Participants were recruited through newspaper ads and fliers. Those who passed the screen completed a questionnaire packet either online or in paper format, and were compensated with a gift certificate for their time. Of these participants, further screening was performed to ensure the sample met the assumptions of the hypotheses.

A set of regression analyses was performed to test moderation inefficacy and negative outcome expectancies as predictors of the criterion variables. Selected theoretically related background variables served as statistical controls. These included gender, desire for control, self-deception, gambling problem severity, and gambling related difficulties. After testing additive models, a moderation analysis was performed to test for an interaction effect between MIE and NOE. In order to graphically depict the results, a two by two ANOVA was run with RTC as the outcome variable. Median splits were performed on the predictor variables of MIE and NOE as depicted in Figure 1. Post-hoc analyses were then run to clarify the findings, and to explore the data.

**Results.** Demographic variables were analyzed to provide a sample against which other non-treatment seeking populations could be compared. Zero order correlations revealed that only two of the background variables were related to both predictor and outcome. The self-deception subscale and DSM severity were retained for the analyses with RTC. Following this, regression analyses were performed. NOE was a significant predictor of readiness to change, but not commitment to abstinence, and accounted for a significant amount of variance even after controlling for the background variables. MIE

was not a significant predictor of RTC or CTA. A hierarchical moderated regression analysis was run to test the hypothesis that higher moderation inefficacy would interact with higher NOE to predict residual criterion variance in readiness to change and commitment to abstinence. However, neither of these hypotheses were supported. Finally, post-hoc analyses revealed significant differences between the male and female subsamples.

**Discussion.** The general purpose of the current study was to begin to close these gaps in the literature, extend previous research, and apply theory to an area of research which has been mostly atheoretical. Specifically, the present investigation aimed to test a theory-guided model of problem gambling cessation in a sample population who were attempting to quit without professional assistance. The results of the current study are an important step towards bridging the gap between the alcohol and drug research areas and the gambling area. These findings reveal that models of behaviour change which have been tested in other areas can be extended to the gambling area. Also, the current study made use of improved methodology in terms of measuring negative outcome expectancies, and perceived lack of control.

The hypothesis concerning negative outcome expectancies as a predictor of readiness to change was supported by the data. This finding is especially important because it suggests that despite the slightly lower overall problem severity of this community sample in comparison to clinical samples, the expectation of negative consequences still plays a major role in gambler's readiness to change. This may imply that the psychological processes in which negative future consequences are identified and

assessed could be a specific target for intervention for increasing readiness to change in problematic gambling individuals in the community.

The hypothesis concerning moderation inefficacy as a predictor of readiness to change was not supported by the data. Further, the moderation analyses were non-significant. This would initially suggest that the interaction between these two variables does not have a significant influence on readiness to change. As no study to date found in the literature review had tested this interaction in any addictive behaviour sample it is initially unclear what this might mean. The significant differences between the male and female participants in terms of MIE and the interaction suggest that these constructs should be examined further in future research.

The current study chose to approach the problem of disordered gambling cessation with an intersection of clinical and community psychology. The results suggest that negative outcome expectancies may play an important role in readiness to change, especially in male community-dwelling gamblers. This finding lends support for an online-format motivational enhancement which targets past and future consequences. This type of intervention may assist those who are struggling with problematic wagering in the community to change their behaviour and seek out community-based or professional services, and should be researched and developed.

## CHAPTER II

### REVIEW OF LITERATURE

#### 2.1 Introduction

##### *2.1.1 The Scope of the Issue: Pathological and Problem Gambling*

The lion's share of scientific research on addictive behaviours has focused on understanding substance abuse, such as drugs and alcohol. The abusive use of drugs and alcohol can be very costly to both the individual and society, and there now exists a large body of research to document these costs. Problematic gambling, however, is an understudied subarea within the larger addiction field. As will be discussed, gambling is similar to other addictive behaviours in that it is very costly from both a personal and public health perspective. Thus, it has become apparent that more research is needed to bring the area of gambling up to the level of the alcohol and substance use areas. The general purpose of the current study is to advance the area of gambling research by exploring selected psychological variables that may contribute to the motivation to quit or cut-back.

##### *2.1.2. Study Terminology*

Numerous terms for problematic gambling, such as compulsive gambling, are used within the scholarly literature as well as within the public discourse. The term "problem gambling" is a lay term used to indicate a wide range of excessive gambling behaviours that are associated with negative consequences (Blaszczynski, Ladouceur, & Shaffer, 2004). However, this term is also used by clinicians and researchers to indicate gambling behaviour that is causing distress to the individual but does not meet full criteria for pathological gambling.

The term “pathological gambling” comes from criteria as set out by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). To meet DSM-IV-TR criteria a person must exhibit five out of ten DSM symptoms. Examples of DSM-IV-TR criteria include being preoccupied with gambling, the need to gamble in increasing amounts to obtain the same level of excitement, and after losing money will return another day to try and regain those losses. Respondents who participated in the current study consisted of both problem and pathological gamblers. When referring to the current sample, the broad expression “problematic gambling” will be used.

In addition to these terms, it should be noted that the term “moderation” is used in two capacities for this study. In one usage, moderation describes efforts taken to cut-back on gambling behaviour. Moderation inefficacy refers to this type of moderation, as it is doubt in one’s ability to cut-back effectively, in this case cut back on wagering. The second usage of this term for the study refers to the hypothesized interaction between the two main study variables. Therefore, this moderation refers to the statistical term used to denote an interaction indirect effect between two variables.

### *2.1.3. Prevalence of pathological and problem gambling*

Problematic gambling has been estimated to be a prevalent disorder. In fact, lifetime prevalence rates, primarily from the United States, range from 0.1% up to 5.4% of the population (Volberg, 1996; Petry & Armentano, 1999; Raylu & Oei, 2002). A more recent survey by Kessler et al. (2008) found that the lifetime prevalence of problem gambling in their sample was 2.3%, and 0.6% for pathological gambling. It is likely these rates are equally as high in Canada. What we can conclude from these types of findings is

that there are a large number of people who are engaging in problematic gambling who ought to be quitting or cutting back.

The high prevalence of problematic gambling is further complicated by the fact that most of those with the disorder will not seek professional treatment. According to the National Gambling Impact study (1999) only one to three percent of problem gamblers will seek professional help in a given year. Within the non-treatment seeking population of problem and pathological gamblers there are an unknown percentage who decompensate and get worse over time. The subsample who choose to resolve their problematic gambling on their own without professional assistance are termed natural changers. Even as casinos are increasingly being required to provide information on services targeted to problematic gamblers, the greatest proportion either do not change or rely on natural change methods to quit or cut back. These non-professional means of change can range from relying on oneself to attending non-professional support groups such as Gamblers Anonymous.

Given that natural changers far outnumber treatment seekers, it is surprising that so little research has been conducted in this sample to understand naturally occurring psychological factors that facilitate or inhibit motivation to change. The present study seeks to fill this void in the literature by examining the psychology of quitting in gamblers.

#### *2.1.4. The consequences of pathological and problem gambling*

Problematic gambling can be personally deleterious, and the costs of this behaviour span across various life domains. While many people who choose to gamble recreationally are able to remain in control of the amount of time and money spent on

gambling, those develop a disorder experience serious negative life consequences as a result. These consequences range from financial and relationship problems, to loss of work, and even criminal involvement (Dickerson & O'Connor, 2006, pp. 39).

The traditional role of clinical psychological research has been to concentrate on those individuals who are treatment-seeking. However, the majority of problematic gamblers are not seeking any form of professional help, creating a need for scholarship at the intersection of clinical and community psychology. Because the public health burden of untreated problem gambling is so great, research is needed that holds promise for reducing this burden.

The increasing accessibility of ways to gamble will put pressure on governments, mental health professionals, and the gaming industry to respond effectively to increased need for treatment and support (Volberg, 1994). Furthermore, certain populations such as women, minorities and adolescents are becoming increasingly at risk. In Canada, it has been found that lower income families are spending more on gambling expenditures than are high income families (Korn, 2000). Technology, such as internet poker, is further increasing the accessibility of wagering. Gambling impacts the community at large as well as the individual in terms of the makeup and vitality of the areas which surround casinos. There is also some evidence that other issues such as crime and suicide may be related to pathological gambling (Korn & Shaffer, 1999). These public health studies have begun to highlight the considerable impact of pathological gambling on the Canadian public, but cessation research continues to lag behind.

## 2.2 Treatment Changers Versus ‘Natural Changers’

There are an estimated 340,000 gamblers in Ontario alone (Wiebe & Cox, 2001), and of these only an approximate 1000 enter the professional treatment system in a given year. This appears to be typical of other provinces as well (Rush & Shaw-Moxam, 2000). Thus there are huge numbers of problematic gamblers residing in the community who may wish to quit or cut back on their gambling, but who never seek formal treatment. The underutilization of professional services for the purposes of overcoming a gambling disorder is consistent with research on other addictive behaviours such as drug and alcohol abuse (Sobell, Ellingstad, & Sobell, 2000).

Very little is known empirically about the types of factors that might motivate gamblers to recover without treatment. Because of their ease of accessibility, those who do choose to seek professional help tend to be the ones who are the most frequently studied, however, this ignores the largest portion of problematic gamblers. Grant, Kim, and Kuskowski (2004) have acknowledged that these subpopulations are not currently well understood, and the factors that motivate change have not been well delineated. Many pathological gamblers choose to remain untreated in the community, and overtime may experience a variety of consequences. As with other addictions, admitting that gambling has become a problem may be accompanied by stigma.

### *2.2.1. Dearth of research in the gambling area*

Carballo and colleagues (2007), in a recent methodological review of natural recovery, identified a distinct need for research which systematically leads to a better understanding of natural recovery. They suggested the need for naturalistic research is especially salient in reference to addictive behaviours other than alcohol abuse, which

would include problematic gambling. In addition to this gap in the literature, many researchers who work in the gambling area have used advances within the alcohol and drug use literatures and exported those findings to the gambling area. This has resulted in a wide range of research, which is for the most part atheoretical. The area of gambling research has suffered from this lack of theoretical constructs.

To fill these gaps in the research literature, the current study will adopt a public health approach to the study of people who suffer from a gambling disorder and will be informed by health and educational psychology models of behaviour change. This study seeks to understand factors that influence the probability of natural change efforts to abstain from gambling. In particular, I will examine two processes that may assist gamblers in their cessation efforts. This will be accomplished by investigating motivation to quit gambling within a sample of problematic gamblers who have not sought treatment but who have plans to overcome their problem on their own.

### 2.3 Understanding Motivational Readiness to Change: Theoretical Models

To date much of the work done within the area of problem and pathological gambling research has been atheoretical, or lacking theoretically derived frameworks for the research being conducted. In order to understand the psychology of health behaviour change, it is helpful to consider the theoretical frameworks that come from health psychology and health education perspectives. The present study intends to utilize the well known theoretical models that have been applied to problems of alcohol and substance abuse, as well as the health education area. My goal is to adapt and test theories of substance abuse behaviour change to the area of problem gambling. There are several motivational and multi-stage models of health behaviour which help to identify

psychological variables that lead to health behaviour change. These theories provide the conceptual rationale for the present investigation. In the review of theory that follows below I will attempt to show how the theories discussed point to common elements that influence the motivation to change health destructive behaviours. These common elements include the awareness or expectancy that there will be negative consequences to continuing to engage in the problematic behaviour, problematic gambling in this case, and the perception that one has difficulty in exerting control over engaging in the problematic behaviour. In the current study, I have termed these two 'negative outcome expectancies' and 'moderation inefficacy.'

### *2.3.1. The Transtheoretical Model (TTM)*

There are a number of psychological theories that assist in our understanding of the motivation to change a problematic behaviour. Perhaps the most popular and widely used models is the Transtheoretical Model of Change (TTM; Prochaska, DiClemente, & Norcross, 1992). The TTM was applied to the study of smoking cessation. Since its inception it has been applied to many different types of health destructive behaviours, especially addictive behaviours. The TTM is a developmental model of the processes and stages of change. This model has been integral to advancing the understanding of how behaviour change progresses, and what factors help to push and pull an individual through the stages of change.

This model is integral to the current study for several reasons. The first of these is that the TTM provides an overall framework with which the degree of motivation to change may be understood. Secondly, this model helps to understand how individuals progress through various stages of change, which relate to different levels of motivation.

Finally, the TTM provides several specific processes of change that are strongly influential in the motivation to quit or cut back. These processes map directly onto negative outcomes expectancies and the perceived lack of control over wagering behaviour.

**Understanding the TTM's stages of change.** The Transtheoretical Model posits that there are five distinct stages during the process of behaviour change. They are precontemplation, contemplation, preparation, action, and maintenance (Prochaska, DiClemente, & Norcross, 1992). These stages denote points along a continuum of motivational readiness to change. In the precontemplation stage the individual has no intention or desire to change their behaviour and does not consider their behaviour to be problematic. Many people who are troubled by alcohol or gambling can be classified as fully in the precontemplation stage as they have no intention to change these behaviours and are often said to be “in denial.” In the contemplation stage the individual has become aware that their behaviour is problematic, and they have developed the intention to change their behaviour. This stage is marked by strong ambivalence. In the preparation stage the individual moves closer to taking action, whether in the form of quitting or cutting back. In the preparation stage the person is more committed to changing their behaviour, and have developed a plan for change. They also have intentions to implement their plans. In the action stage the individual has enacted their implementation intentions and have taken concrete steps to modify their problematic behaviour. Finally, in the maintenance stage, the individual's overt behaviour has been changed for an extended period of time, and they remain committed to their new behaviour goal (Lafreniere & Cramer, 2005).

For the purposes of the present study it is important to note that while in its early stages the TTM was believed to consist of five discrete stages which are progressed through in order, more recently many researchers believe that these stages may be seen as more of a continuum of motivation to change. It has been suggested that a continuous model is most useful (Joseph, Breslin, & Skinner, 1999), and this is the approach that the current study will take.

To summarize, the TTM is currently one of the most widely researched models of addictive behaviour change. In the current study, it serves as the theoretical basis underlying the dependent variable, motivation to change. In addition, however, the TTM shed light or assists in theoretically linking motivation to change to psychosocial “causes” of change.

**The predictors of readiness to change.** According to the original model developed by Prochaska, DiClemente, and Norcross (1992), there are ten processes of change associated with the Transtheoretical Model. These processes refer to the underlying psychological mechanisms which drive movement between the stages of change in the TTM. These processes represent factors that are believed to cause or contribute to increments in a person’s position along the continuum of motivational readiness to change. Increasing our understanding of factors that contribute to motivation to change is valuable for theory and practical reasons. The ten processes within the TTM include consciousness raising, dramatic relief, environmental re-evaluation, social liberation, self re-evaluation, stimulus control, helping relationships, counter conditioning, reinforcement management, and self-liberation (Diclemente, & Prochaska, 1982). Of specific interest to the current study are three particular processes which map

onto the constructs of negative outcome expectancies and moderation inefficacy. In the context of the current study, I propose that these three processes may also influence the strength of resolve to change one's behaviour. The three TTM processes of theoretical concern to the current study are consciousness raising, environmental re-evaluation, self re-evaluation.

Consciousness raising (CR) refers to the psychological process by which one becomes increasingly aware of the causes and consequences of continuing to engage in a problematic behaviour (Diclemente, & Prochaska, 1982), such as pathological gambling. This process has multiple levels of interest to the current investigation. To begin, a gambler who gains a deeper understanding of the relationship between their gambling and negative consequences in their life has a raised consciousness, but has also become aware of possible negative outcomes in the future. Similarly, during the process of consciousness raising the individual becomes more aware of the control, or lack thereof, that they possess over being able to wager in moderation. These two aspects work together within the process of consciousness raising in order to increase motivation to change the problematic behaviour. Therefore, those who engage in this process are believed to move up in the stages of change.

For example, if consciousness is raised among precontemplators, then this model would suggest that this would result in movement to the contemplation or even preparation stage of change. The implication of this connection is that the TTM makes a direct connection between awareness of negative outcomes and perceived lack of control, or moderation inefficacy.

The second TTM process that has relevance to the present study is termed environmental re-evaluation (ERE) involves subjective evaluations of the ecological impact of a behaviour, such as problematic gambling, on one's social and physical environments (Prochaska, Redding, & Evers, 2008). This is often thought to include an evaluation of the consequences in terms of one's position in society. Thus, if engaging in uncontrolled wagering has begun to negatively impact the ecology of the gambler then they may begin the process of evaluating this impact. This implies that the gambler will develop an expectancy that their environment will be negatively impacted by continuing to gamble. This process of ERE is believed to move individuals up in the stages of change, causing them to be more motivated or psychologically ready to take action and either quit or cut back.

The third TTM process that is relevant to the current study is termed self re-evaluation (SRE). SRE involves the subjective evaluation of the impact of problematic gambling on one's self-concept (Prochaska, Redding, & Evers, 2008). Consequently, continuing to engage in the problematic behaviour may create negative self-evaluations or cognitive dissonance, and lead to an alteration in personal identity. Through this process a gambler may begin to define themselves as a "compulsive gambler," one who does not possess the capacity to wager in moderation. This is conceptually similar to both the Alcoholics Anonymous (AA) tenet of admitting one is powerless over the consumption of alcohol, and is relevant to the concept of moderation inefficacy. As with environmental re-evaluation, self re-evaluation can also result in an expectancy that negative consequences will result from continuing to engage in problematic gambling. As is the case with other TTM processes, SRE is believed to contribute to increased

motivation to change one's problematic behaviour. In other words, SRE can facilitate a person's movement up the continuum of motivational readiness to change.

Taken together, these three processes focus on becoming aware of, and evaluating, the negative consequences of continuing to gamble as well as one's own ability to moderate wagering behaviour. These in turn are believed to work as motivating forces which increase an individual's motivation to change a destructive health behaviour, and assists in the progression through the stages of change.

**How the TTM informs the current study.** The general purpose of the present study is to understand the influence that negative outcome expectancies and moderation inefficacy have on the level of motivation to abstain from problematic gambling. As has been seen, the TTM gives attention to processes which theoretically map directly onto the predictor variables of concern to the current study. Because of this kinship, the TTM provides justification and rationale for the value of further examining NOE and MIE.

Consciousness raising, environmental re-evaluation, and self re-evaluation all involve evaluating the impact of gambling on various aspects of an individual's life. The TTM refers to the method by which these evaluations are made as the "decisional balance" (DB). The DB involves beginning to gather and evaluate the pros and cons of changing one's behaviour (DiClemente, 2003). Once it has been concluded that the negative consequences are significantly distressing, motivation to change is increased. It may be predicted, therefore, that those who more strongly believe that continued gambling behaviour will result in negative consequences, such as the impact to one's social environment, and that they lack the ability to moderate their behaviour, will

display a favourable decisional balance. Theoretically, they should be more motivated to change and progress more quickly through the stages.

However, the TTM suggests that these processes are specific to certain stages of change and do not influence those at different stages. The current investigation will not adopt this position, but rather utilizes the stages of change as continuum in which motivation to change may be affected by these influences along all points on the continuum.

### *2.3.2. The Health Belief Model of behaviour change*

Another model derived from the fields of health psychology and health education that adds to the understanding of the motivation to quit or cut-back is that of the Health Belief Model (HBM). This model suggests four factors that influence the probability that a person with an addictive disorder will quit or cut back (Becker, 1974). There are six beliefs central to this theory. Specific to the current study are beliefs about susceptibility and belief about the severity of continuing to engage in health destructive behaviours because of their kinship to the constructs of NOE and MIE.

**The HBM predictors of health behaviour change.** The HBM model includes six overall factors which motivate health behaviour change (Becker, 1990). These include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and general health values (Abraham, & Shanley, 1992). The current study will focus on the role of the first two factors, susceptibility and perceived severity, and their relationship to motivation to change wagering behaviour.

Perceived susceptibility may be understood as a person's subjective understanding of their vulnerability to engaging in a health destructive behaviour, and to

the consequences of engaging in that behaviour (Stroebe & Stroebe, 1996). In the context of the current study, this would be an individual's beliefs about their ability to moderate their wagering. Those who believe that they have a high level of control over their wagering behaviour will not see themselves as susceptible to the consequences of problematic gambling. However, those who recognise that they have impaired control over how much they gamble will see themselves as more susceptible to engaging in excessive wagering according to this mode. They will also associate aversive life consequences with the health destructive behaviour. Following from the HBM's predictions, this perception will influence the level of motivation to resolve their problematic behaviour. This is theoretically similar to moderation inefficacy.

The second factor which influences motivation to change is perceived severity. This factor may be understood as the subjective understanding of the seriousness of the consequences of engaging in a health destructive behaviour (Armitage & Conner, 2000). Therefore, in the context of this study, when an individual believes that continuing to gamble will make them highly likely to experience serious negative consequences, such as loss of one's job, they will be more likely to become more motivated to resolve their gambling problem. This is theoretically similar to the concept of negative outcome expectancies.

**How the HBM informs the current study.** As has been discussed, the HBM incorporates two factors which motivate the decision to change a health behaviour. These are perceived susceptibility and perceived severity. While very few researchers have utilized this model to provide a theoretical framework for motivation to change within the addictions field, there appear to be a strong kinship between the concepts that make up

this model and the concepts of negative outcome expectancies and moderation inefficacy. This model has the capacity to provide further justification and rationale to the investigation of NOE and MIE in the current study.

The HBM also suggests that there is an implicit interaction between its factors. Perceived susceptibility and perceived severity work together and interact within this model to produce higher or lower motivation to resolves the health destructive behaviour (Armitage, & Conner, 2000), which would be problematic gambling in this instance. This means that perceived susceptibility to future negative consequences should increase when the gambler has an increased understanding of their impaired control over wagering. Conversely, perceived severity should increase when the individual has an understanding of the consequences which result from continued gambling.

This theoretical interaction has not been empirically tested. However, this theoretical interaction provides justification for considering the interaction between NOE and MIE in the current study. When control over gambling is perceived to be low, and the consequences of gambling are perceived to be serious, a higher level of motivation to change should result as predicted by the HBM. While the relationships between the determinants of health behaviour in the HBM have not been well defined, some research has begun to show support for the predictive power of its constructs (Champion, & Skinner, 2008). The current study aims to empirically test the influence of these two determinants, and the interaction between them.

### *2.3.3. The Addicted Self Process Model (ASPM)*

The final model which has important implications for the present investigation is the Addicted Self Process Model (ASPM). This model was developed by Fiorentine and

Hillhouse (2000) within the area of alcohol and substance use. The ASPM is a model of recovery from behavioural addictions which stems from the social-cognitive understanding of behaviour, and incorporates knowledge from self-efficacy theory, learning and expectancy value theory, attribution theory, decisional conflict theory, and self-perception theory (Fiorentine & Hillhouse, 2000). Furthermore, this model is in line with other pre-existing models of self-change such as the TTM and HBM, as well as Conflict Theory and the Crystallization of Discontent Theory. Similar to the previously discussed models, both Conflict Theory and the Crystallization of Discontent Theory suggest that the cognitive appraisal of negative consequences can promote behaviour change, which is a key aspect of the adapted ASPM. The current study hopes to extend the work by Fiorentine and Hillhouse by adapting the ASPM to the area of problematic gambling and by incorporating pre-existing theoretical concepts.

**Overview of the ASPM.** The addicted self process model once again incorporates NOE and MIE, however, this model focuses on these constructs more strongly from an addictions perspective. The ASPM by Fiorentine and Hillhouse (2000) centres around the adoption of the addicted self. An individual will adopt the addicted self when they come to realise that they have repeatedly been unable to quit or cut back because they do not have sufficient ability to control their use of alcohol or other drugs. According to the ASPM, this belief increases the individual's certainty that negative consequences will result from continuing to engage in the problematic behaviour. This level of certainty is then believed to be associated with higher levels of abstinence acceptance (Fiorentine & Hillhouse, 2001). "Abstinence acceptance" can be understood as a cognitive indicator of

the likelihood of abstinence, which is theoretically similar to motivational readiness to abstain from problematic gambling.

Research has shown that changes in moderation inefficacy are related to changes in negative outcome expectancies in alcohol and drug dependent population, measured from in-take to discharge (Fiorentine & Hillhouse, 2000; 2001; 2004). These studies have also found that the likelihood of abstinence is positively related to both NOE and MIE. However, these studies have only considered univariate models. However, the theory itself suggests an important relationship between NOE and MIE which suggests that an interaction effect should be investigated. As the perception that one cannot control their wagering increases, the perception, or certainty, that negative consequences will occur should be amplified. Therefore, moderation inefficacy should act as the moderator in the relationship between negative outcome expectancies and motivational readiness to change.

The current study endeavours to test the implied interaction by considering a multivariate model. This will take into account the multiplicative effect of these two key variables, whereas previous studies have only considered the effect of the variables separately. Furthermore, the mediational relationship put forth by Fiorentine and Hillhouse has only been empirically tested for change scores during treatment, and has never been tested within a gambling population. Therefore, the current study aims to extend this theory in several ways.

**Application of the ASPM to the current study.** The aim of the current study is to modify and extend the ASPM. As noted, the ASPM has been found tested within samples of recovering substance abusers seeking to become abstinent from their drug of

choice. By way of contrast to existing research with the ASPM, the current study will examines natural changers. More specifically, the aim of the current study will be to conduct a moderational analysis instead of a mediational one to determine the multiplicative effects of NOE and MIE. This will permit the examination of the predictive power of NOE and MIE on levels of motivational readiness to change within a problematic gambling sample. RTC and CTA, as a part of motivational readiness to change, are also indicators of the likelihood of successful abstinence. Both of these constructs tap into proximal measures of improved outcomes, and increased motivational readiness to change.

#### *2.3.4. Summary of the application of theoretical models to the current study*

In the current study I will examine two key predictor variables, NOE and MIE. I expect these variables to interact to predict the likelihood of abstaining from problematic gambling. The importance of NOE and MIE has been highlighted in all three of the theoretical models which have been previously discussed. I have shown that the TTM processes, the HBM, and the ASPM all point to the roles of negative outcome expectancies and moderation inefficacy. The presence of these elements in three major theories of motivation to change health destructive behaviours suggests that they are important to our understanding of why gamblers might be motivated to exert effort to resolve their problematic gambling. The fact that NOE and MIE have not been researched in the context of gambling behaviour change is a serious gap in the literature. The present study aims to fill this gap by testing the influence of NOE and MIE, and the interaction between them.

## 2.4 Predictors of Addictive Behaviour Change: The Empirical literature

### *2.4.1. Introduction to the empirical literature*

In order to better understand motivation to quit or cut back, addictions researchers have examined a wide number of factors. In this regard, there is empirical support to suggest a role for perceived social support, self-esteem, guilt, and confidence in the provided treatment (Comfort & Kaltenbach, 2000). It is currently unclear how each of these factors fosters increased motivation to quit or cut back. This research has been limited by primarily focusing on persons with addictive disorders who have sought help from professional treatment services.

As has been seen, several models of health behaviour change have implicated NOE and MIE as possible influences on the likelihood of successful abstinence. Theory has suggested that these variables may be important to behaviour change, however, the empirical literature lags behind theory. The following literature review highlights the dearth of research on NOE and MIE. Much of what has been done is preliminary in nature and most studies have not used sound theoretical bases to guide their research. This has created a patchwork of research which contains large unaddressed voids. To date, little is known empirically about the effects of negative outcome expectancies and moderation inefficacy on motivation to abstain in natural changers.

### *2.4.2. Negative Outcome Expectancies*

In the following section the empirical literature will be addressed in regards to NOE as a motivator of health destructive behaviour change. Much of the research has come from the alcohol and other substance use areas. However, there is some evidence

that NOE may motivate change from the gambling area as well. Theoretical implications and limitations of the area will also be discussed.

In order to understand the area of NOE it is important to note that there are two camps of expectancy research in the alcohol and substance use disorders area, positive expectancies and negative expectancies. Numerous studies have outlined the association between positive drinking or drug use outcome expectancies and continued or increased use (Brown, Christiansen, & Goldman, 1987; Fromme, Stroot, & Kaplan, 1993; Fromme, & D'Amico, 2000). This research concerns the motivations to continuing a health destructive behaviour such as excessive alcohol use, whereas negative outcome expectancies concern motivations to quit or cut-back. This is an important distinction to be made between these two expectancy literatures. Reductions in positive expectancies have not necessarily been found by the empirical literature to result in a reduction in the addictive behaviour (Jones, Corbin, & Fromme, 2001). However, increases in negative outcome expectancies may result in a reduction or cessation of the behaviour.

Research has suggested that the more a person gambles the more likely they are to experience harmful consequences (Currie et al., 2005). These negative consequences can cover a wide range of domains, such as financial, personal, and career. As theory predicts, the awareness of the likelihood that these negative consequences will occur in the future if the behaviour persist at a problematic level should increase motivation to change. While past negative consequences are strongly related to the expectancy of future consequences, it is the future expectancy which should be most influential on motivation. For those problematic gamblers who are unrealistically optimistic about the occurrence of future consequences there may be less impetus to quit or cut back.

It is important to note that most of the research into negative outcome expectancies has been done in the area of alcohol and substance use. However, the current study aims to empirically validate this construct within the problem gambling area.

**Research on treatment samples in the alcohol and substance use areas.** In a qualitative study which asked about the reasons that alcohol-abusing treatment seekers and social drinkers wanted to quit or cut back on their drinking, the most commonly cited reason was the expectation of future negative consequences related to excessive drinking (Marsh & Saunders, 2000). This study further found that those who were in treatment for alcohol abuse or dependence were more likely to be concerned about future negative consequences than were the social drinkers who did not believe their future consequences would be as severe. This finding may be theoretically related to the HBM in that the increased perception of severity influenced the desire to quit or cut back.

Commitment to recovery from substance abuse and dependence has been shown to be significantly increased by the experience of higher levels of expected negative consequences (Jones & McMahon, 1994; 1996). Other studies have suggested that associating negative future consequences with substance use may play a role in the desire to restrain one's use of these substances (Gadon, Bruce, McConnochie, & Jones, 2004). McNally and Palfai (2001) also investigated the role of negative outcome expectancies on the motivational readiness to change addictive behaviours. They have reported evidence that negative alcohol expectancies were predictive of total readiness to change scores, whereas positive expectancies were not a significant predictor. According to their study negative emotional expectancies were the most influential motivator to change.

Finally, the effect of negative outcome expectancies appears to continue past the action stage of change. Post-treatment, negative expectancies have also been shown to play a role in continued recovery (Amodeo & Kurtz, 1990; Eastman & Norris, 1982). In addition, McMahon and Jones (1994) argue that negative outcome expectancies play a significant role in the motivation to refrain from drinking as positive alcohol expectancies do in the motivation to engage in drinking behaviour even after resolution. The authors of this study found that negative outcome expectancies were strongly predictive of motivation to maintain abstinence. They concluded that the construct of NOE should be more widely included in addictions research because in their study it was able to predict more residual variance than were positive expectancies.

Taken together, these studies provide empirical evidence to suggest the anticipation of negative consequences of alcohol use may contribute to greater levels of motivation to change. These findings can be understood from the perspective of the theoretical processes of change discussed previously. Implicit within these studies are the theoretical concepts of perceived severity from the HBM, and all three of the discussed processes of change from the TTM, especially consciousness raising. Results derived from alcohol and other substance use research also begs the question of whether or not similar results would be found in samples of problematic gamblers.

**Research on community samples in the alcohol and substance use areas.** As previously mentioned, there is a lack of research in the addictions area, and more specifically the problem gambling area, on those who choose a path to recovery that does not involve professionally assisted change. However, there are some studies that have found that the desire to avoid future negative consequences has been an important

determinant of changing behaviour in spontaneously remitting alcohol abusers (Ludwig, 1985).

There is also some evidence that negative outcome expectancies may be even more important for those who are natural changers than for those who seek professional treatment. A study by McMahon, Jones, and O'Donnell (1994) studied non-treatment seeking social drinkers and found that both proximal and distal negative outcome expectancies were related to actual changes in the consumption of alcohol. The current study aims to test NOE within a community sample of problematic gamblers in order to help bridge this gap in the NOE literature and to better understand the concept of motivation to change.

**Research on negative outcome expectancies in gambling samples.** Marotta (1999) conducted a study with pathological gamblers which considered both natural changers and those who sought professional treatment. By teasing apart these two populations it was found that those who sought professional treatment were more likely to cite psychological distress as the main motivator for change. By comparison, gamblers who chose the natural change path seemed to be more motivated by the balance of the pros and cons. This suggests that the decisional balance may be especially important for those who choose to recover without professional assistance. As has been discussed, an important aspect of the decisional balance is the influence of negative expectancies related to continuing to engage in the problematic behaviour.

While also preliminary in nature, there is evidence that negative expectancies play a role in motivation to change for persons with a gambling disorder. In a sample of pathological gamblers, most of whom had never sought treatment, Hodgins and el-

Guebaly (2000) identified several factors contributing to the desire to quit or cut back on their gambling. The most prevalent of these were financial problems and emotional factors, both of which involve the recognition that these negative outcomes are related to a gambling problem. It is possible that negative historical consequences impacted the decision to quit or cut back by way of expectancies for future consequences. Those in the study who had resolved their gambling problem cited the anticipation of negative consequences as one of the reasons that they maintained their abstinence.

The expectation of future negative consequences of engaging in gambling behaviour has been found to be a significant predictor of desire and motivation to change in several gambling studies (Hodgins, 2001; Walters & Contri, 1998; Gillespie, Derevensky, & Gupta, 2007). Hodgins (2001) studied resolved gamblers and found that among several others, recognising past consequences and anticipating future ones was one of the strategies which participants used to maintain their abstinence. In a study of pathological gamblers who pursued a natural change path to recovery, Cunningham, Hodgins, and Toneatto (2009) found that those with more severe gambling problems cited negative future consequences as the main motivator for change. The study by Gillespie and colleagues (2007) found that adolescent problem and pathological gamblers anticipated both positive and negative outcomes most strongly in their study.

These studies do not take into account factors which may interact with negative expectancies to produce greater motivation to change, and greater commitment to abstinence. In order to understand the role that these negative expectancies play, it is important to further look at a model which could explain why the influence of negative expectancies has not been found to be equally powerful across all samples.

**Summary and critique of the NOE literature.** The literature on NOE shows some strong associations between negative outcome expectancies and the motivation to change a health destructive behaviour. This has been seen in empirical studies which have investigated a variety of addictive behaviours and populations. However, more research is needed to fill in the sizeable gaps that remain. Greater theoretical ties could improve the consistency of study findings. Furthermore, there should be more research which seeks to understand the motivation to abstain from addictive behaviours in natural changers.

In addition, there are a number of other limitations of this research area. As previously mentioned, there has been no consideration of the way NOE may interact with other important variables. Further, the way that the future negative consequences have been assessed suffers from a lack of construct validity. The measures used by most studies in this area focus on proximal and minor consequences which may not be sufficient to influence motivation to change (Alleva, & Hart, 2006). The outcome measures of readiness to change could also be improved. The current measure does not contain questions from all stages of change.

#### *2.4.3. Moderation Inefficacy*

As the Health Belief Model and Addicted Self Process Model suggest, negative outcome expectancies are not the only important factor affecting the motivation to abstain. In the following section the empirical literature on moderation inefficacy as a predictor of motivation to change will be discussed. Currently, the gaps that have been seen in the NOE literature are even greater in the MIE literature. To date, extensive literature searches brought up no studies which looked at the role moderation inefficacy

may play for natural changers in the alcohol and other substance use areas. This, and other limitations of the area will also be discussed.

Moderation inefficacy, otherwise known as doubt in one's ability to engage in an addictive behaviour in moderation, is a determinant of behaviour change that has been understudied across all addictive behaviours. Despite this lack of empirical research, what evidence does exist suggests that this factor will be important to motivation to abstain. Furthermore, following from the HBM's perceived susceptibility and the processes of change seen in the TTM, there is reason to believe this variable may have an influence on motivational readiness to change. It should be noted that there is little consensus on the name of this construct, and it has often been called perceived control, perceived lack of control, or impaired control within the literature.

**Evidence from the alcohol and substance use literatures on treatment-seekers.** In the alcohol literature there has been some debate about whether or not those who are dependent on alcohol can successfully become moderated drinkers, or whether they will only be successful by choosing abstinence. This debate has largely revolved around the notion of control, and whether or not those who are addicted can exercise sufficient behavioural control to become moderated drinkers (Glatt, 1980). From qualitative reports on social drinkers and treatment seekers, many treatment seekers attributed slips or relapse to a lack of control over the amount they drank (Marsh & Saunders, 2000). This concern over lack of control was far more apparent in treatment seekers than in the social drinkers. This suggests that there is a link between the perception of lack of control, or higher levels of moderation inefficacy, and concern over the seriousness of the drinking problem.

To date, most of the research has focused on abstinence self-efficacy. The difference between moderation inefficacy and abstinence self-efficacy is an important distinction to be made because they have very different implications. Abstinence self-efficacy is the confidence one has in one's ability to become and remain abstinent. Therefore, when studying the cessation of an addictive behaviour, high abstinence self-efficacy is positive because it is believed that abstinence self-efficacy underlies the change process (Hodgins, Peden, & Makarchuk, 2004). In this population, it has been argued, and is the position of the current study, that high moderation inefficacy is also positive. This is because those who have higher confidence that they would be able to wager in moderation (high moderation self-efficacy) should be less committed to the change goal of abstinence.

Moderation inefficacy has begun to be shown to have an effect on motivation to change within the substance abuse literature. Theory predicts that the less confidence a problematic gambler has in their ability to control their own wagering, the more committed the gambler will become to the goal of abstinence. Research has suggested that this is the case. Those participants who felt as though they lacked control over the amount they engaged in drinking or drug use were more likely to seek treatment and to be committed to the change goal of abstinence (Fiorentine & Hillhouse, 2000; 2003; 2004). In all of these studies, greater concern about impaired control was associated with greater commitment to abstinence, and was further associated with the perception of negative consequences as well.

Qualitative data has suggested that it may be especially important to understand the role of moderation inefficacy in relation to other influential variables. Participants in a

study by Marsh and Saunders (2000) revealed that they would use their feelings of moderation inefficacy to justify drinking to excess. Some suggested that this was because they did not truly want to moderate their drinking, and other stated that this was because the immediate benefits outweighed the consequences. The decisional balance that this group of participants engaged in was swayed in favour of drinking seemingly because their perception of future negative consequences was low. This further speaks to the importance of the subjective awareness of impaired control. While there are measures of objective impaired control, the perception of impaired control appears to be the key element of this construct. Findings such as this indicate that the subjective perception of loss of control may be an important contributor to the cessation of addictive behaviours under certain conditions.

**Evidence from the alcohol and substance use literatures on natural changers.**

Moderation inefficacy, or perceived lack of control, is a very new area of research. As has been discussed, within the addictions literature those who seek professional treatment are overrepresented in the research literature. Therefore, the natural change population has yet to be studied. More research is strongly needed in this area, and the current study aims to add to this area.

**Moderation inefficacy in gambling populations.** As might be expected based on the alcohol literature (Cunningham et al., 1993), within the problem gambling population, the more severe the gambling problem the more likely that treatment will be sought (Hodgins & el-Guebaly, 2000). A possible reason for this finding would be that those with a more severe gambling problem perceive themselves to be less able to control their

wagering. Differences in the perception of control may also play a role in the motivation to change within the population of gamblers who do not seek treatment.

Many problematic gamblers report that the main reason for not following a plan for change is that they believe that they can bring their wagering under control with their own willpower (Hodgins, 2001). Others believe that their problem is not severe enough to pose a problem (Marotta, 1999; Tavares, Martins, Silberman & el-Guebaly, 2002). Once again these findings suggest that the awareness of impaired control over wagering behaviour is essential to motivational readiness to change. One study by Fiorentine and Hillhouse (2001) found that increases in perceived moderation inefficacy accounted for a greater proportion of the variance in abstinence acceptance than did other predictors such as severity of the gambling problem.

Hardoon, Derevensky, and Gupta (2003) found that youth tend to considerably underestimate the severity of their gambling problem. They were unaware or unwilling to recognise the consequences of their gambling behaviour, and therefore did not believe they needed to quit or cut back. This is theoretically linked to the HBM's perceived severity as previously discussed. In conjunction with studies with adults (Marotta, 1999; Tavares, Martins, Silberman & el-Guebaly, 2002) it appears as though a lack of perspective on the severity, or an inflated sense of control over one's gambling behaviour, significantly reduce readiness to change or commitment to abstinence. Conversely, according to theory, doubt in the ability to control wagering should be related to increases in motivation to change.

**Summary and critique of the MIE literature.** While the research into this particular predictor of motivational readiness to change is in its infancy, it has begun to

show promise. A handful of studies have found a link between moderation inefficacy and the likelihood of successful abstinence. Understanding how MIE affects motivation to change has a wide number of implications in terms of our conceptualization of addiction and recovery, as well as for intervention development. Theoretical literature has preceded the empirical literature significantly in this area. Most notably the ASPM, but the HBM and TTM all contain processes which map onto MIE and suggest that this is a variable that requires more attention. The most evident limitation of the research in this area is the lack thereof. Secondly, the lack of a theoretical basis has led to a range of conceptualisations of MIE. Finally, there has been some confusion between the constructs of abstinence self-efficacy and moderation inefficacy. The current study aims to fill these gaps, as well as advancing the area by using a sample of natural changers.

### 2.5 Measuring Motivation to Change

In order to assess whether or not the constructs of negative outcome expectancies and moderation inefficacy have an impact on motivation to change it is important to understand how motivation to change is conceptualised, and how it is related to actual outcomes. The Transtheoretical Model suggests that readiness to change is a continuum that is related to specific stages of change. Therefore, greater readiness to change is found at the higher stages of change. In the literature various variables have been used to measure motivation. For the current study, motivation is broken down into commitment to abstinence and readiness to change.

#### *2.5.1. Operationalizing Motivation to Change*

Understanding motivation to change is essential to the area of problem and pathological gambling in terms of both increasing our knowledge base around this issue

as well as for designing and improving both professional and non-professional community resources. Motivation is considered to be important throughout the entire process of change (DiClemente, Schlundt, & Gemmell, 2004). Both readiness to change and commitment to abstinence have been shown to be prognostic indicators of successful cessation of addictive behaviours. Thus, these cognitive predictors provide both an understanding of motivation, as well as proximal measures of actual abstinence.

### *2.5.2. Readiness to change*

The first criterion variable in the current study is readiness to change, which has been conceptualised as the level of motivation to change. This stems from the TTM's 5 distinct stages of change. During the process of changing a behaviour one moves through the pre-contemplation, contemplation, preparation, action, and maintenance stages, and readiness to change should be higher within each consecutive stage (Prochaska, DiClemente, & Norcross, 1992). Therefore, this theory posits that there is a direct relationship between readiness to change and an individual's actual progress towards abstinence. Readiness to change has been used as an important outcome variable in studies wishing to assess the effect of treatment (el-Guebaly, Hodgins, Armstrong, & Addington, 1999).

In a review of the current research on readiness to change, DiClemente, Schlundt, and Gemmell (2004) suggest that those who have higher readiness to change across substance use addictions experience better outcomes. Within the gambling research area, a continuous measure of readiness to change was found to be predictive of both the level of severity and of reductions in gambling behaviour (Petry, 2005). These readiness scores

were also predictive of lower relapse rates, suggesting that increased motivation to change may be critical to resolving a gambling problem.

While most of the evidence comes from the alcohol literature, recent research has begun to show that readiness to change is also useful in predicting improved gambling outcomes (Petry, 2005). In the current study, following from theoretical predictions based on the gambling-adapted version of the ASM, this model was tested within a population of gamblers who are in the action stage of change and who hold abstinence as their change goal.

### *2.5.3. Commitment to abstinence*

Related to readiness to change is commitment to abstinence. Commitment to abstinence, the second criterion variable in the current study, is the self-reported level of dedication to refraining from engaging in the problem behaviour. Prochaska and colleagues (2003) found that greater awareness of the cons of smoking was related to greater commitment to abstinence, suggesting that negative outcome expectancies should be related to commitment to abstinence. Furthermore, treatment process research examining services for substance abusers has shown that commitment to change in action-stage gamblers predicts responsiveness to treatment (Joe et al, 2002; Dearing et al, 2005).

Within an adolescent population, increased commitment to abstinence in the first thirty days of treatment was related to a greater likelihood that participants would stay in the drug treatment program (Edelen et al., 2007). The longer participants remained in treatment, the better their posttreatment prognosis. Similarly, commitment to abstinence was also found to mediate the relationship between quality of life and remission status for

smokers (Laudet, Becker, & White, 2009). Therefore, commitment to abstinence appears to be strongly linked to improved outcomes across different addictive behaviours.

There is also empirical evidence that commitment to abstinence is predictive of relapse rates posttreatment as well. In a study by Hall, Havassy, and Wasserman (1990), commitment to complete abstinence after treatment was predictive of a lower risk of relapsing as well as longer periods between first use and relapse. This is not an uncommon finding within the literature. Commitment to abstinence, as well as a greater intention to avoid high-risk situations were also found to be predictive of lower relapse rates (Morgenstern, Frey, McCrady, & Labouvie, 1995). Both motivation and commitment to abstinence are believed to be influential in the area of relapse prevention (Miller, Carmona, & Leukefeld, 1993).

These studies all suggest that commitment to abstinence is a part of motivation to change which is predictive of better outcomes across numerous alcohol and substance use disorders. It is likely that this will be true for gambling disorders as well. This evidence suggests that there are a number of positive implications for the individual when motivation to abstain is increased, such as a greater likelihood of sticking to one's change plan.

## 2.6 Specific Hypotheses

To this end it was expected that higher negative outcome expectancies and lower moderation inefficacy would be significant predictors of both motivation to change, and of commitment to abstinence, moreover, it was predicted that there would be a significant interaction between moderation inefficacy and negative outcome expectancies.

1a) Negative outcome expectancies will be a significant predictor of readiness to change.

1b) Negative outcome expectancies will be a significant predictor of commitment to abstinence.

2a) Moderation inefficacy will be a significant predictor of readiness to change.

2b) Moderation inefficacy will be a significant predictor of commitment to abstinence.

3a) There will be a significant interaction between negative outcome expectancies and moderation inefficacy on readiness to change.

3b) There will be a significant interaction between negative outcome expectancies and moderation inefficacy on commitment to abstinence.

## CHAPTER III

### DESIGN AND METHODOLOGY

#### 3.1 Participants

The original sample consisted of 86 participants, but 11 were removed because they either did not complete enough questionnaires to have provided valid data, answered the questionnaires in such a way as to suggest that they did not answer accurately, or answered questions in such a way that they provided logical inconsistencies. The remaining sample originally consisted of 75 community-dwelling problem and pathological gamblers from Ontario, Canada. This number was then further reduced based on their responses to questions concerning professional assistance, to ensure none of the participants had engaged in professional assistance in the past three months. The final number of participants in the study was 62.

Only three participants had ever attended a Gamblers Anonymous (GA) meeting. One participant reported having been to a professional counsellor at some point in their lifetime, however this individual reported that it was not specifically for help with wagering behaviour. Eight participants had been to a financial counsellor at one point in their lifetime, and three were currently seeing a financial counsellor. These three were not excluded from the current study.

All participants indicated that they were pursuing, without professional assistance, the change goal of abstinence. For respondents to be accepted into the study they had to indicate that they were currently trying to cut out all gambling, however they were not required to be completely abstinent. In terms of the change efforts participants were engaged in, most of the sample (50%) reported that they were quitting on their own

without outside help. Some participants (16%) were talking to friends, family members, significant others, parish priests, minister, other spiritual/community leaders.

### 3.2 Measures

**Demographic and Background Information Questionnaire** (Please see Appendix A) was administered to gather background and descriptive information on the sample. The eligibility data were built into this questionnaire such that respondents were told at the outset if they were eligible or if they failed to satisfy our inclusion/exclusion criteria, such as being at least 19 years of age.

**Diagnostic and Statistical Manual of Mental Disorders (4<sup>th</sup> edition, text revision) (DSM-IV-TR) criteria for Pathological Gambling** (APA, 2000; see Appendix B) The DSM-IV-TR criteria for Pathological Gambling was used as an indicator of the severity of one's gambling disorder. In the present study only problem and pathological gamblers were included. The DSM-IV-TR inventory consists of 10 items measuring clinically-significant symptoms of gambling pathology.

**Negative Gambling Outcome Expectancy (NGOE) inventory** (see Appendix C) The NGOE was developed and validated by Hart and Frisch (2006) after reviewing the Negative Alcohol Expectancy Questionnaire (NAEQ) developed by Jones and McMahon (1992). Like the NAEQ, the NGOE assesses how strongly one will expect unpleasant or harmful consequences to occur if one continues to engage in problematic gambling. The negative repercussions covered by this questionnaire include family relationships, employment, social life, finances, and overall well-being. The NGOE inventory consists of 19 items on a Likert scale from 0 (very unlikely) to 4 (very likely). The instructions read "For the questions below, we would like you to use the power of

your imagination to think what it would be like if you went back to gambling. If you have not gambled for a while, try to think hypothetically about what might happen in the future if you were to gamble. Below is a list of things that you might or might not expect to happen in the future as a result of your gambling.” Items include questions such as “My partner or family would be harmed,” and “My job or work life would suffer.”

Higher scores reflect higher negative outcome expectancies from continued gambling. The overall Cronbach’s alpha for abstainers for this measure is high at .96 (Hart & Frisch, 2006). The current study found a Cronbach’s alpha of .95. The test-retest reliability was found to be .58 ( $p < .01$ ) and stable over time.

The NGOE was found to be strongly positively correlated with the Objective History of Aversive Gambling Consequences scale, the Moderation Self-Efficacy for Gambling Scale, the Attitudes towards seeking Professional Psychological Help scale and the DSM criteria. Furthermore, it was negatively correlated to the gambling self-efficacy questionnaire, the Gambler’s Illusion of Control over Winning scale, the Balanced Inventory of Desirable responding measure, the Subjective Enjoyment of Gambling scale, the self-control measure, and the Dispositional Optimism/Pessimism scale, suggesting convergent validity (Hart & Frisch, 2006). There was no association between the NGOE and the measure taping desire to feel in control of life. This lack of association between theoretically unrelated constructs supports the discriminant validity of the NGOE.

#### **Perceived Control Over Gambling (PCOG) questionnaire** (see Appendix D)

The 12-item PCOG, was adapted by Hart and Frisch (2006) based on the shortened version of the ‘Scale of Gambling Choices’ (SGC-short; Baron, Dickerson, & Blaszczynski, 1995). The PCOG asks participants to rate their level of agreement with

each statement on a Likert scale that ranges from 0 (Very Strongly Disagree) to 4 (Very Strongly Agree). This measure requires respondents to imagine a hypothetical circumstance in which they are asked to cut back on their wagering. As such, the PCOG taps expectations pertaining to one's ability to gamble within responsible limits. The instructions read "Using the power of your imagination, we would like you to think about what it would be like if you stopped pursuing your program of abstinence and started to gamble like you used to." The scale includes items such as "If I was to start gambling again, I would be able to stop easily after a few games or bets," and "If I was to start gambling again, I would have an overwhelming urge to continue, once I began a session." Higher scores indicate higher levels of perceived control over wagering behaviour.

The overall Cronbach's alpha for abstainers was found to be .92 (Hart & Frisch, 2006). In the current study it was found to be .86. Both of these are above acceptable cut-offs. The test-retest reliability for the PCOG was found to be .74 ( $p < .01$ ) and stable over time. The PCOG was found to be significantly and inversely related to the measure of gambling self-efficacy developed by May and his colleagues (2001) which also taps a gamblers perceived ability to control/self-regulate gambling expenditures. Furthermore, it was significantly and positively related to the objective history of aversive gambling consequences, and to the severity of disordered gambling. The PCOG was significantly and inversely related to the personality measure which tapped generalized ability to self-regulate one's behaviour across a variety of life domains (Hart & Frisch, 2006). These pieces of evidence suggest that the PCOG has convergent validity. In terms of discriminant validity, the PCOG was not at all related to the degree to which gambling is

perceived to be an enjoyable activity. Thus, in the test sample of action-stage gamblers who were pursuing a program of abstinence, the inability to exercise self-restraint in the context of problematic gambling is unrelated to positive emotions derived from wagering.

**Gambler's Readiness to Change Questionnaire (GRTC;** see Appendix E) was developed by Hart and Frisch (2006) and modeled on the 12-item Alcohol Readiness to Change Questionnaire (Rollnick, Heather, Gold, & Hall, 1992), which was based on Prochaska & DiClemente's (1992) Transtheoretical Model of change. The GRTC is a 16-item questionnaire which provides an overall continuous score and separate scores for each of the four stages of change before maintenance. In the area of gambling research, Neighbors, Losutter, Larimer, & Takushi (2002) have previously developed a similar 9-item questionnaire they have called the "Gambling Readiness to Change" questionnaire (GRTQ). The current study has chosen to use the GRTC over the GRTQ because of one serious limitation. The GRTQ fails to include any items concerning the preparation stage of change, whereas the GRTC does not. Preliminary research has found that in using this scale future adverse consequences predicted readiness to change independent of objective history of negative consequences, which has not been previously found with other scales (Alleva & Hart, 2006). The Cronbach's alpha of this measure was found to be acceptable in the current study, at .84.

**Level of Commitment to Total Abstinence Scale (LOCTA)** (See Appendix F) This scale is a short 6-item scale designed to assess a participant's level of commitment to abstinence. Participants answered a 4 point Likert scale that ranged from disagree (1) to very strongly agree (4). Items included questions such as "I am dedicated to doing what is required to achieve my goal of 'abstinence'," and "I have a strong desire never to

gamble again.” The Cronbach’s alpha for this scale is approximately .90 overall in the abstainers group (Hart & Frisch, 2006), and .71 in the current sample. Test-retest reliability was .70 ( $p < .01$ ) and stable overtime.

**Lifetime Negative Consequences of Gambling (LNCG)** (see Appendix G) This questionnaire was a re-worded version of the NGOE to capture the same negative repercussions in the past, in other words it assess what negative consequences participants had encountered over their lifetime. Respondents indicated whether or not they had experienced each of the consequences by circling yes or no. The yes responses were then summed to get a total score.

**Self-Deception Subscale of the Balanced Inventory of Desirable Responding (SDS-BIDR; Paulhus, 1991; Appendix H)** This scale was administered in order to be able to control for response bias due to self-deception and social desirability. Respondents answered 20 items on a scale from very true to very false. The alpha reliability has been found to be .83, and test-retest reliability was between .65 and .69 (Paulhus, 1991).

**Desirability of Control Scale – General Desire for Control Factor (DFC-DCS; Burger & Cooper, 1979; see Appendix I)** This scale measures an individual’s desire for control in different aspects of life. This is a 9-item scale on which participants rated their agreement with the items on a Likert scale from 1 (Strongly Disagree) to 4 (Strongly Agree). Higher scores indicate higher desire for control. Alpha for this scale was .80, and the test-retest reliability was .75 (Burger & Cooper, 1979).

### 3.3 Procedure

Ethics approval was obtained from the University of Windsor before the data collection began. Seventy percent of the sample completed the survey via the website,

while the rest completed the pencil and paper version. Participants completed a University of Windsor consent form and then went through the screening process. The first screener question determined eligibility in terms of age. If the participant reported being under the legal gambling age, they were excluded from the study and directed to an exit message.

If the participant did meet the age criteria, they were directed to the next series of questions. These questions were designed to assess whether the individual had made any attempts to control or change their gambling behaviors. If they endorsed any action-taking, they were then directed to questions designed to determine what sort of action they were undertaking. Those clearly endorsing that they were trying to avoid gambling were included in the current sample. If their responses to the abstinence/moderation questions were ambiguous, or they did not report any attempts to change their gambling behavior, they were directed to a final set of questions designed to assess frequency of gambling activities. Those reporting never having gambled, or not gambling at all during a typical two-week period were excluded from the study and directed to an exit message.

In order to be eligible for the study each respondent's answers to the exclusion criteria questions given on the screening questionnaire had to be consistent with their responses on the actual questionnaire packet. Those being excluded from the study were thanked for their time. Accepted callers were directed to leave a mailing address so that the questionnaire could be sent to them. Those passing the online screening procedure were directed to the online version of the questionnaire.

Data from particular respondents was removed from the analyses if there were logical inconsistencies. If participants phoned in they completed the automated screening

by answering questions on a touchtone phone keypad. If they passed the screening they were then mailed a paper copy of the questionnaire. If participants accessed the website they completed the screening online, and if they passed they moved onto the online questionnaire.

Participants were recruited using flyer advertisements with a 1-800 phone number and website address for potential participants to contact the study researchers. These flyers were distributed at various gambling establishments, Gamblers Anonymous meetings, and gambling treatment agencies in Ontario. In addition to fliers, ads were placed in the newspapers, on radio, and on television were used to recruit participants. All those who completed the questionnaire packet were given a \$15.00 gift voucher for Shoppers Drug Mart as compensation at the completion of the study. Those who referred other eligible participants and assisted with snowball recruitment were given an additional \$10.00 gift certificate. Treatment agencies also received a \$10.00 voucher for any eligible participants they referred to the study.

## CHAPTER IV

### ANALYSIS OF RESULTS

Data was analysed using the Statistical Package for the Social Sciences (SPSS) version 17. The results are divided into four subsections. These sections include descriptive analyses of the sample, descriptive and psychometric analyses of the study measures, the main analyses related to the hypotheses, and post-hoc analyses.

#### 4.1 Descriptive Analyses of the Sample

As there is minimal descriptive data concerning problem and pathological gamblers who have abstinence as a change goal and who choose a path to recovery that does not involve professional assistance I will report extensive background data to fully characterize the participants of this study. The inclusion sample was 69.4% ( $N = 43$ ) male and 30.6% ( $N = 19$ ) female. The average age of the sample was 37.1 years ( $SD = 11.4$ ), and ranged from 19 years to 69 years of age. Fifty-three percent of the sample reported never having married as can be seen in Table 1. Table 1 also shows that approximately 30% of the sample was married at the time of study participation.

Table 1  
*Marital Status of the Sample*

Status	# participants	percentage
Never married	33	53.2
Married	18	29.0
Divorced	4	6.5
Common-Law (living together)	4	6.5
Widowed	2	3.2
Separated	1	1.6

In terms of ethnicity, almost two thirds of the sample was Caucasian (61.3%).

Table 2 shows additional data pertaining to the ethnic breakdown of the sample. All but one of the participants were Canadian, with the remaining participant being American.

Table 2  
*Ethnic Breakdown of the Sample*

Ethnicity	# participants	percentage
Caucasian/European origin	38	61.3
Native Canadian/American	7	11.3
East Asian (Chinese, Japanese, Korean)	6	9.7
South Asian (Indian, Pakistani, Sri Lankan, etc)	4	6.5
African Canadian/American	3	4.8
Other or multi-ethnic origin	3	4.8
Middle Eastern	1	1.6
Hispanic and South American origin	0	0.0

Table 3 shows that almost half of the sample (45.9%) were employed full time, and almost a third were not employed at the time of study participation. The remaining participants were employed either part-time or on a temporary basis as can also be seen in

Table 4.

Table 3  
*Employment Status of the Sample*

Status	# participants	percentage
Full-time	28	45.2
Not employed	18	29.0
Part-time	10	16.1
Seasonal/Temporary/Contract	5	8.1

#### 4.1.1. Gambling Involvement

In regards to the severity of gambling problems within the sample, participants had an average of 5.4 DSM-IV-TR symptoms, and ranged from 1 to 10 symptoms. In terms of the breakdown of classifications within the sample, 66.1% of the sample were classified as a pathological gamblers, 25.8% of the sample were classified as problem gamblers, and the remaining 8.1% were classified as probable problem gamblers.

Seventy-one percent of the sample was still currently gambling at the time that data were collected, 21% had quit or cut-back in the past 6 months, and 8.1% had quit or

cut back significantly more than 6 months ago from the time of the questionnaire. When asked whether they believed that quitting means avoiding all types of gambling 71.0% said yes. However, there was considerable overlap when participants were also asked if quitting means only avoiding problem types of gambling, with 77.4% saying yes. The large majority of the sample, 93.5%, said that life would be better if they gambled less, however, only 74.2% stated that they were currently attempting to change their gambling behaviour. The number of attempts at quitting that participants had engaged in for a minimum of 24 hours is represented in Table 4. Visual analysis of the patterns present in the number of quitting attempts reveals some interesting information. The number of participants who had attempted 1 through 6 times to abstain was fair evenly distributed. The first spike was for 10 to 12 attempts, and there was a smaller spike around the 20 time mark.

Table 4  
*Number of Attempts at Quitting*

# of attempts	# participants	percentage
1-5 attempts	16	25.8
6-10 attempts	10	16.1
11-20 attempts	10	16.1
21-50 attempts	5	8.1

Participants were asked how successful they believed they had been at abstaining from gambling behaviour in the three months previous to the collection of the study data, on a scale from 1 to 100%. The results ranged the whole span of the scale, from 1 to 100%. As can be seen in Table 5, the subjective perception of success is widespread with certain high points at 50% successful and 80-90% successful.

Table 5  
*% Successful at Stopping in the Previous Three Months*

% Success	# participants	percentage
1	3	4.8
10	4	6.5
20	2	3.2
30	3	4.8
40	3	4.8
50	13	21.0
60	7	11.3
70	2	3.2
80	10	16.1
90	10	16.1
100	5	8.1

#### 4.1.2. Negative Historical Gambling Consequences

As a result of continued problematic gambling, participants in the sample have experienced a number of serious consequences. For some participants, 38.7%, continued gambling had resulted in a crisis that was “overwhelming.” As can be seen in Table 6, in the 3 months previous to taking the survey participants had suffered most from emotional consequences such as high levels of worry and anxiety. Table 6 also contains the top ten recent consequences of continued gambling.

Table 6  
*Recent consequences of continued gambling*

Consequence	Percentage of participants	Rank
High levels of anxiety/worry	56.5	1
Felt just miserable	54.8	2
Suffered financially	40.3	3
Became argumentative	33.9	4
High levels of anger	32.3	5
Spiritual or moral life was harmed	21.0	6
Social life, popularity or reputation was harmed	17.7	7
Physical health was harmed	11.3	8
Lost spouse/partner	9.7	9
Stole money	9.7	10

The top ten lifetime consequences of continued gambling were slightly different, with “felt just miserable” and having suffered financially being the most prominent

consequences as can be seen in Table 7. Also shown in Table 7 are the rest of the lifetime consequences of continued gambling in ranked order.

Table 7  
*Lifetime consequences of continued gambling*

Consequence	Percentage of participants	Rank
Felt just miserable	77.4	1
Suffered financially	77.4	2
High levels of anxiety/worry	74.2	3
Became argumentative	45.2	4
High levels of anger	43.5	6
Physical health was harmed	25.8	7
Social life, popularity or reputation was harmed	25.8	8
Friendships suffered	24.2	9
Job or work was damaged	21.0	10

When asked to specify in written format if anything bad had happened to them as a result of their gambling, participants who chose to respond ( $N = 24$ ) provided a range of responses. Two main themes emerged from these qualitative responses. The first and most prominent was financial difficulty, with 22 responses. These verbatim participant responses included examples such as “Lost money intended for other necessary monthly expenditures such as bills and medication,” and “Lost all money in bank accounts, could not pay rent, phone line disconnected.” The second theme was relationship difficulties as a result of continued gambling with 6 responses. These verbatim participant responses included examples such as “[Had to] lie to my spouse,” and “[My] family life was in danger of separation.” Some responses fell into both of these categories, such as “[My] gambling led to loss of huge amounts of money (50,000+) and ended my first marriage in divorce.” There were two other responses that did not directly fall into these categories, but are related. These include, “[Was] beaten up by bookies,” and “Nearly lost my son.”

#### 4.1.3. Summary of Participant Descriptives

The current sample consists of primarily Caucasian never-married men, about half of whom were not employed full-time at the time that data was collected. Participants had encountered a number of historical difficulties related to their gambling behaviour with the most prevalent being emotional, interpersonal, and financial. About a quarter of the sample had attempted to quit or cut back on their gambling more than 10 times.

### 4.2 Descriptive and Psychometric Analyses of Study Measures

#### 4.2.1. Reliability Analyses

Cronbach's Alpha was performed on the four continuous main variables, the Negative Gambling Outcome Expectancy (NGOE) inventory (Hart & Frisch, 2006), the Perceived Control Over Gambling (PCOG) scale (Hart & Frisch, 2006), the Gambler's Readiness to Change Questionnaire (GRTC; Hart & Frisch, 2006), and the Level of Commitment to Abstinence (LOCTA) scale. Results are summarized in Table 8. For the NGOE, PCOG, and the GRTC good ( $\alpha \geq .8$ ) to excellent ( $\alpha \geq .9$ ) internal consistencies, based on Cicchetti's (1994) guidelines for reliability, were found. The alpha for the LOCTA scale was found to be lower than the other variables with an internal consistency that fell into the fair range ( $\alpha \geq .7$ ). The contribution of each of the 6 items to the internal consistency was evaluated. Item 6 was removed, but the internal consistency did not significantly improve, and removing additional items did not increase the alpha. The 6-item LOCTA was retained for the analyses.

Table 8  
*Reliability of Main Study Variables*

Measure	# of items	Cronbach's Alpha
Negative Gambling Outcome Expectancy	19	.949
Perceived Control Over Gambling	12	.858
Gambler's Readiness to Change Questionnaire	16	.844
Level of Commitment to Abstinence	6	.708

The mean, range, and standard deviations for all measures used in this study are presented in Table 9. All variables were created by using a sum of item scores with the exception of the Gambler's Readiness to Change questionnaire which was created by creating subscores for each of the 4 readiness to change stages included in the questionnaire. The subscores for the contemplation, preparation, and action stage were then summed. The subscore for the precontemplation stage was then subtracted from the sum of the other subscores to create the total score, utilizing a continuous scoring method as opposed to a categorical method (Forsberg, Ekman, Halldin, & Rönnerberg, 2004).

Table 9  
*Descriptive Data for all Variables in Main Analyses*

Measure	<i>N</i>	<i>M</i>	<i>SD</i>	Range
<b>Predictor Variables</b>				
Negative Gambling Outcome Expectancy	62	25.7	15.6	1 - 69
Perceived Control Over Gambling	62	27.9	8.6	12 - 50
<b>Outcome Variables</b>				
Gambler's Readiness to Change	62	32.6	8.4	10 - 52
Level of Commitment to Abstinence	62	19.1	2.6	12 - 24
<b>Control Variables</b>				
DSM-IV-TR Severity Score	62	5.4	2.5	0 - 10
Lifetime Gambling-Related Difficulties	62	1.9	1.6	0 - 7
Desirability of Control Scale	62	26.8	3.8	16 - 36
Self-Deception Subscale	62	50.9	5.9	36 - 65

#### 4.3 Analyses Related to Main Hypotheses

In order to determine which of the theoretically related control variables would be retained for the main analyses zero-order correlation analyses were run. Only those background variables which were significantly related to both the predictor variables and

the outcome variable were retained. Symptom severity, gambling-related difficulties (GRD), gender, desirability of control (DESC) and self-deception (SDS) were included as potential control variables. As can be seen in Table 10, DSM-IV-TR severity (DSMS) and SDS were significantly correlated with both the predictor variables (NGOE and PCOG) and with GRTC. Therefore these two variables were then used as control variables in the regression analyses that had GRTC as the outcome variable. In terms of the second outcome variable, LOCTA, Table 10 reveals that none of the background variables were significantly related with LOCTA and so none were retained for the regression analyses. The Gambling-related difficulties questionnaire was used in these analyses in place of the lifetime history of negative consequences due to problems with multicollinearity.

Table 10  
*Correlations Between Measures*

Measure	1	2	3	4	5	6	7	8	9
Predictor Variables									
NGOE - 1	1	.46 <sup>b</sup>	.38 <sup>b</sup>	-.14	.42 <sup>b</sup>	-.39 <sup>b</sup>	.34 <sup>b</sup>	-.07	.24
PCOG - 2		1	.10	-.14	.51 <sup>b</sup>	-.33 <sup>b</sup>	.27 <sup>a</sup>	.24	.25 <sup>a</sup>
Outcome Variables									
GRTC - 3			1	.25	.41 <sup>b</sup>	-.31 <sup>a</sup>	.17	-.19	.14
LOCTA - 4				1	-.07	.02	-.11	-.08	.07
Control Variables									
DSMS - 5					1	-.48 <sup>b</sup>	.31 <sup>a</sup>	.07	.16
SDS - 6						1	-.30 <sup>a</sup>	-.19	.12
GRD - 7							1	-.03	.36 <sup>b</sup>
Gender - 8								1	-.14
DESC - 9									1

Note.  $a = p \leq .05$ ,  $b = p \leq .01$

The assumptions of regression analyses were checked for all measures. All measures approximated a normal distribution and did not violate the assumptions of linearity, homoscedasticity, or multicollinearity after gambling-related difficulties was

substituted for the history of negative consequences. No outliers were removed from the analyses.

Both hypothesis 1a and 2a were analysed with a hierarchical regression analysis. Hypothesis 1a stated that negative outcome expectancies would be a significant predictor of readiness to change, and hypothesis 2a stated that moderation inefficacy would be a significant predictor of readiness to change. In the first step of the regression symptom severity and self-deception were entered as controls. In the second step NGOE and PCOG were entered. As can be seen in Table 11, the first step of the regression was significant and accounted for approximately 18.5% of the variance in readiness to change. When the predictor variables were entered into the model in step 2 the model remained significant and accounted for approximately 27.1% of the variance in readiness to change.

Table 11  
*Regression Results for Readiness to Change*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with control variables	6.7	.002	.185	7.7
Step 2 with NGOE and PCOG	5.3	.001	.271	7.4

As can be seen in Table 12, after controlling for symptom severity and self-deception bias, negative outcome expectancies significantly predicted readiness to change, however moderation inefficacy only showed a trend towards significance. Therefore, hypothesis 1a was supported, but hypothesis 2a was not. These hypotheses were tested in an unadjusted regression that did not include the control variables. This analysis revealed similar results to the adjusted regression in that NOE was a significant contributor ( $p < .01$ ), and the PCOG was not ( $p = .50$ ). It should be noted that the measure of MIE became less significant without the control variables. Further analysis

revealed that the omission of DSM severity as a control variable appeared to influence the contribution of the PCOG to the model.

Table 12  
*Contribution of Model Variables*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	SDS	-.217	.191	-.152	-1.135	.261
	DSMS	1.117	.443	.337	2.520	.014
Step 2	SDS	-.151	.189	-.106	-.801	.427
	DSMS	1.190	.476	.359	2.502	.015
	NGOE	3.146	1.370	.309	2.297	.025
	PCOG	-2.988	1.619	-.256	-1.845	.070

Hypothesis 1b and 2b were also analysed using a hierarchical regression.

Hypothesis 1b stated that negative outcome expectancies would be a significant predictor of commitment to abstinence, and hypothesis 2b stated that moderation inefficacy would be a significant predictor of commitment to abstinence. No control variables were entered into the regression because none had been significantly related to LOCTA. The results of the hierarchical regression with commitment to abstinence as an outcome variable were non-significant as can be seen in Tables 13 and 14. Neither NGOE nor PCOG were significant predictors of this measure of commitment to abstinence. Therefore, hypotheses 1b and 2b were not supported.

Table 13  
*Regression Results for Level of Commitment to Abstinence*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with NGOE and PCOG	.54	.66	.03	2.7

Table 14  
*Contribution of Model Variables for Level of Commitment to Abstinence*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	NGOE	.012	.026	.069	.445	.658
	PCOG	-.043	.046	-.139	-.918	.362

Hypothesis 3a and 3b were analysed using a moderated regression analyses. Hypothesis 3a stated that there would be a significant interaction between negative outcome expectancies and moderation inefficacy on readiness to change. Hypothesis 3b stated that there would be a significant interaction between negative outcome expectancies and moderation inefficacy on commitment to abstinence. For the readiness to change moderated regression the third model with the interaction term remained significant as can be seen in Table 15, however, the interaction term did not significantly contribute to the model as can be seen in Table 16. The non-significant interaction is depicted graphically in Figure 1.

Table 15

*Moderated Regression Results for Readiness to Change*

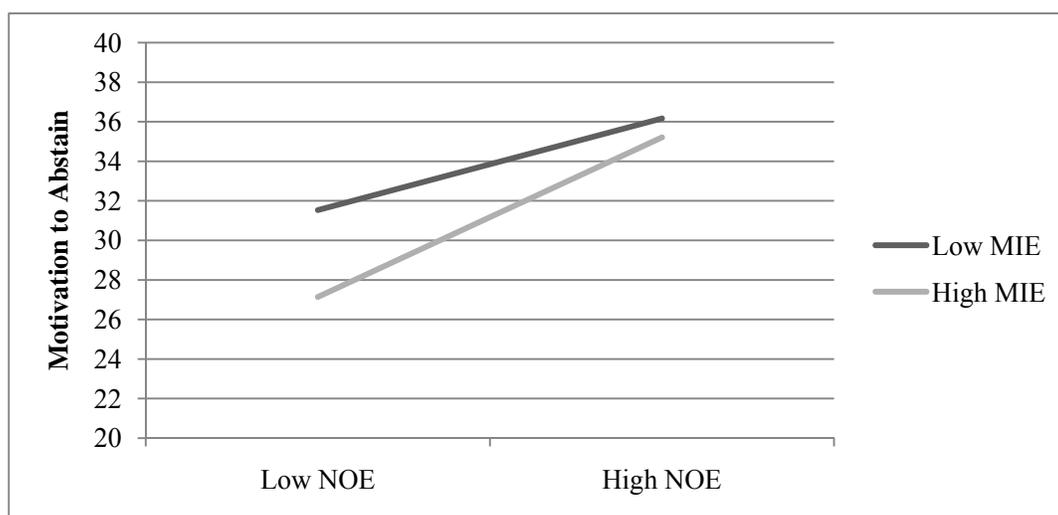
Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with control variables	6.7	.002	.185	7.7
Step 2 with NGOE and PCOG	5.3	.001	.271	7.4
Step 3 with interaction term	4.2	.003	.272	7.5

Table 16

*Contribution of Model Variables in the Moderated Regression*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	SDS	-.217	.191	-.152	-1.135	.261
	DSMS	1.117	.443	.337	2.520	.014
Step 2	SDS	-.151	.189	-.106	-.801	.427
	DSMS	1.190	.476	.359	2.502	.015
	NGOE	3.146	1.370	.309	2.297	.025
	PCOG	-2.988	1.619	-.256	-1.845	.070
Step3	SDS	-.142	.190	-.099	-.748	.458
	DSMS	1.157	.479	.349	2.415	.019
	NGOE	.147	.076	.274	1.929	.059
	PCOG	-.256	.136	-.263	-1.887	.064
	NGOE*PCOG	.006	.008	.103	.801	.426

Figure 1. Interaction of NOE and MIE



For the commitment to abstinence moderated regression none of the models were significant as can be seen in Table 17. Additionally, neither of the key variables nor the interaction term added significantly to the model, as can be seen in Table 18. Therefore, neither hypothesis 3a nor hypothesis 3b was supported. It should be noted, however, that when the sample was broken down by gender the interaction term did become significant for males. Please see the post-hoc analyses section for this data.

Table 17

*Moderated Regression Results for Level of Commitment to Abstinence*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with NGOE and PCOG	.78	.46	.03	2.6
Step 2 with interaction term	.51	.68	.03	2.6

Table 18

*Contribution of Model Variables for Level of Commitment to Abstinence*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	NGOE	-.015	.024	-.092	-.632	.530
	PCOG	-.029	.044	-.096	-.662	.511
Step 2	NGOE	-.016	.026	-.096	-.611	.544
	PCOG	-.029	.044	-.097	-.660	.512
	NGOE*PCOG	.000	.003	.010	.069	.945

#### 4.4 Post-hoc Analyses

The first post-hoc analysis that was run involved splitting the sample by gender and re-running the analyses related to the main hypotheses. When the regression was run with only the males in the sample ( $N = 43$ ) the results remained similar to those from the full sample. As can be seen in Table 13 and Table 14, both the models with the control variables and those with the predictor variables were significant. The model that contained the predictor variables increased the amount of variance accounted for by the model from approximately 24.9% to 34.5%.

Table 19  
*Regression Results for Males*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with control variables	6.6	.003	.249	7.1
Step 2 with NGOE and PCOG	6.5	.000	.345	6.5

While NGOE remained significant (and indeed became more so), the PCOG remained a trend towards significance. As may be seen in Table 14 the influence of negative outcome expectancies was nearly as important as the influence of symptom severity.

Table 20  
*Contribution of Model Variables for Males*

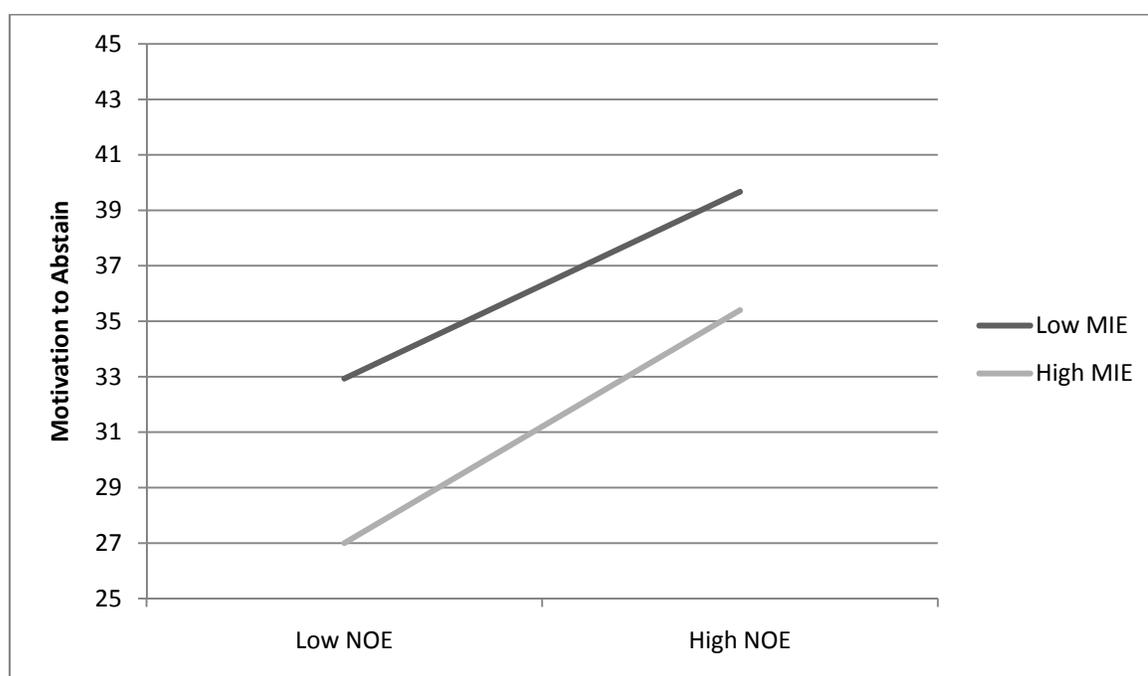
Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	SDS	-.128	.257	-.077	-.496	.623
	DSMS	1.422	.485	.458	2.933	.006
Step 2	SDS	.067	.247	.041	.272	.787
	DSMS	1.559	.489	.502	3.190	.003
	NGOE	.248	.081	.461	3.073	.004
	PCOG	-.305	.164	-.292	-1.866	.070

When the same analyses were run with just the females from the sample ( $N = 19$ ) none of the variables, including the control variables, even approached significance. This

suggests that the males in the sample are the root of the significant finding for the entire sample.

The moderated regression analyses were also re-run with each of the gender-specific samples. An interesting finding came from this analysis as well. As can be seen in Table 15 the third model with the interaction term was significant. This interaction is depicted graphically in Figure 2.

*Figure 2. Male Subsample Interaction Between MIE and NOE*



In this case, as can be seen in Table 16, the PCOG variable becomes a significant predictor as did the interaction term. The model that included the interaction term increased the amount of variance account for, for males, to approximately 41.9%.

Table 21

*Moderated Regression Results for Males*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with control variables	6.6	.003	.212	7.2
Step 2 with NGOE and PCOG	6.5	.000	.345	6.5
Step 3 with interaction term	7.1	.000	.419	6.1

Table 22  
*Contribution of Model Variables in the Male Moderated Regression*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	SDS	-.128	.257	-.077	-.496	.623
	DSMS	1.422	.485	.458	2.933	.006
Step 2	SDS	.067	.247	.041	.272	.787
	DSMS	1.559	.489	.502	3.190	.003
	NGOE	.248	.081	.461	3.073	.004
	PCOG	-.305	.164	-.292	-1.866	.070
Step 3	SDS	.222	.241	.134	.920	.364
	DSMS	1.583	.460	.509	3.440	.001
	NGOE	.224	.077	.416	3.073	.006
	PCOG	-.361	.156	-.346	-2.318	.026
	NGOE*PCOG	.018	.007	.321	2.424	.020

When the moderated regression analysis was run with the female subsample, as may be expected from the above results, nothing was found to be significant as can be seen in Table 23. The interaction term and the PCOG variables did not approach significance as can be seen in Table 24. The addition of the key predictor variables and the interaction term did not account for a significant amount of the variance explained by the model. The variance accounted for increased by less than one percent for the female subsample, as is shown in Table 23. Even the DSM symptom severity was not a significant predictor of RTC for the female subsample, as is shown in Table 24. Unadjusted analyses were run for each gender analysis and provided similar results to the analyses which included control variables.

Table 23  
*Moderated Regression Results for Females*

Model	F	Sig.	R <sup>2</sup>	SE
Step 1 with control variables	2.2	.139	.219	8.2
Step 2 with NGOE and PCOG	.99	.445	.220	8.8
Step 3 with interaction term	.74	.610	.221	9.1

Table 24  
*Contribution of Model Variables in the Female Moderated Regression*

Model	Measure	B	SE	$\beta$	t	Sig.
Step 1	SDS	-.499	.933	-.428	-1.675	.113
	DSMS	.260	.298	.071	.279	.784
Step 2	SDS	-.507	.322	-.435	-1.573	.138
	DSMS	.360	1.197	.099	.301	.768
	NGOE	-.024	.159	-.048	-.153	.881
	PCOG	-.004	.258	-.005	-.016	.988
Step 3	SDS	-.501	.372	-.430	-1.349	.201
	DSMS	.373	1.295	.102	.288	.778
	NGOE	-.018	.233	-.036	-.079	.938
	PCOG	-.007	.280	-.008	-.025	.980
	NGOE*PCOG	.000	.026	-.014	-.035	.973

The DSM-IV-TR severity was then assessed for each of the gender groups in order to further understand these findings. However, the difference between the average number of symptoms experienced by both groups did not significantly differ. Males experienced on average 5.3 DSM-IV-TR symptoms of pathological gambling. Females experienced on average 5.6 DSM-IV-TR symptoms of pathological gambling.

An analysis of the means of the key study variables revealed no significant differences between the genders on any of the predictor or outcome variables. Additionally, the skewness and kurtosis of the key variables were examined for the female subsample, and no problems were identified. A sample of 19 male participants was age-matched with the female participants and the regression and moderated regression analyses were run on this small subsample. While the findings were non-significant, NOE and the interaction term showed trends toward significance, suggesting that the disparity in the results between the male and female subsamples may not be due to sample size alone.

As the PCOG measure was designed for those who were in the action stage of change, and therefore had already begun to abstain from gambling, the subsample that met that assumption was selected out. As mentioned above the majority of the sample was still gambling at the time the data was collected. However, it should be noted that there is no data on whether or not these participants were engaging in their problem-specific type of gambling. On this subsample of actual abstainers ( $N = 18$ ) the regression and moderated regression analyses were run. However, none of the results from this small subsample were found to be significant.

Finally, based on preliminary findings from a sample of alcohol abusers there was evidence for a possible mediational role for negative outcome expectancies between objective history of negative consequences and readiness to change. This was investigated with the current sample of problem and pathological gamblers. However, contrary to what had been found in the alcohol area, negative outcome expectancies did not function as a mediator between historical consequences and the level of readiness to change in this sample. This analysis was run with both the full sample, and the male subsample, both findings were non-significant.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

While scholarship in the area of problematic gambling has begun to expand in recent years, and there is increased understanding of the problem from a clinical perspective, there are a large number of areas that remain under-researched. The general purpose of the current study was to begin to close these gaps in the literature, extend previous research, and apply theory to an area of research which has been mostly atheoretical. Specifically, the present investigation aimed to test a theory-guided model of problem gambling cessation in a sample population who were attempting to quit without professional assistance. Given that natural changers outnumber treatment seekers, it is surprising that so little research has been conducted with this subsample to understand naturally occurring psychological factors that facilitate or inhibit motivation to change. For this reason, the current study focused on those who were not seeking professional assistance.

The present study investigated the role of both negative outcome expectancies (NOE) and moderation inefficacy (MIE) on motivation to abstain from gambling behaviour. Further, the present study also investigated the interaction of these two variables. Several theoretical models were extended to the area of gambling cessation. These included elements of the Health Belief model and the Transtheoretical model. In addition, the Addicted-Self Process model was adapted and extended by testing the model in a non-clinical problematic gambling population, and by investigating the possibility of an interaction between the theoretical variables. The general implication of

the findings of this study provide information on increasing the likelihood of quitting gambling without professional treatment.

The analyses of the data from this population produced some interesting and unexpected results which require careful consideration. While not all of the hypotheses were supported, this study has made unique contributions to the area of gambling research. The uniqueness of the sample will be discussed in order to provide descriptive and comparative data for other studies which seek to understand natural changers. Secondly, the results relating to the main hypotheses will be discussed, as will the conceptually-related post-hoc analyses. The results of this study have a wide range of implications. The research-related, clinical, practical, and methodological implications will be explored. Finally, the limitations and future directions will be explored.

### 5.1 Sample Characteristics: Basic Demographic Information

In the published literature very little is known from the standpoint of basic descriptive information about the population of problem and pathological gamblers who do not seek professional treatment. The current study aimed to help fill this gap by assessing a number of background variables in a population of Canadian community-dwelling gamblers whose change goal was abstinence.

The current sample was largely made up of Caucasian, never-married men, most of whom were not employed full-time. Two-thirds of the inclusion sample was male, however, at the outset of the study this number was closer to half. As the sample was refined to exclude those who were not attempting to abstain from pathological gambling the number of females was reduced. Much of the research that has been conducted in the area of problematic gambling has focused on male participants (Raylu, & Oei, 2002). As

the post-hoc analyses revealed this is a weakness of the literature as female participants may not follow the same behavioural and motivational patterns as do males. Currently, there remains little information on how to approach the treatment of women who engage in problem gambling (Spunt et al., 1998).

Most of the sample fell into the pathological gambling range based on their DSM-IV-TR scores. These findings are similar to a small community sample of Albertans obtained by Hodgins, Wynne, and Makarchuk (1999). This study used telephone follow-up interviews after a community survey to identify 6 community-dwelling previously pathological gamblers who had resolved their gambling problem. Five of the 6 participants did not seek professional assistance during their recovery. Hodgins and colleagues found that these participants had on average 5.3 DSM-IV symptoms. This is the same number found in the current sample.

These findings are only slightly lower than those found in clinical populations of problem gamblers (Ladouceur et al., 2006) suggesting that those who do not seek professional help are still experiencing a number of serious consequences related to their continued gambling. This further suggests that those who do not seek professional treatment may still significantly benefit from community resources or online interventions. This may be especially true considering that most of those who did not fall into the pathological gambling category still stated that their life would be improved if they gambled less.

In general, there were several categories of negative consequences that participants in the current study experienced: emotional, financial, interpersonal, spiritual, physical, legal, and vocational. The negative consequences of gambling that

participants had encountered in the past 3 months differed slightly from those that had been encountered at some point during their lifetime, but both followed similar patterns. Emotional consequences were the highest ranked, followed closely by financial consequences, suggesting that problematic gambling takes a serious toll on more than a person's finances.

Those who struggled with disordered gambling in our sample suffered from subjectively high levels of anxiety, miserable feelings, and considerably irritability, across the two time frames. Fewer numbers of participants experienced other serious consequences such as losing their spouse, stealing money, or having their physical health harmed. In terms of lifetime consequences, more interpersonal consequences became prevalent for participants in the study than in the recent time frame. Approximately a quarter of the sample had experienced some form of social or interpersonal consequence as a result of their gambling. These included consequences such as having friendships or one's social life suffer. In addition to this, around a fifth of participants reported that their job or work suffered as a result of their gambling. Of interest was that within the three month time frame participants more frequently reported that their spiritual or moral life had been harmed by their gambling compared to the lifetime time frame, as may be seen in Tables 6 and 7.

Over a third of the sample had encountered a time when their gambling had led to a crisis which overwhelmed them. When asked to specify in written format what major difficulty participants had experienced as a result of their gambling, the major focus of the responses was on the financial repercussions. Participants frequently reported spending more money than they had intended, or getting into debt that they knew they

would be unable to pay back. For one participant the financial consequences clearly interacted with the consequence of harm to their physical health as they reported being “beaten up by bookies.” What was also important for numerous participants was the impact that their gambling had had on their relationships. As a result of their gambling several participants reported that their marriage ended in divorce, and one participant wrote about almost losing their son. Therefore, while emotional consequences appear to be the most prevalent for participants, the financial and interpersonal consequences appear to be the most salient to participants.

A study of treatment-seeking pathological gamblers which included qualitative components found very similar results when they asked their participants about negative consequences from gambling (Morasco, Weinstock, Ledgerwood, & Petry, 2007). They found that in the qualitative answer given by participants concerning negative consequences that they had experienced stemming from their gambling behaviour the most common themes were depressed mood, financial problems, and conflict with family. These parallel the findings of the present study. This finding lends support to the idea that problematic gamblers experience a number of negative consequences which are personally distressing, and which impact a number of area of their lives.

While the sample was carefully selected to be pursuing abstinence the majority of the sample was still engaging in gambling behaviour at the time that study data was collected. However, it remains uncertain whether these participants were still engaging in their specific problem type of gambling, or whether they had cut out certain types. As will be discussed further, there are different definitions within the problematic gambling populations as to the meaning of abstinence and responsible gambling.

The participants in the present study were currently motivated to change their gambling behaviour, and all had stated that their ultimate goal was abstinence. There was a discrepancy in the data in terms of the overlap because of the half of the participants who answered yes to both “quitting means avoiding all types of gambling” and “quitting means avoiding only specific types of gambling.” After analysing the questions it seemed as though the methodological limitation likely occurred on the second question, as the “only” was not highlighted and may have been overlooked by a number of participants. Since the questions should be mutually exclusive it stands to reason that those who answered yes on the first, non-ambiguous question, would not have meant to answer yes to the second one.

Under these assumptions it is possible to suggest that the 30 participants who answered yes to both questions only meant to answer yes to the first question. This would indicate that two-thirds of the sample believe that quitting means avoiding all types of gambling, and one third believe that quitting means only avoiding their problem-specific type of gambling. There remains the possibility that, despite the fact that one question should exclude the other, some participants may have meant to say yes to both of these questions. However, it would appear that the majority of participants believe that quitting means complete abstinence, which is more in-line with the Alcoholics Anonymous version of abstinence.

Those who stated that they were currently involved in change efforts were mostly making use of personal resources. Half of the sample were quitting on their own without help, and other methods included talking to friends, family, significant others, spiritual leaders, or some other personal acquaintance. Some participants were cutting down as

their pathway to abstinence. Most of the participants had at some point in their lifetime attempted to moderate their gambling behaviour, and many had attempted to within three months of the time that the data was collected. This appears to indicate that even for those who choose abstinence as a change goal, moderation is part of their change process. This has some important practical implications, which will be discussed further.

How successful participants felt that they had been ranges considerably. While approximately a quarter of the sample felt that they had been less than 40% successful at attempting to abstain, approximately a third felt that they had been 50-60% successful, and over a third believed that they had been more than 80% successful, as can be seen in Table 5. Therefore this sample contains participants who have been more or less successful at abstaining from gambling behaviour. A crosstabulation of this variable with the number of stopping attempts provides some interesting insight into the different experiences with quitting that individuals encounter. For example, two participants reported attempting to abstain only once, and felt that they had been 80-90% successful. However, one participant reported having attempted to abstain 35 times, and felt that they had only been 10% successful. Understanding the differences between those who are able to abstain more easily and those who struggle for longer will greatly advance this area of research, and should be further investigated.

These results provide a better picture of those problematic gamblers in the community who have chosen not to seek professional treatment, but who nevertheless are grappling with a serious disorder. The descriptive data provided by this study permits the comparison of this community sample to clinical samples that have been published in the area. As has been seen, in many ways this sample both resembles and differs from

samples which deal with treatment seekers. Of important note are the consequences and the seriousness of the disordered gambling which is occurring in this community sample. If other community samples suggest the same level of distress, then the need for services which reach out to these populations is evident.

## 5.2 Discussion of the Main Hypotheses

As mentioned above, the main purpose of the current study was to identify the psychological processes which increase a problematic gambler's readiness to change. Understanding these processes is key to developing effective interventions, improving current techniques, and advancing the knowledge base concerning community-dwelling problematic gamblers.

In terms of the specific hypotheses it was expected that higher negative outcome expectancies would be predictive of higher readiness to change, and secondly that higher moderation inefficacy would be predictive of higher readiness to change. In the same vein, the second set of hypotheses stated that negative outcome expectancies would be predictive of higher commitment to abstinence, and secondly that higher moderation inefficacy would be predictive of higher commitment to abstinence. Finally, the third set of hypotheses expected that there would be a significant interaction between negative outcome expectancies and moderation inefficacy, and that this interaction would significantly predict readiness to change and secondly commitment to abstinence.

Some of these hypotheses were supported by the data, but not all. Furthermore, of the five theoretically related background variables that were assessed only two were retained for the purpose of the analyses. These included the Self-Deception Subscale of the Balanced Inventory of Desirable Responding, and the symptom severity as measured

by DSM-IV-TR score on the Pathological Gambling criteria. The remaining three control variables were not significantly correlated with the outcome and predictor variables. The DSM-IV-TR score was the only control variable which was a significant contributor to the regression models. This severity score is a good bench mark against which the contribution of the new variables may be compared as it is the most commonly used and best understood contributor to readiness to change (Cox, Enns, & Michaud, 2004).

### *5.2.1. Discussion of Hypothesis 1a*

**Higher negative outcome expectancies should predict higher readiness to change.** The hypothesis concerning negative outcome expectancies as a predictor of readiness to change was supported by the data. Negative outcome expectancies accounted for a third of the variance in readiness to change, while DSM-IV-TR severity accounted for just slightly more than a third, as can be seen in Table 12. This suggests that the negative consequences that participants in the study expected from continued gambling behaviour were almost as motivating a factor in their readiness to change as was the severity of their problem itself.

The recognition that continued gambling would result in serious consequences has been found by other studies as one of the main motivating factors for resolving a gambling problem or for preventing relapse (Cunningham, Hodgins, and Toneatto 2009 ; Hodgins 2001). There is a strong relationship between past consequences and the expectation of future consequences. Similar to the findings of the present study in terms of consequences experienced, a study by Hodgins and el-Guebaly (2000) found that it was financial and emotional consequences which contributed in great part to the desire, or motivation for, change that participants expressed. Thus, it may be expected that in the

present study the expectation of these types of consequences also functioned as a motivator to abstain from gambling behaviour.

A recent review of the existing literature on motivators for resolving or seeking help for gambling problems found that there were only a few studies which considered the role of future expectations on motivation to change (Suurvali, Hodgins, & Cunningham, 2010). However, those that did consider this variable found that for many gamblers the expectation of future negative consequences was a significant motivator to resolve their problem. While the expectation of imminent financial, relationship, and emotional consequences were also found to be motivators of help-seeking, this relationship has yet to be clarified in the literature (Suurvali, Hodgins, & Cunningham, 2010).

This finding concerning the role of NOE is especially important because it suggests that despite the slightly lower overall problem severity of this community sample in comparison to clinical samples, the expectation of negative consequences still plays a major role in gambler's readiness to change. This may imply that the psychological processes in which negative future consequences are identified and assessed could be a specific target for intervention for increasing readiness to change in problematic gambling individuals in the community.

### *5.2.2. Implications of Hypothesis 1a Results*

This study has leant further support to the research that suggests that negative outcome expectancies play a significant role in motivational readiness to change. In doing so, NOE may be considered an empirically supported psychological variable that can be targeted in a variety of ways. For those in the community who do not wish to seek

treatment, but who do wish to change their gambling behaviour, motivational enhancements which seek to boost NOE may be developed and used as a tool in a person's recovery process.

This is especially important as there are a larger number of problematic gamblers in the community who do not wish to seek professional assistance than gamblers who do. These results suggest that by increasing negative outcome expectancies, the success rate of quitting without professional assistance can be bolstered. If community-dwelling gamblers had access to a brief motivational enhancement which sought to increase their perception of their vulnerability to future consequences they may be more likely to successfully abstain. Increasing this success rate would in turn greatly diminish the public health burden present due to problematic gambling. Therefore, this finding may impact the public health burden of problematic gambling if interventions are successful at increasing NOE. One way of doing so may be to create an online intervention, which could more easily reach those who do not seek out clinics or clinicians.

This approach would constitute a new area of pragmatic public health interventions which sought to provide research-based help to those who have decided not to seek professional help. If an online intervention could increase the user's sense that continuing to gamble will result in very serious consequences, and give them feedback as to the likelihood of these negative consequences occurring based on the consequences that they had previously experienced then it could potentially improve their chances of quitting gambling. This increase in successful quitting would reduce the public health burden that exists as a result of continued problematic gambling. Increases in successful quitting attempts without professional help as a result of online interventions would

benefit both the individual and the greater society as well. This method would be a highly efficient method of reaching and assisting gamblers achieve their abstinence goals while remaining in the community.

Furthermore, this variable could be utilized within existing interventions, as well as in therapy, to increase motivation to change in gamblers. However, more research should be conducted to better understand the role of moderation inefficacy before it is included in any intervention. The findings of this study should not preclude the investigation of moderation inefficacy, especially in relation to gender.

The positive finding for NOE has supported the role that negative expectancies were theorized to play. Several theories of behaviour change have included negative outcome expectancies as a part of motivation to change behaviour. This finding suggests that this psychological process may be important within the area of problematic gambling as well. This would indicate that theories of behaviour change developed in other areas of psychological research, such as health psychology or substance addiction research, can be applied to behavioural addictions such as gambling. The contribution to the understanding of behaviour change theories made by the present study is further explored in the theoretical implications section.

### *5.2.3. Discussion of Hypothesis 2a*

**Higher moderation inefficacy should predict higher readiness to change.** The hypothesis concerning moderation inefficacy as a predictor of readiness to change showed a trend towards significance, but did not meet the .05 probability cut-off, as can be seen in Table 12. This finding should be replicated with a larger sample to clarify whether this variable is a significant motivator to abstain. It should be noted that the

valence of this item's contribution to the model was in the opposite direction than hypothesized. This will be further explored with the results from the post-hoc analyses. The model which contained both this variable and the NOE variable, as well as DSM-IV-TR severity, accounted for more than a quarter of the variance in readiness to change scores. This suggests that together NOE and DSM-IV-TR severity are what contribute most to the readiness to change scores in this model, as together they account for more than two-thirds of the variance that the model accounts for.

#### 5.2.4. Discussion of Hypotheses 1b and 2b

**Higher negative outcome expectancies and higher moderation inefficacy should predict higher commitment to abstinence.** None of the control variables were retained for the analyses which used commitment to abstinence (LOCTA) as the outcome variables as none of them were significantly correlated with this variable. Two hypotheses were concerned with commitment to abstinence as the outcome. These included the hypothesis that NOE would be a significant predictor of commitment to abstinence, and the hypothesis that MIE would be a significant predictor of commitment to abstinence. The analyses for these hypotheses were non-significant. One possible reason for this could be that the LOCTA measure only contained six items, and its reliability, while considered "fair," was considerably below that of the other measures.

Another potential problem with this particular measure was that many of the items were concerned with "never gambling again" which is not how approximately a third of the sample understood the term abstinence. Thus, when asked how committed they were to, for example, "cutting gambling out of [their lives] completely" they may have rated this lower than they would have if it had been phrased differently. While they may have

considered themselves more or less committed to their version of abstinence, that may not have been reflected in how they responded to this particular questionnaire.

#### *5.2.5. Discussion of Hypotheses 3a and 3b*

**The interaction between negative outcome expectancies and moderation inefficacy should predict readiness to change and commitment to abstinence.** The final two hypotheses concerned the role of an interaction between NOE and MIE on readiness to change and on commitment to abstinence. Similar to the regressions analyses, the moderation analyses which used commitment to abstinence as the outcome variable were non-significant, as may be expected. For the moderation analyses that had readiness to change as its outcome, the findings were also non-significant for the interaction term, as may be seen in Figure 1. This would initially suggest that the interaction between these two variables does not have a significant influence on readiness to change. As no study to date found in the literature review had tested this interaction in any addictive behaviour sample it is initially unclear what this might mean. However, the post-hoc analyses reveal that the role of the interaction between NOE and MIE should not be dismissed out of hand.

#### 5.3 Role of the Post-Hoc Analyses in Relation to the Main Hypotheses

The full sample was broken down into two subsamples by gender and run through the regression and moderation analyses. Much of the research that has been conducted on gender differences in the area of problematic gambling has focused on either demographic differences, or differences in the progression of the disorder (Ibáñez, Blanco, Moreryra, & Sáiz-Ruiz, 2003). However, the results from the current study suggest that the gender differences in the area of gambling may run deeper. The results

from these post-hoc analyses suggest that motivation to change gambling behaviour may be influenced by different factors in men and women. When women were removed from the regression analysis with readiness to change as the outcome variable NOE accounted for just under half of the variance in the model, and the model accounted for just over a third of the variance in readiness to change scores. Therefore, for male participants the expectation of future negative consequences may be particularly important for increasing their motivation to abstain from gambling.

In the moderated regression analysis with readiness to change as the outcome for males, MIE became a significant contributor to the equation, and the interaction term also became significant, as can be seen in Figure 2. In this model NOE accounted for more than a third of the variance, and MIE accounted for just about a third of the variance, as can be seen in Table 16. Once again, the effect of MIE occurred in the opposite direction from what had been hypothesized. Thus, it would appear that for male participants, moderation efficacy may be a positive influence on their motivation to change. This would mean that those most confident in their ability to gamble in moderation are also the most ready to be abstinent. This puzzling finding is contrary to what theory has suggested, and is also counter-intuitive.

At present there is no theory which would satisfactorily account for this finding. The most plausible has to do with one of the major limitations of this study, and that is that the PCOG measure assumed that the participants were already abstinent. As was seen from the descriptive data, that was not the case. The vast majority of the sample was still engaging in wagering behaviour. Therefore, asking these participants to imagine that they had relapsed would not have been applicable, and may have affected their responses. The

analyses were re-run on the subsample who were abstinent, however the sample size was small and no significant effects were found. The valence of the PCOG measure remained in the opposite direction of the hypothesis, suggesting that this may not be the only explanation.

One possible, if unsatisfactory, explanation for this puzzling result is that so many of the current sample were using moderation as part of their change plan towards abstinence. In addition to this, as mentioned, almost a third of the sample believed that quitting means only avoiding problem-specific gambling forms. These aspects of the sample may have influenced why the role of moderation inefficacy had a valence in the opposite direction from what was expected. This may also contribute to the understanding of the significant interaction for males. Those who believe that continued gambling will result in serious negative outcomes, but who also believe that they are able to successfully moderate potentially as a step towards abstinence, would be the most motivated to change their behaviour as they would perceive their chance at success to be the high, and the consequences of failure to be the most severe. While this is a statistically significant interaction for men in the sample, it is possible that this does not represent a theoretical interaction with practical or clinical implications.

Even though they are theoretically different, the difference between abstinence self-efficacy and moderation self-efficacy may not be clear to members of the general gambling community. This may be especially true as problem-specific abstinence, which a substantial section of the sample subscribed to, may be difficult to differentiate from moderation. This confusion, and the makeup of the current sample may have introduced unexpected error into the measures used. Future research should clarify these issues by

utilizing a sample that was not making use of moderation, and by using a measure of MIE which would be less likely to be ambiguously interpreted.

When these analyses were run for the female participants there were no significant findings, and none of the variables approached significance. The sample size for these analyses was quite small and any conclusions drawn from these results should be taken cautiously. When a similar sized sample of male participants was run, the results were non-significant, although several variables approached significance. It may be suggested from these findings that the expectation of negative future consequences might not significantly increase motivational readiness to change gambling behaviour in female gamblers.

There is very little to no research existent on the differences between the genders in terms of factors which lead to gambling cessation. However, the finding that negative outcome expectancies significantly increase motivational readiness to change in men but not in women may be in line with the existing gender difference studies in the area. However, the findings have been mixed. A study by Ladd and Petry (2002) did not assess reasons for quitting, but did look at gender differences in treatment seeking gamblers. Of note, female participants were found to have higher severity scores, which is similar to the current study, but fewer legal problems than male participants as a result of their gambling. Legal problems were the only negative consequence considered by the study. As previous negative outcomes are strongly related to the expectancy of future negative outcomes, it is possible that the experience of fewer consequences may influence future expectancies.

A study by Nower and Blaszczynki (2006) looked at gender differences in those who chose to add themselves to a program which would exclude them from casinos in the area. When asked the reasons behind their choice to exclude themselves there were several significant differences between men and women in the sample. Women stated it was their need for help, their need to regain control, their desire to prevent suicide, and being referred by a counsellor that motivated them to join this program more than for men. The study further found that women had filed for bankruptcy more than the men in the sample. Men were more likely to state that they joined the program to save their marriage. This study by Nower and Blaszczynki (2006) provides some mixed support for the findings of the current study. Needing help, the need to regain control, and being referred by a counsellor do not relate as much to negative outcomes as does the desire to save their marriage. However, the fact that more women filed for bankruptcy suggests that negative outcomes should theoretically be important to female participants.

Another study found that financial concerns were less important than other reasons to the motivation to change gambling behaviour for the female participants in the study (Avery & Davis, 2008). The most commonly cited reason for quitting for women in the sample was feeling depressed, and secondly not wanting to harm relationships. These findings are similar to some of the most commonly cited consequences in the current study. A review that looked at gender differences in the consequences of continued gambling concluded that the results are mixed, as presented here. The only consistent finding was that male participants appear to have more extensive criminal histories. One study that looked at reasons given for quitting gambling behaviour found that there were no gender differences in the reasons stated for quitting (Hodgins, Makarchuk, El-

Guebaly, Peden, 2002). Clearly there is a need for more research in this area, and more specifically research which targets potential differences in factors which motivate gambling cessation.

### *5.3.1. Implications of the Gender Analyses*

A very important implication stemming from this study concerns differences between the genders on factors that motivate a person to change their gambling behaviour. The findings suggest that there may be a significant difference between male and female gamblers. The implication of this may be that boosting NOE in female gamblers may not have a clinically significant impact on their motivational readiness to change. If this is the case, then online outreach interventions, public health workers, frontline counsellors, and professional clinicians may want to consider tailoring their interventions to the client, at least in terms of gender. If boosting these variables is less effective for women, then valuable time should not be wasted on techniques that are ineffective. However, if higher NOE and higher moderation self-efficacy are positive and clinically significant motivators for male gamblers, then this should not be ignored for them either.

The results of the current study could have serious implications for how motivational enhancements are delivered to problematic gamblers in the future if these gender differences are supported by further research. Matching treatment to the client has been a subject of interest in addictions research since the 1970's (Mattson, Allen, Longabaugh, Nickless, 1994), however the evidence for its usefulness has been somewhat mixed in the alcohol literature (Lipps, 1999). More research is needed in the gambling area to assess whether matching may be a useful tool in this area.

## 5.4 Overall Implications of the Current Study

### *5.4.1. Theoretical Implications*

Several theories concerning health behaviour change suggest that negative outcome expectancies and moderation inefficacy have an effect on an individual's motivational readiness to change their behaviour. These include the Transtheoretical model (TTM), the Health Belief model (HBM) and the Addicted Self Process model (ASPM; Prochaska, DiClemente, & Norcross, 1992; Becker, 1974; Fiorentine & Hillhouse, 2000). By testing and extending these models with a population of problematic community-dwelling gamblers, the way that motivational processes function in this population can be explored in a systematic fashion.

In terms of the TTM, this study made use of several concepts which contribute to this theory of behaviour change. The notion of readiness to change employed by the current study stems from the TTM. The TTM consists of five stages of change which correspond with different levels of readiness to change, and different levels of motivation to change (Prochaska, DiClemente, & Norcross, 1992). The outcome variables relates to these concepts of motivational readiness to change, as an indicator of future success at quitting or cutting back. Gamblers in this study were found to be at different stages of change, and different levels of motivation.

In addition, the TTM has three processes of change which map onto the predictors in the present study. These include consciousness raising, environmental re-evaluation, and self re-evaluation, which all involve evaluating the impact of gambling on various aspects of an individual's life, and the likelihood of these impacts occurring. Once it has been concluded that the negative consequences, or impacts, are significantly distressing,

motivation to change is increased (DiClemente, 2003). It was predicted, therefore, that those who more strongly believed that continued gambling behaviour would result in negative consequences, such as the impact to one's social environment, and also believed that they lacked the ability to moderate their behaviour, would be more ready to abstain.

The findings of this study support the theoretical effect that these processes of evaluation of negative consequences of a behaviour have on motivational readiness to change. More specifically, the constructs related to negative outcome expectancies appear to function as theory would suggest in problematic gamblers. Those related to moderation inefficacy require more investigation.

The second theory which informed the current study was the Health Belief model. The HBM model includes six overall factors which motivate health behaviour change (Becker, 1990). The current study focused on the role of two factors, susceptibility and perceived severity, and their relationship to motivation to change wagering behaviour. In the context of this study, perceived susceptibility was an individual's beliefs about their ability to moderate their wagering. It was hypothesized that those who believe that they have a high level of control over their wagering behaviour will not see themselves as susceptible to the consequences of problematic gambling. Perceived severity may be understood as the subjective understanding of the seriousness of the consequences of engaging in a health destructive behaviour (Armitage & Conner, 2000). Therefore, it was hypothesized that when an individual believed that continuing to gamble would make them highly likely to experience serious negative consequences they would be more likely to become more motivated to resolve their gambling problem. Furthermore, the theory suggests there would be an interaction between these two constructs.

Based on the results, this model also appears to be useful within problematic gambling populations. The theory correctly predicted the role of negative outcome expectancies, as the higher the sense of the severity and likelihood that serious consequences would result from continued gambling, the more likely the participant would be ready to change. Essentially, as the theory suggests the expectation of negative consequences should lead to changes in wagering behaviour for non-treatment seeking gamblers.

Finally, the current study sought to test and extend the ASPM theory developed by Fiorentine and Hillhouse (2000). This theory suggests that an individual will adopt the “addicted self” when they come to realise that they have repeatedly been unable to quit or cut back because they do not have sufficient ability to control their use of alcohol or other drugs. According to the ASPM, this belief increases the individual’s certainty that negative consequences will result from continuing to engage in the problematic behaviour, which in turn encourages behaviour change. Therefore, the current study proposed that this theory suggests more than just main effects of NOE and MIE, as has been tested, but further it suggests an interaction between the constructs of NOE and MIE. Furthermore, this theory had only been applied to those struggling with alcohol or other drug addictions, and not behavioural addictions such as problematic gambling.

The findings from this study are mixed in terms of the ASPM. Negative outcome expectancies were predictive of readiness to change, suggesting that the certainty that negative consequences will result from continued wagering will likely increase actual behaviour change. However, the role of moderation inefficacy in this study was not as the theory had predicted. A greater perception of lack of control should have also been

related to the adoption of the addicted-self. In this sample, the role of MIE was not found to be a significant predictor for the entire sample, and was a predictor in the opposite direction in the male subsample. As discussed, this effect may be due to the sample that was collected. Nevertheless, the current study data does not support the theory that higher doubt in one's control over gambling will result in higher readiness to change. This may suggest instead that in the case of problematic gambling, a sense of control may increase successful quitting without professional help. Therefore, the generalisability of the ASPM to the gambling area, or perhaps even to other addictive behaviours that are not related to substance abuse, may be limited. Further research is needed to clarify this point of the adapted ASPM for gambling addiction.

#### *5.4.2. Research and Methodological Implications*

The current study is a first step towards filling in several of the gaps which exist in the gambling literature. This study made use of a non-treatment seeking population, whose change goal was abstinence. This study also made use of two well-known and one lesser-known theory of behaviour change. In doing so, the current study revealed that existing theoretical frameworks can be used and extended to the area of gambling research, making the area less atheoretical. Furthermore, this study addressed factors which increase a gambler's readiness to change, which has only been studied in a very small number of studies. The role of negative outcome expectancies, moderation inefficacy, and the interaction between these two theoretical variables was explored for the first time in a sample of gamblers. By considering the role of the interaction between variables the depth of understanding of an area is greatly advanced, and more sophisticated interventions may be developed.

By filling in these gaps in the literature, this study has added important information to the knowledge base concerning psychological factors which increase motivation to abstain. Unexpectedly, this study further advanced the area of gambling research as the data suggested that there may be significant gender differences in which factors motivate a person to be ready to abstain from gambling. Extensive literature searches did not turn up any articles which directly addressed the issue of gender differences in terms of factors which contribute to cessation motivation.

The current study chose to approach the problem of disordered gambling cessation with an intersection of clinical and community psychology. This integrative approach is unique, as a large majority of the participants in clinical psychology research are isolated to those who choose to seek treatment. As this study has shown, there are a number of community members who are struggling to overcome serious mental health problems and addictive behaviours but who do not choose to seek out professional assistance. Thus, there is an increasing need for studies which bridge the gaps between clinical and community populations suffering from mental health issues.

Finally, this study also brought to light issues concerning the terminology and understanding of the concepts of moderation and abstinence in community-dwelling gamblers. While the majority of the sample considered quitting to mean giving up all forms of gambling, there were a sizeable portion to whom quitting meant only giving up problem-specific types of gambling. This is a potentially important finding as there appears to be little consideration in the literature of what quitting means to gamblers. How a person's defines abstinence could be very important in terms of both the research done, what conclusions may be drawn, and the targets for therapeutic intervention.

Several methodological improvements were incorporated into the current study. The first of these was the stringent multi-step method by which participants were selected for the inclusion sample. By using multiple indicators of the participant's goal to abstain and their lack of involvement with professional assistance it was possible to draw conclusions about this subsample of the gambling population. However, despite this methodology most of the sample was still gambling and many were using moderation as a strategy for changing their gambling behaviour. This may have impacted the results of the present study and will be further discussed in the limitations section.

Several improved measures were used for this study. The Negative Gambling Outcome Expectancy questionnaire and the Gambler's Readiness to Change questionnaire were both improved measures which showed good reliability. Both of these measures appeared to have enhanced psychometric properties and should be used more widely in the area of gambling research. Unfortunately, one of the measures, the Level of Commitment to Abstinence scale, showed poorer reliability, and may not have measured the concept it was designed to in this sample.

### 5.5 Limitations of the Current Study

The current study had several limitations which should be taken into consideration in relation to the results. One of these is the fact that the sample was cross-sectional, and the analyses were correlational. Because of these methodological limitations it is not possible to draw any causal inferences or conclusions about the meaning of these results. While NOE was found to be a significant predictor of variance in readiness to change, it should not be concluded at this juncture that higher levels of NOE cause higher levels of readiness to change.

In addition, there are several limitations pertaining to the sample. The first of these was the sample size. While the inclusion sample was adequate for the statistical procedures used in the present study, it may have limited the power to detect the role of some variables. Secondly, there were a small and unequal number of female participants in this sample. Before participants were further screened from the larger data set for inclusion in the current study there were a more equal number of female participants. It is unclear if the percentage of female participants dropped because as the sample was refined, fewer women in the gambling population fit into that subsample, or whether it was simply due to the characteristics of this particular sample. Nevertheless, as there were gender differences found within this sample, the unequal representation of female problematic gamblers is a limitation which should be corrected in future research.

Another limitation of the sample was the fact that most of the participants were in the process of moderating their gambling behaviour. This was an unexpected finding as the sample had been carefully selected to ensure that abstinence was their change goal and that they had not sought professional help. However, they had not been screened in terms of their engagement in moderation, or their use of moderation as a step towards abstinence.

This may have caused several problems with the current study. The PCOG measure of MIE was written based on the assumption that these participants would be attempting abstinence, and asked them to imagine that they had relapsed. This would not be ecologically valid for the large portion of participants who were not abstinent, and especially for those who were engaging in moderation. Therefore, the lack of findings from the PCOG, and the findings for males in the opposite direction than hypothesized

may be misleading. It stands to reason that if a large portion of the sample was using moderation as a step towards abstinence then moderation self-efficacy, as opposed to moderation inefficacy, would be perceived as a positive influence.

The large number of moderators in the sample may have also caused serious limitations with the use of the LOCTA scale, as a measure of commitment to abstinence. A major issue was that many of the items were concerned with “never gambling again” which not only excludes those making use of moderation as a tool, it is also problematic for those participants who believed that quitting gambling meant only quitting the type of gambling which was problematic for them. Thus, some participants who, for example, felt they could not control their poker playing and so were abstaining from that type of wagering might still have been buying lottery tickets.

This is a difficulty with the area of gambling research as opposed to the substance use research areas. Abstinence within the substance use is, for the most part, unambiguous. However, with the behaviour addictions abstinence is a more complex notion. Gambling as an addictive behaviour may have more in common with over-eating or “sex addiction” than with alcohol or drug addiction. This may become an important area for research within the gambling field as the range of understandings of abstinence complicate research which seeks to understand gambling cessation.

The LOCTA scale was also a limitation because of its low reliability in relation to the other measures. Attempts were made to ameliorate the scale, however, the scale did not improve significantly. Each item’s contribution to the scale was assessed, and the removal of several items was attempted. Further, each item was correlated with the study variables to assess whether a single item was more effective at capturing commitment to

abstinence in this sample. However, none were found to be strongly correlated. The correlation between the LOCTA items was assessed and all 6 items were retained for the scale. As discussed above, based on the characteristics of this sample the LOCTA scale did not appear to be a good measure of commitment to abstinence in the current study. It is uncertain whether the results of the analyses that contained LOCTA as an outcome might have different results with a sample of complete abstainers.

### 5.6 Future Directions

As this area of research is underdeveloped, the current study provides the groundwork for a considerable amount of future research. As per the previously discussed limitations, future research which seeks to understand gambling cessation should carefully recruit and screen participants in order to ensure that the sample does not contain those who are engaging in moderation. Furthermore, larger samples with more even gender distributions should be collected. In addition to this, research which explores the differences and similarities between those who believe that quitting gambling means complete abstinence and those who believe that it means abstinence from a problem-specific form of gambling should be conducted. This will allow for a much better understanding of the groups of abstainers in the community, and facilitate future research on gambling abstinence.

As this study has several clinical, practical, and public health-related implications, future research should investigate the role of these psychological variables in terms of outreach, motivational enhancement, and intervention. Future research should elucidate the roles of MIE and the interaction between MIE and NOE to determine their usefulness,

specifically in relation to gender-matching of treatment to the client. Once these roles are made clear, existing treatments and therapies could be modified to best fit the client.

The results from this study suggest that negative outcome expectancies may play an important role in readiness to change, especially in male community-dwelling gamblers. This suggests that an online-format motivational enhancement which targets past and future consequences may assist those who are struggling with problematic wagering in the community to change their behaviour and seek out community-based or professional services, and should be researched and developed. A similar online-intervention has been created and tested within the alcohol abuse and dependence area (Squires & Hester, 2002). This new approach to motivational enhancement has met with success in the alcohol area (Hester, Squires, & Delaney, 2005), and should be explored in the gambling area.

As many gamblers make use of modern technology to wager, the online format may be especially applicable to this population. Furthermore, this may be one of the most effective ways in which clinical and community psychology could be interfaced. The online format provides a way in which clinical, empirically supported, interventions and motivational enhancements could be delivered to the greater community of gamblers, and those who do not wish to seek out professional treatment services. In doing so, such integrative approaches may go a long way towards reducing the public health burden, and the personal costs, associated with problematic gambling.

APPENDICES

APPENDIX A

**Demographic and Background Information**

Please fill out the following information about yourself and your background:

1. Age:

2. Gender (circle one): Male / Female

3. Marital Status (circle one):

Never Married / Married / Separated / Divorced / Widowed / Common-Law (living together)

1

2

3

4

5

6

4. Ethnicity (circle # from a-h below):

- a) Caucasian/European origin
- b) African-Canadian/American
- c) East Asian (Chinese, Japanese, Korean)
- d) South Asian (Indian, Pakistani, Sri Lankan, etc.)
- e) Middle Eastern
- f) Native Canadian/American
- g) Hispanic and South American Origin
- h) Other or multi-ethnic origin

5. Are you a resident of Ontario, Canada? (Circle one)

YES / NO

↳ If NO, what country do you reside in? (circle one)

- 1. Canada
- 2. U.S.A.
- 3. Other

6. Your current employment status (circle # from 1-4 below):

- 1. Not employed
- 2. Part-time

- 3. Full-time
- 4. Seasonal/Temporary/Contract

**Demographic and Background Information (Cont'd)**

7. Has anything bad ever happened to you as a result of your gambling? (circle one)

YES / NO (If NO, skip to question #8)  
 ↳ If YES, please describe in one sentence

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8. Would life be better if you gambled less? (circle one) YES / NO

9. Are you currently involved in any efforts to change your gambling (this question excludes historical efforts)? (circle one)

YES / NO (If NO, skip to question #10)  
 ↳ If YES, what kinds of efforts? (circle all that apply to you)

- a) formal treatment program
  - b) psychotherapy
  - c) Gamblers' Anonymous
  - d) Other gambling support group (not GA)
  - e) Self-help literature
  - f) Talking to friends, family members, significant others, parish priest, minister, other spiritual/community leader, etc.
  - g) quitting on your own without outside help
  - h) other efforts to change (please specify):
- 
- 
- 

**Lifetime Efforts to Change your Gambling:**

10. In your lifetime, have you ever been to a meeting of gamblers Anonymous?

YES / NO (If NO, skip to question #11)



→ If YES, how old were you when you first went? \_\_\_\_\_ years old

11. In your lifetime, have you ever been to a professional counselor (e.g. gambling specialist, social worker, psychologist, etc.) to help with your excessive gambling?

YES / NO (If NO, skip to question #12)

↳ If YES, how old were you when you first went? \_\_\_\_\_ years old

12. In your lifetime, have you ever been to a financial advisor for help in getting your finances back in order (due to past gambling debts)?

YES / NO (If NO, skip to question #13)

↳ If YES, how old were you when this first happened? \_\_\_\_\_ years old

13. In your lifetime, have you ever privately pursued a program of 'responsible gambling' that was secretly developed by yourself?

YES / NO (If NO, skip to question #14)

↳ If YES, how old were you when you first started this? \_\_\_\_\_ years old

#### Recent History:

14. In **the last 3 months**, have you ever been to a meeting of gamblers Anonymous?

YES / NO (If NO, skip to question #15)

↳ If NO, do you intend to in the future? YES / NO

15. In **the last 3 months**, have you been to a professional counselor (e.g. gambling specialist, social worker, psychologist, etc.) to help with your excessive gambling?

YES / NO (If NO, skip to question #16)

↳ If NO, do you intend to in the future? YES / NO

16. In **the last 3 months**, have you been to a financial advisor for help in getting your finances back in order (due to past gambling debts)?

YES / NO (If NO, skip to question #17)

↳ If NO, do you intend to in the future? YES / NO

17. In **the last 3 months**, have you privately pursued a program of 'responsible gambling' that was secretly developed by yourself?

YES / NO (If NO, skip to question #18)

↳ If NO, do you intend to in the future? YES / NO

### **Demographic and Background Information (Cont'd)**

18. Has your gambling ever resulted in a crisis that overwhelmed you? (circle one)

YES / NO (If NO, skip to question #19)

↳ If Yes, please answer the following questions:

a. what year and month did this happen? Year\_\_\_\_\_ Month\_\_\_\_\_

b. Did this occur more than once?

YES / NO (If NO, skip to question #19)

↳ If YES, when was the first occurrence? Year \_\_\_\_\_

Month\_\_\_\_\_

19. What is the legal age for gambling in the province, state, or country in which you reside?

**werwe**

20. Do you currently gamble? (circle one from 'a' to 'd' below)

- a) YES, I currently gamble
- b) NO, I quit or cut back significantly within the last 6 months
- c) NO, I quit or cut back significantly more than 6 months ago

d) NO, I have never gambled

21. **For gamblers only:** (if you have never gambled, please skip the following questions

and

proceed to the next section)

a. In the last year, how many times have you quit or significantly cut down on

your

gambling for at least 24 hours? \_\_\_\_\_

b. Are you seriously thinking of quitting or cutting down on your gambling?

a) YES, within the next 30 days

b) YES, within the next 6 months

c) NO, not thinking of quitting or cutting down

APPENDIX B

**DSM-IV (APA, 1994) Criteria for Pathological Gambling**

Please answer the following questions by circling the appropriate answer.

Circle One

1. Have there <i>ever</i> been times when you spent a lot of time thinking about past gambling experiences, planning your next gambling activity, or thinking of ways to get money to gamble?	Yes	No	Not Applicable
2. Have you <i>ever</i> needed to gamble with larger amounts of money or with larger bets in order to obtain the same feeling of excitement?	Yes	No	
3. Have you ever tried to control, cut back, or stop gambling <i>several times</i> in the past and been unsuccessful?	Yes	No	
4. Do you feel <i>restless or irritable</i> when you try to cut down or stop gambling?	Yes	No	Not Applicable (Never tried to cut down)
5. Do you feel that you gamble as a way to <i>avoid or escape</i> from personal problems or to relieve uncomfortable emotions, such as feelings of nervousness, helplessness, guilt, anxiety, or sadness?	Yes	No	
6. After you lose money gambling, do you <i>often</i> return another day to get even or try to win back your losses?	Yes	No	
7. Have you <i>ever</i> lied to family members, friends, or others to hide your gambling from them?	Yes	No	

8. Have you <i>ever</i> committed any illegal acts such as forgery, fraud, theft, or embezzlement to get money to gamble or to pay gambling debts?	Yes	No	
9. Have you <i>risked or lost</i> a relationship with someone important to you, or a job, or school or career opportunity because of gambling?	Yes	No	
10. Have you relied on others to pay your gambling debts or to pay your bills when you have had financial problems <i>caused by gambling</i> ?	Yes	No	Not Applicable (never had money trouble)

APPENDIX C

**Negative Gambling Outcome Expectancies,**  
**NGOE**

**HYPOTHETICAL SCENARIO:**

For the questions below, we would like you to use the power of your imagination to think what it would be like if you went back to gambling. If you have not gambled for a while, try to think hypothetically about what might happen in the future if you were to gamble. Below is a list of things that you might or might not expect to happen in the future as a result of your gambling.

Please indicate the likelihood of the following things happening:

IF I WAS TO GAMBLE, I BELIEVE ...

	Highly unlikely	Unlikely	Possible	Likely	Highly Likely
1 ... My partner or family would be harmed.	0	1	2	3	4
2 ... My job or work life would suffer.	0	1	2	3	4
3 ... My friendships or close relationships would be damaged.	0	1	2	3	4
4 ... My financial situation would suffer.	0	1	2	3	4
5 ... I would become argumentative.	0	1	2	3	4
6 ... I would steal money.	0	1	2	3	4
7 ... I would lose my partner/wife/husband.	0	1	2	3	4
8 ... I would lose my home/apartment.	0	1	2	3	4
9 ... I would lose my job.	0	1	2	3	4
10 ... I would lose my friends.	0	1	2	3	4
11 ... My physical health would be harmed.	0	1	2	3	4
12 ... I would end up in the hospital.	0	1	2	3	4
13 ... I would consider (or attempt) suicide.	0	1	2	3	4

14 ... My spiritual or moral life would be harmed.	0	1	2	3	4
15 ... My social life, popularity or reputation would be damaged.	0	1	2	3	4
16 ... I would have trouble with the law.	0	1	2	3	4
17 ... I would experience high levels of worry/anxiety.	0	1	2	3	4
18 ... I would experience high levels of anger.	0	1	2	3	4
19 ... I would feel just miserable.	0	1	2	3	4

APPENDIX D

**Perceived Control Over Gambling Scale**

**PCOG**

**HYPOTHETICAL SCENARIO: Pretend you have slipped**

Using the power of your imagination, we would like you to think about what it would be like if you stopped pursuing your program of abstinence and started to gamble like you used to.

**If I was to start gambling again...**

	Very Strongly Disagree	Strongly Disagree	Disagree	Agree	Strongly Agree	Very Strongly Agree
1. If I was to start gambling again, I would find it difficult to stay within a spending <i>limit</i> once I started a gambling session.	0	1	2	3	4	5
2. If I was to start gambling again, and I went near a bar/hotel/raceway/casino/bingo hall etc, it would be difficult to resist gambling.	0	1	2	3	4	5
3. If I was to start gambling again, I doubt I'd be able to stay within a reasonable limit for how often I should gamble.	0	1	2	3	4	5
4. If I was to start gambling again, I would be able to stop easily after a few games or bets.	0	1	2	3	4	5
5. If I was to start gambling again, I would be able to stop gambling before I spent all my spare cash.	0	1	2	3	4	5

6. If I was to start gambling again, I would be able to resist the urge to continue once I start gambling.	0	1	2	3	4	5
7. If I was to start gambling again, I would have an overwhelming urge to continue, once I began a session.	0	1	2	3	4	5
8. I would be able to stop all forms of gambling for a week or even more if I tried.	0	1	2	3	4	5
9. If I was at a raceway/bar/casino/hall and it was approaching closing time, I would be able to stop gambling and leave <i>before</i> it actually closed.	0	1	2	3	4	5
10. If I was to start gambling again, I doubt I could resist gambling even for a single day.	0	1	2	3	4	5
11. If I was to start gambling again, I'm confident I could cut back on the amount of money I spent on gambling.	0	1	2	3	4	5
12. If I was to start gambling again, I would be able to stop gambling before I got into debt.	0	1	2	3	4	5

## Gamblers' Readiness to Change Questionnaire

### IMPORTANT INSTRUCTIONS

**The following 16 questions are designed to identify how you personally feel about your gambling right now. Please read each of the questions below carefully, and then decide to what extent each statement describes you. Please circle the answer of your choice to each question according to scale indicated.**

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I enjoy my gambling, but sometimes I gamble too much.	1	2	3	4	5
2	I gamble, and sometimes I think I should cut down or cut out gambling.	1	2	3	4	5
3	It's a waste of time thinking about my gambling (because I do not have a problem).	1	2	3	4	5
4	I presently gamble, but I've resolved to cut back or quit gambling and plan to act on this resolution in the near future.	1	2	3	4	5
5	I have just recently changed my gambling habits (e.g. cut down or stopped altogether).	1	2	3	4	5
6	Anyone can talk about wanting to do something about gambling, but I am actually doing something about it.	1	2	3	4	5
7	I gamble, and my gambling sometimes causes problems.	1	2	3	4	5
8	I presently gamble, but I've made a decision to change my gambling habits and have already taken preliminary steps in this direction.	1	2	3	4	5
9	I gamble, but there is no need for me to think about changing my gambling.	1	2	3	4	5
10	I am actually changing my gambling habits right now.	1	2	3	4	5
11	Gambling less would be pointless for me, as I see no reason.	1	2	3	4	5

12 I'm on the verge of cutting back on my gambling or quitting altogether.	1	2	3	4	5
13 I am a fairly normal gambler	1	2	3	4	5
14 I am trying to stop gambling or gamble less than I used to.	1	2	3	4	5
15 Sometimes I wonder if my gambling is out of control.	1	2	3	4	5
16 I have made a plan of action to quit or cut back on my gambling and will be following through with this plan in the next few weeks.	1	2	3	4	5

APPENDIX F

**Level of Commitment to Abstinence Scale**

**In the next part of the survey we ask you to tell us *how strongly* you are committed to your personal goal of quitting gambling and staying quit. Please indicate, by circling the appropriate responses, the extent to which quitting is indeed your goal.**

	<i>Circle One</i>			
	Disagree	Slightly Agree	Strongly Agree	Very Strongly Agree
1. I am committed to making the idea of not gambling a reality in my life.	1	2	3	4
2. I am dedicated to doing what is required to achieve my goal of "abstinence".	1	2	3	4
3. I have spent time learning the best techniques for cutting gambling out of my life completely.	1	2	3	4
4. I want to learn how to be more consistent in applying techniques which help me to quit and stay quit.	1	2	3	4
5. I am quite convinced the right thing for me is to simply give up gambling entirely (as opposed to the alternative which is cutting back).	1	2	3	4
6. I have a strong desire never to gamble again.	1	2	3	4

APPENDIX G

**Lifetime Historical Consequences of Gambling**

**LIFETIME HISTORY**

**In this section, we would like to know if any of the following have EVER happened to you as a result of your gambling.**

<i>At sometime in my life, as a result of my gambling ...</i>	Yes	No	Not Applicable (I have not gambled)
1 ... My partner or family has been harmed.	Y	N	N/A
2 ... My job or work life has suffered.	Y	N	N/A
3 ... My friendships or close relationships have been damaged.	Y	N	N/A
4 ... My financial situation has suffered.	Y	N	N/A
5 ... I have become argumentative.	Y	N	N/A
6 ... I have stolen money.	Y	N	N/A
7 ... I have lost my partner/wife/husband.	Y	N	N/A
8 ... I have lost my home/apartment.	Y	N	N/A
9 ... I have lost my job.	Y	N	N/A
10 ... I have lost my friends.	Y	N	N/A
<i>At sometime in my life, as a result of my gambling ...</i>			
11 ... My physical health has been harmed.	Y	N	N/A
12 ... I have ended up in the hospital.	Y	N	N/A
13 ... I have considered (or attempted) suicide.	Y	N	N/A
14 ... My spiritual or moral life has been harmed.	Y	N	N/A
15 ... My social life, popularity or reputation has been damaged.	Y	N	N/A

16 ...	I have had trouble with the law.	Y	N	N/A
17 ...	I have experienced high levels of worry/anxiety.	Y	N	N/A
18 ...	I have experienced high levels of anger.	Y	N	N/A
19 ...	I have felt just miserable.	Y	N	N/A

### Recent Historical Consequences of Gambling

#### RECENT HISTORY – the last 3 months

In this section, we would like to know if any of the following have happened to you in ***the last 3 months*** as a result of your gambling.

<i>During the last 3 months, as a result of my gambling</i>		Yes	No	Not Applicable (I have not gambled)
...				
1 ...	My partner or family has been harmed.	Y	N	N/A
2 ...	My job or work life has suffered.	Y	N	N/A
3 ...	My friendships or close relationships have been damaged.	Y	N	N/A
4 ...	My financial situation has suffered.	Y	N	N/A
5 ...	I have become argumentative.	Y	N	N/A
6 ...	I have stolen money.	Y	N	N/A
7 ...	I have lost my partner/wife/husband.	Y	N	N/A
8 ...	I have lost my home/apartment.	Y	N	N/A
9 ...	I have lost my job.	Y	N	N/A
10 ...	I have lost my friends.	Y	N	N/A
<i>During the last 3 months, as a result of my gambling ...</i>				

11 ...	My physical health has been harmed.	Y	N	N/A
12 ...	I have ended up in the hospital.	Y	N	N/A
13 ...	I have considered (or attempted) suicide.	Y	N	N/A
14 ...	My spiritual or moral life has been harmed.	Y	N	N/A
15 ...	My social life, popularity or reputation has been damaged.	Y	N	N/A
16 ...	I have had trouble with the law.	Y	N	N/A
17 ...	I have experienced high levels of worry/anxiety.	Y	N	N/A
18 ...	I have experienced high levels of anger.	Y	N	N/A
19 ...	I have felt just miserable.	Y	N	N/A

APPENDIX H

**Self-Deception Subscale of the Balanced Inventory of Desirable**

**Responding**

(Paulhus, 1991)

**Instructions:**

Using the scale below as a guide, circle the appropriate response beside each statement to indicate if the statement is True of you or False.

	Very True	True	False	Very False
1. My first impressions of people usually turn out to be right.	VT	T	F	VF
2. It would be hard for me to break any of my bad habits.	VT	T	F	VF
3. I don't care to know what other people really think of me.	VT	T	F	VF
4. I have not always been honest with myself.	VT	T	F	VF
5. I always know why I like things.	VT	T	F	VF
6. When my emotions are aroused, it biases my thinking.	VT	T	F	VF
7. Once I've made up my mind, other people can seldom change my opinion.	VT	T	F	VF
8. I am not a safe driver when I exceed the speed limit.	VT	T	F	VF
9. I am usually in control of my own fate.	VT	T	F	VF
10. It's usually hard for me to shut off a disturbing thought.	VT	T	F	VF
11. I typically never regret my decisions.	VT	T	F	VF

12.	I sometimes lose out on things because I can't make up my mind soon enough.	VT	T	F	VF
13.	When I vote, the reason I vote is because my vote can make a difference.	VT	T	F	VF
14.	My parents were not always fair when they punished me.	VT	T	F	VF
15.	Typically, I am a completely rational person.	VT	T	F	VF
16.	I rarely appreciate criticism.	VT	T	F	VF
17.	I am generally very confident of my judgments.	VT	T	F	VF
18.	I have sometimes doubted my ability as a lover.	VT	T	F	VF
19.	It's all right with me if some people happen to dislike me.	VT	T	F	VF
20.	I don't always know the reasons why I do the things I do.	VT	T	F	VF

APPENDIX I

**Desirability of Control Scale – General Desire for Control**  
**Factor**

(DCS-GDC; Burger & Cooper, 1979)

**INSTRUCTIONS:**

**Please read each statement carefully and respond to it by expressing the extent to which you believe the statement is true (or false) for you.**

		Strongly Disagree	Disagree	Agree	Strongly Agree
1.	I prefer a job where I have a lot of control over what I do and when I do it.	1	2	3	4
2.	I try to avoid situations where someone else tells me what to do.	1	2	3	4
3.	I enjoy being able to influence the actions of others.	1	2	3	4
4.	I enjoy making my own decisions.	1	2	3	4
5.	I enjoy having control over my own destiny.	1	2	3	4
6.	I consider myself to be generally more capable of handling situations than others are.	1	2	3	4
7.	I'd rather run my own business	1	2	3	4

and make my own mistakes  
than listen to someone else's  
orders.

- |    |  |   |   |   |   |
|----|--|---|---|---|---|
| 8. | When it comes to orders, I<br>would rather give them than<br>receive them.                         | 1 | 2 | 3 | 4 |
| 9. | I prefer to avoid situations<br>where someone else has to tell<br>me what it is I should be doing. | 1 | 2 | 3 | 4 |
-

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## VITA AUCTORIS

Amanda E. R. Robinson was born in 1984 in Ottawa, Ontario. She graduated from Nepean High School in 2003. From there she went on to the University of New Mexico where she obtained a B.A. in Psychology in 2008. She is currently a candidate for the Master's degree in Adult Clinical Psychology at the University of Windsor and will receive her degree in October, 2010. She will continue on to begin her Ph.D. in Adult Clinical Psychology at the University of Windsor at that time.