2012

Client Factors that Influence Outcome in Problem Gambling Treatment

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By

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A Dissertation

Submitted to the Faculty of Graduate Studies

through the Department of Psychology

in Partial Fulfillment of the Requirements for

the Degree Doctor of Philosophy at the

University of Windsor

Windsor, Ontario, Canada

2011

Client Factors that Influence Outcome in Problem Gambling Treatment

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ABSTRACT

This study examined various client related factors that may predict problem gambling (PG) treatment outcomes (i.e., treatment completion and continued abstinence). Specifically, factors that may facilitate treatment (i.e., social support, self-efficacy, motivation, readiness for change, and emotion-focused coping) or hinder treatment (i.e., depression and life stress) were examined. The 50 participants were followed for four months after entering treatment for PG and were assessed at baseline, one month into treatment, two months into treatment, and during a follow-up four months after treatment began. Of the 50 participants, 20 dropped-out of treatment and 24 completed the follow-up measure. The results suggest that self-efficacy and depression, measured at baseline, are good predictors of one and two month outcomes, whereas depression and life stress, measured after two months of treatment, are good at predicting four month outcomes. The results also suggest that younger individuals have different predictors for dropout than do older individuals. The treatment implications of the findings are discussed.

ACKNOWLEDGEMENT

First and foremost, I would like to acknowledge the tremendous amount of support that Dr. Antonio Pascual-Leone has provided throughout my graduate career. You have always believed in me, even when others have not, and have even taken great risks in order to champion my cause. Without your support, I would not have had the success that I have had. You are truly an amazing supervisor and a cherished friend. I also would like to thank Dr. Ron Frisch who arranged for both my practicum and data collection at the Windsor Regional Problem Gambling Services. Because of your support, I was able to overcome great obstacles and learn a great deal about problem gambling treatment. In addition, I would like to thank Nick Rupcich and all the counsellors and staff at the Windsor Regional Problem Gambling Services for your commitment to this project. Particularly, I would like to acknowledge the extraordinary efforts of Evelyn Smith and Michelle Timmins, both of whom went above and beyond to coordinate the data collection effort at the treatment centre. Furthermore, I would like to thank the Ontario Problem Gambling Research Centre for funding both the project and myself for three years. I also would like to thank Dr. Kim Calderwood and Dr. Josee Jarry for all of their invaluable feedback throughout this project. In addition, I would like to thank Dr. Tony Toneatto for his feedback and for travelling to Windsor to be an integral part of my defence. Finally, I would like to thank my family for all of their support and all of my friends in Windsor who have become like a second family to me.

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CHAPTER I

Introduction

Treatment research to date has collectively shown that although treatment has a measureable impact on psychological difficulties, client factors represent an overwhelmingly larger determinate of a treatment's outcome (Wampold, 2001). Client factors represent a range of issues and are intimately tied to lifestyle, personality, family factors, and recreational interests among others. Consider the following vignette describing a problem gambler:

> A man sits at a slot machine. Engaged in little thought, he repeatedly presses the button that makes the wheels turn on the machine. Hours go by and the man, locked in a daze, is unaware of the money that he has lost. He continues with his pursuit, refusing to leave the machine since someone else might sit down and take the win that he has been working so hard to achieve. The man has already remortgaged his home, much to the disappointment of his entire family. Before he left for the casino this time, the man's wife had said to him "if you really love me, you won't go to the casino." The man does love his wife, but the urge to gamble was so strong that he was unable to resist. But that is a distant memory; all that matters to the man at this moment are the slot symbols that rotate in front of him.

This vignette highlights the power that this disorder has to impact a variety of different factors in the individual's life; factors which must be considered during treatment.

Individuals who gamble at problematic levels seem to be locked into a destructive lifestyle where the primary concern becomes continued gambling behaviour, despite the

costs to one's self and one's family and friends. It is not uncommon for people to lie to their spouses about time and money spent at a casino or for employees to embezzle money from employers in order to support their gambling habits (Federman, Drebing, & Krebs, 2000). The financial difficulties that result from uncontrolled gambling are obvious, but it is not uncommon for problem gamblers to also experience a full array of emotional consequences, such as increased levels of anger, anxiety, and depression, with some individuals even taking their own life in a final act of desperation (Blaszczynski, 1998). For a gambler's family, the financial difficulties often mean missed opportunities, such as vacations or a child's education, but a gambler's behaviour also results in a great deal of emotional strife as families are forced to cope with a parent or spouse who appears to care very little about the welfare of the family (Centre for Addiction and Mental Health, 2004). In addition, communities everywhere are left to deal with the aftermath from various criminal offenses, such as theft and fraud, which gamblers have committed while in a desperate state of mind (N. Rupcich, personal communication, October 22, 2008). Indeed, problem gambling comes at a great cost to individuals, families, communities, and even society in general.

Problem gambling (PG) can be defined as compulsive gambling behaviour which occurs at levels that are harmful to the individual's well-being (American Psychiatric Association, 2000). Unfortunately, rates of PG are high across Canada. A nationally representative survey of almost 35,000 Canadian residents revealed a 12-month prevalence of gambling problems to be 2.0%, with rates as high as 2.9% in Manitoba and Saskatchewan and as low as 1.5% in New Brunswick (Cox, Yu, Afifi, & Ladouceur, 2005). As well, the data from this survey suggests that provinces with the greatest access

to legal forms of gambling, such as the availability of Video Lottery Terminals (VLTs) and permanent casinos, have the highest rates of PG. This, along with the current expansion of the casino and gaming industry, suggests that PG, with all of its harmful effects, is likely to continue as a serious problem in Canada. Within the province of Ontario, a wide scale survey conducted in 2005 (Wiebe, Mun, & Kauffman, 2006) found that 2.6% of the population suffered from moderate problem gambling and an additional 0.8% suffered from severe problem gambling. This study observed that overall gambling by all citizens had declined from the rates observed in 2001, but participation by those individuals who do gamble had increased. For example, the level of participation in casino table games in 2005 was four times greater than it was in 2001. Despite efforts to curb problem gambling, the Ontario wide survey found virtually no change in the percentage of individuals with moderate and severe gambling problems when comparing 2001 and 2005 rates.

With all of these consequences of problem gambling looming, successful treatment of this disorder becomes a necessity. Gambling treatment outcome studies are lacking in the literature, but some important information can be gleaned from what is available. Overall, treatment does seem to be effective (Palleson, Mitsem, Kvale, Johnson, & Molde, 2005), but many individuals drop out before completing the program and even those who do complete treatment often relapse (Petry et al., 2006). As such, treatment attrition and relapse seem to be serious problems that reduce the ability of professionals to successfully treat this disorder. Clearly, there is a great need for a better understanding of the problem gambling treatment process so that the reasons for these high attrition and relapse rates can be explored. As treatments are administered in a

relatively uniform fashion, it is likely that an examination of the characteristics of the individuals entering treatment will be fruitful for discovering such information. For this reason, the aim of the current study is to examine various client variables that may either facilitate or hinder treatment through the effect they have on rates of attrition and treatment outcome, including gambling severity, relapse, and quality of life. With a better understanding of the factors that cause one to drop out or have a poor outcome (i.e., relapse), treatment approaches could be tailored for those individuals who are at risk for one or more of these outcome problems. This potential for greater treatment success would be an immense service to not only problem gamblers, but also to those who have been impacted by their gambling.

Conceptualizing Problem Gambling

The current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000) has classified pathological gambling as an impulse-control disorder, suggesting that PG is more akin to pyromania, kleptomania, and trichotillomania than to "addictions" associated with the substance abuse disorders. Thus, current North American diagnostic criteria suggest that problem gambling should be conceptualized and treated as something separate from addiction. A likely reason for this is the fact that no substance is consumed during problem gambling, and thus the person is not in a chemically-altered psychological state. However, some authors have suggested that the same psychological processes that cause an individual to compulsively consume a substance are also at work when individuals lose control over their gambling behaviour. For example, Alexander (2008) defines addiction as an

"overwhelming involvement with any pursuit . . . that is harmful to the addicted person, to society, or to both" (p. 29). Here, addiction is seen as a lifestyle that is narrowly focused on one or more objects or behaviours. According to this definition, addiction encompasses all compulsive behaviours, whether a substance is consumed or not. The general theory of addiction proposed by Jacobs (1986) also shares this view. Much like those who abuse substances, problem gamblers seem to be fixated on their habit since much of their lives revolve around making it possible to continue gambling (Alexander, 2008). For instance, gamblers often report thinking about gambling while they are at work and while they are with their families. Many gamblers also report feeling as if they are in an altered state while gambling (Walker, Schellink, & Anjoul, 2008) and some even report having symptoms that are congruent with a physical withdrawal process as they attempt abstinence (e.g., sweating, restlessness, irritability, etc.; Blaszczynski, Walker, Sharpe, & Nower, 2008; Griffiths, 2003). Furthermore, the moderate success of Gamblers Anonymous (GA), a self-help group based on the 12-Step model originally put forth by Alcoholics Anonymous, also supports this claim (Petry, 2003). The current study used Alexander's (2008) definition of addiction and, therefore, conceptualized PG as an addiction.

Despite the similarities of problem gambling to substance-based addictions, there are, of course, important differences that cannot be overlooked. For instance, with alcoholism, an individual has a satiation point where consciousness is lost and no more alcohol can be consumed regardless of the quantities still remaining (Levinthal, 2002). However with gambling, the individual does not reach such a point since the main limitation is the person's access to funds, which can come from savings accounts, credit

cards, RRSPs, and even fraudulent acts. This almost unlimited ability to binge is why most problem gamblers accumulate large amounts of debt. Yet, the similarities between these disorders are great enough that it seems reasonable to apply much of what we know about the substance-based addictions to problem gambling, especially concerning treatment and recovery.

Treatment for Problem Gambling

Treatment for PG comes in a variety of forms with each treatment centre having its own unique treatment philosophy. Some treatment centres incorporate the 12-steps of Gamblers Anonymous (GA) while others focus more on cognitive-behavioural therapy (CBT; Petry, 2005a). Some treatment programs may even take an eclectic approach, incorporating many different techniques and approaches. Although clients will usually have regular one-on-one sessions with a counsellor, group treatment is also sometimes incorporated, not only because it is more cost effective, but also because the individuals are able to benefit from the support of the group. The intensity of treatment may also vary with some individuals receiving primarily outpatient counselling while others receive inpatient or residential treatment. Thus, the type of treatment received when an individual enters into treatment differs depending on a number of factors, some of which may be client related (i.e., severity of problem, motivation to change, etc.).

Regardless of the type of treatment received, problem gamblers, on average, benefit from professional treatment. A meta-analysis (Palleson et al., 2005) examining the effectiveness of psychological treatment across 22 different studies found an overall effect size of 2.01 and an effect size of 1.59 at follow-up (averaging 17 months),

indicating quite a large level of post-treatment improvement. As well, rates of abstinence were generally higher for those who received treatment as compared to those who did not. More recently, Toneatto and Dragonetti (2008) compared eight sessions of cognitive-behavioural treatment delivered by mental health professionals with eight sessions of a 12-step oriented treatment and found similar positive gambling related outcomes for those who completed treatment, regardless of which group they were in. Petry and colleagues (2006) found that all individuals in their study who received some level of intervention, including those who received brief (8 session) CBT treatment and those who were referred to GA, had a significant decrease in their gambling behaviour, an improvement that was still evident for many individuals at the 12 month follow-up. As well, Jiménez-Murcia and colleagues (2006) studied an outpatient CBT group and generally found positive outcomes, with abstinence rates of 76.1% at the end of therapy and 81.5% at six month follow-up. However, the authors do note that almost 50% of participants did not complete the six month follow-up, indicating a likely bias in their results. Still, taken together, the cumulative nature of these positive results suggests that individuals who problem gamble can be greatly helped by professional treatment.

Although these results are promising, there are two major problems that threaten the overall effectiveness of PG treatment: attrition and relapse. Indeed, many studies find positive outcomes, but only for those who complete treatment; and even these individuals often relapse. In the study by Petry and colleagues (2006), only 60.7% of those randomly assigned to individual cognitive therapy attended more than 6 sessions and 7.1% did not attend any sessions. As well, very few participants in any condition remained abstinent for the duration of the 12 month study, with only 16.5% of the cognitive therapy group

remaining abstinent for the month prior to each assessment. One study (Echeburua, Baez, & Fernadez-Montalva, 1996) comparing two different treatment approaches among 64 problem gamblers saw 14 (22%) drop out from treatment and 15 (23%) relapse during follow-up. In a study by Hodgins and el-Guebaly (2004), only 8% of participants remained abstinent throughout the duration of the study. In another study (Ladouceur et al., 2001), almost half of the 66 participants undergoing treatment dropped-out before completing it. One study that specifically examined predictors of dropout in PG treatment (Leblond, Ladouceur, & Blaszczynski, 2003) obtained a treatment dropout group of 43 (out of 112 participants) by simply allowing the attrition process to run its usual course. Finally, a review of 12 studies examining dropout in various PG treatments, including cognitive-behavioural (both individual and group), behavioural, motivational interviewing, self-help, Gamblers Anonymous, or some combination of these, found that rates of dropout ranged from 14% to 50%, with a median rate of 26% (Melville, Casey, & Kavanagh, 2007). Overall across these 12 studies, 31% of individuals dropped-out of treatment.

Overall, attrition and relapse are serious problems that have been found in a wide range of studies examining different types of treatment, suggesting that these are problems that threaten the effectiveness of all types of treatment for PG. Thus, these are transtheoretical problems (i.e., not tied to a certain type of treatment) that may be less related to the treatments themselves and more related to external common factors, such as client characteristics, which influence all therapies. According to a classic review of psychotherapy research, characteristics of the client, such as intelligence, motivation, coping style, and affect, are far more likely to predict treatment outcomes than are

treatment-related or therapist-related factors (Luborsky, Auerbach, Chandler, & Cohen, 1971). Wampold (2001) more recently indicated that approximately 22% of the variance in outcome is related to client factors, as opposed to less than 8% for treatment factors. Thus, client factors account for two to three times the amount of variance as treatment factors. Based on this evidence, client factors appear to have a major influence on treatment outcomes and should therefore be examined as possible predictors of the aforementioned poor outcomes of PG treatments.

Client Factors that Facilitate Treatment

Previous research has already identified various client factors that predict poor PG treatment outcomes, particularly relapse and dropout. For instance, it has been suggested that treatment failure may be precipitated by the availability of opportunities to gamble (Shaffer, LaBrie, & LaPlante, 2004), physiological responses to gambling cues (Sharpe, Tarrier, Schotte, & Spence, 1995), and personality factors such as impulsivity (Leblond et al., 2003). Although these are all client factors that can affect outcome in all types of treatment, each of these factors remains outside the control of both the individual and the counsellor and thus are difficult to address within a treatment setting. Thus, while it seems important to examine factors that are extraneous to treatment (i.e., factors that are not part of treatment but still have an influence on outcome), it also seems that an analysis of the predictive factors that can be influenced during treatment is likely to be more fruitful for improving the overall effectiveness of treatment for PG. The literature on behaviour change suggests a theoretical framework for choosing client-factors that are more dynamic and therefore have the potential to be augmented by the therapist.

The recovery from an addiction, in many ways, can be seen as an exercise in self-control and self-regulation in that individuals are attempting to prevent themselves from engaging in an activity that has not only become problematic, but also quite automatic and compulsive. Along these lines, maintaining abstinence is like a tug-of-war where the impulse to engage in the unwanted behaviour is on one side and the person's goal to change is on the other. Since a return to gambling is the automatic behaviour, a sufficient amount of effort must be exerted in order for the desire for change to win out in this battle. Whether the person's effort is strong enough will likely depend on the availability of the resources that drive their change process. For instance, researchers have found that people require "self-regulation resources" in order to prevent themselves from engaging in undesired, automatic behaviour, such as eating junk food while dieting (Baumeister, Bratlavasky, Muraven, & Tice, 1998; Hofmann, Rauch, & Gawronski, 2007). Furthermore, this research indicated that individuals who lack such resources, or whose resources are being taxed by a competing process, are less likely to be able to sustain self-regulation since they do not possess enough resources to win the battle. Thus, an inability to self-regulate appears to be the result, at least in part, of diminished resources.

Although the resources described by these authors primarily relate to executive functioning, similar resource-based models have been applied to treatment research examining client-factors which are more psychosocial in nature. For instance, a substance abuse study by Majer and colleagues (2003) examined the potential treatment facilitating influence of what they called "personal resources," including variables such self-efficacy, optimism, and self-mastery. Although this study did not assess the influence of these variables on treatment outcomes, these authors do suggest that self-

efficacy for abstinence may function like a resource that is beneficial during the treatment process. Furthermore, Flückiger and colleagues (2010) describe how treatment can be improved if the therapist utilizes the client's own abilities and resources (e.g., motivation, coping ability, etc.) as facilitating components of the change process. Thus, there is some evidence to suggest the practicality of applying this resource-based theory to the treatment process of problem gamblers, especially given that self-regulation is such an important part of maintaining abstinence.

Accordingly, the current study has proposed five such resource-like client factors, including social support, abstinence self-efficacy, readiness for change, motivation for change, and the ability to productively use emotion-focused coping strategies. These variables were chosen since each has the potential to facilitate the treatment process and, like a resource, each can be drawn upon to bolster and sustain a person's effort to stop gambling. Thus, it is believed that individuals who have high levels of these recovery resources are likely to be better equipped for dealing with the struggles that occur during the recovery process, and are thus more likely to complete treatment and have positive treatment outcomes. Conversely, those who have diminished resources may feel overwhelmed by the change process, resulting in a greater likelihood of giving up or being unable to maintain a sustained recovery effort. In this way, it may be the absence of these resources that are responsible, at least in part, for poor treatment outcomes in problem gamblers. Each of these proposed client factors will now be further examined in turn.

Social Support

Social support is often thought of as a general category that encompasses many different types of behaviours received from close others with the aim of aiding the person through an emotionally and/or mentally trying situation. Social support is a resource that helps us to endure many of the difficult moments that life may bring, whether it be the stress of a new-born child or overcoming a serious illness. For this reason, social support has been found to be beneficial in the treatment and recovery of many different physical and psychological problems, including breast cancer (Bloom, Stewart, Johnston, Banks, & Fobair, 2001), diabetes, (Van Dam, Van Der Horst, Knoops, Ryckman, Crebolder, & Van Den Borne, 2005), coronary artery bypass grafting (Barry, Kasl, Lichtman, Vaccarino, & Kromholz, 2006), and depression (George, Blazer, Hughes, & Fowler, 1989).

While overcoming a gambling problem, the support of family and friends can serve to facilitate the treatment process by aiding the individual in his or her time of need (Dobkin, De Civita, Paraherakis, & Gill, 2002). An encouraging family or a sympathetic employer can help in different ways to alleviate many of the person's concerns, leaving him or her with less of a burden to overcome. For instance, an understanding spouse can take care of the finances, leaving the gambler without the temptation that comes with handling money. As well, a close friend who is willing to listen and provide advice when the gambler is having an urge to gamble can help prevent a possible relapse from occurring. Indeed, gamblers who isolate themselves and do not talk about their problems, maybe as a result of the shame that stems from their excessive gambling behaviour, are more likely to relapse (Stein, 1993). In this way, social support seems to be a vital

resource for any recovery since it acts as a buffer, protecting people from risk factors that may impede their progress (Dobkin et al., 2002). Through this buffering effect, social support can make the treatment process more manageable for the individual, making abstinence a more obtainable goal.

The positive role of social support in the recovery process for substance-based addictions has been well established. For instance, one study (Dobkin et al., 2002) found that those with high levels of support experienced greater levels of abstinence at six-month follow-up and less psychological distress at both intake and follow-up. As well, those with higher levels of support displayed less treatment attrition than did those with lower levels of support. Thus, social support seems to be a resource that helps to promote abstinence and treatment completion for other addictions. For problem gambling, research examining the relationship between social support and treatment outcomes is less plentiful and generally unclear about the extent of the treatment facilitating effect of social support. Petry and Weiss (2009) have examined this relationship most directly with a sample of treatment-seeking problem gamblers. Their findings indicate that the participants with the most social support at baseline had the least severe gambling problems and experienced the greatest decrease in gambling severity by the two-month post-treatment assessment. This study additionally found that social support, measured post-treatment (two months), predicted gambling severity at the 12-month follow-up. Another recent study also found that social support, along with treatment engagement, were the best predictors of continued abstinence for individuals in Gamblers Anonymous (Oei & Gordan, 2008). In addition, Gomes and Pascual-Leone (2009) found that, among individuals in treatment for problem gambling, those with more social support tended to

also have lower gambling severity. However, a recent Australian study examining predictors of PG treatment dropout found that baseline levels of social support were unable to significantly predict dropout (Smith, Harvey, Battersby, Pols, Oakes, & Baigent, 2010). Thus, the treatment literature for problem gambling appears to suggest that social support helps to promote abstinence from gambling but does little to help people remain in treatment. Yet, these relationships, or lack thereof, have not been shown beyond the treatment populations utilized by this small number of studies. For instance, it may be that cultural differences in social support are responsible for the lack of influence on treatment completion in Australian samples; meaning that a different result may appear in North American samples. Regardless, with this few studies examining this potentially treatment facilitating resource, a further investigation is warranted.

Abstinence Self-Efficacy

Self-efficacy is based on an individual's belief that he or she is capable of successfully performing a specific behaviour which is required to achieve a desired outcome. For individuals who desire to maintain abstinence from gambling, self-efficacy is the belief that they are capable of avoiding gambling in situations where gambling is likely to result (May, Whelan, Steenbergh, & Meyers, 2003). These "risky" situations can range from social outings where gambling may be present, to arguments with one's spouse. Individuals who have abstinence self-efficacy view themselves as having the ability to cope with distressing or "high risk" situations without resorting to gambling as a means of escape. Bandura (1977) suggests that the change facilitating effect of self-efficacy stems from the confidence that it provides. Individuals with this confidence

come to see abstinence as achievable and become willing to put effort towards this goal. Indeed, it is likely that, at some point, most individuals who problem gamble come to realize their need for change, but without confidence in their ability to change, they are likely to be discouraged by the arduous nature of the change process. For this reason, abstinence self-efficacy is expected to have a major influence on treatment outcome since individuals who lack self-efficacy will probably not fully commit or engage themselves in a treatment plan. Indeed, any treatment program can teach people what course of action is required for recovery, but if people have doubts about their ability to successfully complete the required behaviours, then this information about the course of action will not have a strong influence on their behaviour. Their situation is perceived as being very difficult to overcome, and thus these individuals may lack the resolve to even attempt change.

To the best of the author's knowledge, no studies have been published which link self-efficacy to positive treatment outcomes in problem gamblers. One study did find that gamblers in the later stages of change tend to have greater self-efficacy (Schellinck & Schrans, 2004) and another study found that problem gamblers undergoing cognitive therapy experience increases in their perceived self-efficacy (Ladouceur et al., 2001). While these studies do suggest that self-efficacy increases as one progresses through the treatment process, neither of them can speak to the effect of self-efficacy on actual treatment outcomes.

The literature on substance-based addictions, however, generally does support the treatment facilitating effect of self-efficacy. For instance, one study on alcohol abusers found that having full confidence in one's ability to remain abstinent at discharge was the

best predictor of abstinence one year later, even above baseline levels of drinking (Ilgen, McKellar, & Tiet, 2005). Additionally, McKay and colleagues (2005) found that self-efficacy was predictive of better treatment outcomes for both alcoholics and crack cocaine users, even at the 30-month follow-up. Another study that examined individuals with comorbid substance abuse and depression found that low self-efficacy, especially early in treatment, was a significant predictor of continued substance use and relapse (Tate et al., 2008). Overall, individuals who enter addiction treatment with high levels of self-efficacy seem to have an advantage: a resource that provides the necessary resolve to maintain long-term abstinence. The strong evidence stemming from the alcohol and drug treatment literature suggests a need to extend these findings into the problem gambling field, which is one of the goals of the current study.

Readiness for Change

The state of being ready for change is thought to be the result of a decisional process that occurs as an individual contemplates the need for behaviour change. If change does seem needed, then the individual is likely to develop a mindset that is focused on making that change happen. One factor that seems to predict whether individuals become ready to change their gambling behaviour is their degree of awareness of the problematic nature of their gambling (Gomes & Pascual-Leone, 2009). Indeed, individuals who become aware that their gambling is the cause of much of their current difficulties may begin to see change as being not only necessary, but critical to healthy functioning. This recognition of the necessity for change could then lead individuals to commit to the change process and the various tasks involved. This commitment is often reflected in an individual's willingness to follow a treatment

regimen (DiClemente, 1999). For example, individuals who are not ready to change will be unlikely to follow through on some of the more emotionally challenging tasks that are part of the recovery process, such as being honest with loved ones about the nature of their gambling behaviour. Indeed, only those who are most dedicated to changing themselves will undergo all of the change-related processes that are required of them. Based on this rationale, a lack of readiness is likely to result in only superficial change which is unlikely to be maintained.

As a concept, readiness for change was first proposed by Prochaska and DiClemente (1992) in their trans-theoretical model. This model suggests that the process of becoming ready for change involves a series of four stages that individuals pass through sequentially regardless of the behaviour that is being changed or the theoretical orientation being used to guide the change process. The first is the pre-contemplation stage. In the context of problem gambling, at this stage, individuals remain unaware of the problematic nature of their gambling behaviour. Important people in their lives may be telling them that their gambling has become a problem and may suggest that they seek help. But, despite these voiced concerns, gamblers in the pre-contemplation stage remain in a state of denial, possibly minimizing their situation as being a financial problem, rather than a gambling problem. Individuals in this stage are not yet ready to change. The hope, however, is that they will eventually come to view their gambling as having a negative impact on their lives, ushering them into the second stage, which is the contemplation stage. Here, individuals begin to consider the problematic nature of their gambling behaviour. Many at this stage take stock of their lives and begin to weigh the pros and cons of continuing to gamble. The goal in this stage is for individuals to be able

to see their gambling as the cause of their financial difficulties as well as the cause of other losses, which potentially may be their family, friends, job, and home. Unfortunately, it is often only those who become destitute that are ready to make changes in their lives. Once this state of readiness is achieved, individuals move into the action stage. It is during this stage that individuals stop gambling and may seek treatment or begin attending self-help groups such as Gamblers Anonymous (GA). As such, these individuals are in the process of making changes to their lives, which is the hallmark of the action stage. Once sufficient change has been made, this new lifestyle has to be practiced regularly, moving the person to the maintenance stage. Individuals in this stage often continue to receive some form of treatment, often known as "aftercare", and usually have developed a plan to deal with urges and to reduce the exposure to situations that may trigger their desire to gamble. Unfortunately, movement through the stages is not always in a forward direction. For instance, some gamblers in the action stage who are making changes, possibly even receiving treatment, may begin to again see gambling as a viable solution to difficult situations and may relapse as a result. Instead of moving onto the maintenance stage, these individuals have moved back into the contemplation stage where they begin to have doubts and the possibility of making a change is again weighed against continued gambling.

Individuals may enter treatment at any stage, but it is generally those who are in the later stages (i.e., most ready to change) that seem to have the best outcomes. For example, Petry (2005b) found that gamblers in the later stages of change, mainly the action stage, were more likely than those in the earlier stages to become involved in the treatment program by having better attendance and using self-help workbooks. Although

gambling behaviour decreased on average over the whole sample, those in the later stages of readiness to change had significantly larger decreases in gambling behaviour. Examining alcohol abusers, Edens and Willoughby (2000) found that those in the later stages, as compared to those in the earlier stages, were more likely to complete treatment. As well, the Project MATCH Research Group (1997) studying alcohol abusers found that, out of all of the attributes assessed at baseline, readiness for change was most predictive of reduced drinking behaviour at one year follow-up. Even after three years, baseline levels of readiness for change continued to predict drinking behaviour (Project MATCH Research Group, 1998). Thus, readiness for change does appear to be a facilitating resource during the treatment process as it is linked to less relapse, greater involvement in treatment, and overall better behavioural outcomes. It is for these reasons that a goal of the current study is to further explore the potential facilitating influence that readiness for change has on PG treatment outcomes, especially in promoting abstinence and treatment completion.

Motivation for Change

The term "motivation" is often applied to various psychological constructs and is even sometimes used interchangeably with "readiness" when discussing the transtheoretical model (DiClemente, 1999). However, motivation can also be thought of as being a unique construct that is distinct from readiness (Gomes & Pascual-Leone, 2009). In this conceptualization, rather than stemming from a decisional process, like is the case for readiness, motivation is viewed as the psychological component that drives a person toward a specific action. In order to have motivation, an individual must have a purpose and enough psychological energy to move in the direction of the goal. Cox and

colleagues (2000) also make this distinction, referring to "motivational structure" which they argue stems from concerns that people have about their problematic behaviour and beliefs they have about the positive influence that quitting will have on other areas of their lives. Applied to PG, individuals may be motivated to change by their need to get out of debt, or to win back the respect of their family and friends. In this way, motivation seems to stem from the reasons that one has to change, with more reasons resulting in greater motivation (McBride, Curry, Stephens, Wells, Roffman, & Hawkins, 1994). Individuals who are motivated to change seem to have a mindset that is focused on the goal of actually making the change happen. Usually, when individuals are not motivated to change, they lack an awareness of how their life could be better if the change was made (e.g., better relationships with loved ones).

Generally, motivation involves some sort of perceived consequence: some reward that is obtained when a goal is reached. Motivation theory (Decy & Ryan, 1985) further suggests that motivation comes in two varieties: intrinsic, representing a desire toward an internal or self reward, and extrinsic, representing a desire toward an external reward. Gambling, by its very nature, offers both types of reward since the potential winnings are extrinsic and the mood alteration that comes from "playing" is intrinsic. When it comes to PG, extrinsic motivation has been shown to be more influential than intrinsic motivation (Carruthers, Platz, & Busser, 2006). However, the rewarding effect of being able to alter one's mood should not be overlooked, especially since mood alteration is thought to be one of the major motivating factors for continued gambling behaviour (Walker et al., 2008). As such, problem gamblers, as a group, seem to be motivated, at least in part, by both intrinsic and extrinsic types of reward, suggesting that treatment

providers could use either type of reward to motivate clients to engage in a treatment program.

Regarding treatment, motivation does seem to be an important factor for promoting change. One study examining substance abusers (Joe, Simpson, & Broome, 1999) found that clients who have greater motivation tend to have better therapeutic relationships with their counsellor(s), and thus are more likely to continue in treatment. Another study found that substance abusers entering treatment with greater motivation for change were less likely to relapse post-treatment (Miller, Westerberg, Harris, & Tonigan, 1996). In addition, substance-abuse treatment that involves Contingency Management interventions, which extrinsically reward individuals for abstinence related behaviour, has been associated with greater abstinence, as well as remaining in treatment longer (Petry et al., 2006). Although no studies have directly examined the potential influence of client motivation on gambling treatment outcomes, one pilot study did find that adding a motivational enhancement program to cognitive-behavioural PG treatment did help to promote treatment completion and long-term (one year) abstinence (Wulfert, Blanchard, Freidenberg, & Martell, 2006). As well, motivational-interviewing techniques, designed to increase client motivation for treatment and abstinence, have begun to show some efficacy for enhancing treatment effectiveness (Hodgins & Diskin, 2008). Thus, it does seem likely that motivation is a client-related factor that will foster positive treatment outcomes by providing individuals with the necessary drive to successfully proceed through the recovery process. For this reason, the current study aims to directly assess the resource-like nature of this variable and examine its relationship with PG treatment outcomes.

Emotion-Focused Coping

Treatment for problem gambling has the potential to be quite distressing as individuals often delve into their pasts and explore emotionally volatile material (N. Rupcich, personal communication, October 22, 2008). Since problem gamblers often have difficulties coping with distressing situations and emotional states (Wood & Griffiths, 2007), an individual's ability to cope effectively is going to be a major determining factor for the success of treatment for PG. According to Folkman and colleagues (1986), coping is generally thought to serve one of two functions: regulating distressing emotions, usually called emotion-focused coping, or taking action to alter the situation to reduce the distress it is creating, usually called problem-focused coping. For problem gamblers, their gambling behaviour is thought to provide temporary relief from distressing emotions as it allows individuals to escape from their problems in a dissociative fashion (Walker et al., 2008). If and when this happens, gambling is being used to regulate one's emotional states and can therefore be classified as an emotion-focused coping strategy, albeit a destructive and maladaptive one. This more escapist form of emotion-focused coping is often called avoidance coping since the individual is essentially "running away" from their problems rather than dealing with them (Zangeneh, Grunfeld, & Koenig, 2008). In accordance with what is often observed in problem gamblers, use of such coping strategies is often linked to greater distress and dysfunction (Stanton, Danoff-Burg, Cameron, & Ellis, 1994). Thus, in order to establish abstinence, gamblers need to reduce their reliance on these maladaptive forms of coping.

However, not all forms of emotion-focused coping are harmful, and many researchers now believe that certain types of emotion-focused coping can be very

beneficial, especially during the treatment process. For instance, Stanton and colleagues (2000) discuss the adaptive nature of emotion and its expression while describing the negative consequences of emotional suppression. These authors point out that the processing and expression of emotions, whether through such activities as journaling or discussing one's feelings with a close companion, can be quite therapeutic, especially since these practices allow individuals to make "meaning" from their emotional states. These types of emotion-focused coping strategies run in stark contrast to the emotional denial and suppression that result from avoidance coping strategies such as gambling. As well, these adaptive forms of emotion-focused coping are also distinct from emotional expression that is unproductive, such as venting emotions through physical exertion (e.g., using a punching bag) or exploding with anger. These types of emotional expression help people to release the energy behind their emotions, but are far less likely to result in "meaning making" since they are often carried out to cover up or avoid the person's distressing emotions (i.e., feeling hurt, vulnerable, or sad) rather than truly experience and process them (Greenberg, Rice, & Elliott, 1993). Indeed, an increasing body of psychotherapy research has demonstrated therapeutic success through promoting such adaptive emotion-focused coping skills as the processing and expressing of primary emotional states (i.e., emotions that are immediate and direct responses to situations, rather than secondary emotions which are responses to more primary emotions or thoughts; Greenberg & Pascual-Leone, 2006). Accordingly, it appears to be necessary to distinguish between forms of emotion-focused coping that involve avoidance and forms that involve the processing and expression of emotions (Stanton et al., 2000). When it comes to problem gamblers, it is likely that they are quite good at avoidance, but have

great difficulty with adaptive emotional processing and expression. From this, it seems likely that the acquisition of adaptive emotion-focused coping strategies would be a goal of therapeutic intervention in that those with higher levels of these adaptive forms of coping would have less of a need to fall back on maladaptive coping strategies, such as gambling.

To date, there are few studies that examine the positive role of adaptive coping skill acquisition in the treatment of PG, but the results are encouraging. For instance, one study examining CBT for PG found that short-term treatment outcomes were mediated by the attainment of more adaptive coping skills (Petry, Litt, Kadden, & Ledgerwood, 2007). As well, McCormick (1994) discusses the need for PG treatment to focus on teaching more adaptive coping skills, especially problem-solving skills and the more emotion-focused skills of acquiring more emotional or personally validating types of support. However, no study has of yet examined specifically the role that adaptive emotion-focused coping has promoting positive treatment outcomes for PG, despite the positive effects it appears to have on health in general (Austenfeld & Stanton, 2004). For this reason, one of the goals of the current study is to be the first to examine the potentially treatment facilitating effect of adaptive emotion-focused coping on PG treatment outcomes.

Client Factors that Hinder Treatment

In their resource based theory of self-regulation, Baumeister and colleagues (1998) suggest that self-regulation is a limited resource and that all self-regulation tasks draw from the same resource pool, so to speak. Accordingly, the pool of resources can

be depleted, making further self-regulation tasks difficult to undertake. In describing this process, these authors refer to what they call "ego depletion," which is the reduction of the resource pool by competing self-regulatory tasks. The effect of this ego depletion process is that individuals have a difficult time doing more than one self-regulation task at a time. Research examining this effect in dieters has found some interesting results. For instance, one study examined the ability of dieting individuals to refrain from eating candy while engaging in an additional self-regulation task (Hofmann et al., 2007). In that study two groups of dieters watched a highly emotional scene from a movie, but one group was asked to suppress their emotions while the other group was not. The results indicated that those dieters who suppressed their emotions were far more likely to eat the candy that was presented to them during the movie than the dieters who did not suppress their emotions. These results suggest that individuals who are attempting to regulate their emotions will have far greater difficulty regulating their behaviour in order to conform to a personal goal of change.

Applying this idea of resource depletion to the change process of gamblers, it seems likely that people's resources could become depleted by other challenging circumstances that may be faced during the treatment process, resulting in poor outcomes. Indeed, overcoming an addiction is an upward battle and among addictions, PG is no exception. The process of working through the past and experiencing a whole host of emotions that are usually unresolved or suppressed can already be quite overwhelming for individuals. When further resource "consuming" circumstances are added, the person's resources may become divided, resulting in an even greater difficulty maintaining the self-regulation processes that are required for recovery and treatment.

For this reason, it seems vital to the success of any treatment that individuals are able to devote their emotional and cognitive resources to the treatment process. If there are other issues that are more pressing to the client, then these matters, rather than the treatment process, may become the focus of the individual's resources. Indeed, clients whose resources are directed elsewhere are not likely to fully engage in the treatment process, resulting in the possibility of poor treatment outcomes or dropout. Thus, along with the client factors that work like resources to facilitate treatment, there are also client factors that compete for resources and hinder the treatment process.

Furthermore, Brown and colleagues (1995) have proposed the stress-vulnerability hypothesis of addiction relapse which posits that one of the main precursors of relapse is the presence of severely stressful life circumstances. In addition, this theory indicates that a person's susceptibility to the negative consequences of life stress is partially determined by the presence of psychosocial protective factors (e.g., social support, etc.) and risk factors (e.g., unemployment, etc.). In more recent literature examining this theory (Anderson, Ramo, & Brown, 2006), the protective factors are even described as supplying the individual with additional resources which can be used toward behaviour change. Taken together, this theory also suggests that there are client factors which facilitate treatment and client factors which hinder treatment, and the combination of these factors will determine an individual's risk for relapse and poor treatment outcomes.

Based on the presented theoretical framework, this study additionally examined the potential for certain client factors to hinder the treatment process, possibly by competing for precious resources. Two such treatment hindering client factors are proposed, these being depressed affect and life stress. Since both of these variables have

a tendency to be found in problem gamblers more often than non-problem gamblers (Turner, Zangeneh, & Littman-Sharp, 2006), it seems that these factors in particular will have an influence on the treatment process of problem gamblers. Thus, an exploration of these two potentially treatment hindering client factors seems to be warranted. Each is further discussed in turn.

Depression

Symptoms of depression, such as loss of energy and feelings of worthlessness, can be detrimental to any person's well being. When combined with another disorder, a person's ability to cope is likely to be overwhelmed. For this reason, individuals with comorbid disorders often have poor treatment outcomes. For instance, depressive symptoms in alcoholics were found to predict relapse at all stages of the treatment process, even during post-treatment follow-ups (Kodl, Fu, Willenbring, Gravely, Nelson, & Joseph, 2008). Furthermore, comorbid depression was found to be a risk factor for relapse in a sample of in-treatment cocaine abusers (Poling, Kosten, & Sofuaglu, 2007). Also, one study using the Project MATCH data (Conner, Sörensen, & Leonard, 2005) found that among those entering treatment for alcohol abuse, individuals with symptoms of depression had more difficulty becoming engaged at the beginning of treatment, which is a potential risk factor for dropout. Thus, for substance abusers, the presence of depressed affect during the treatment process appears to be associated with poor treatment outcomes.

These negative associations between depression and treatment are important for the current study since gambling is often comorbid with depression. For instance, in reviewing the literature, Kim and colleagues (2006) found comorbid depression in up to

half of the PG participants employed in a series of inpatient treatment studies. McElroy and colleagues (1992) provide evidence suggesting that PG, based on its clinical characteristics, is related to mood disorders. Blaszczynski and McConaghy (1989) even suggest that PG may be a behavioural stress reaction whereby individuals attempt to cope with their depression by gambling as a form of mood altering behaviour. In support of this interpretation, a national survey in Australia found that 73% of problem gamblers stated that they use gambling as a way to escape depression (Dickerson, Baron, Hong, & Cottrell, 1996). Thus, depressed affect seems to be a factor that perpetuates problem gambling and is likely problematic during treatment.

More specifically, depressive symptoms seem to have an impact on a gambler's resources for change, although this effect is somewhat complicated. For instance, high levels of depressed affect seem to predict lower levels of abstinence self-efficacy in gamblers during treatment (Gomes & Pascual-Leone, 2009). This negative relationship has also been found in smokers (John, Meyer, Rumpf, & Hapke, 2004). Based on these findings, one could speculate that depressed affect overwhelms people's coping resources to the point that they lose confidence in their sense of agency and their ability to change problem behaviours. Regardless of the interpretation, depression does have a deleterious effect on one's ability to recover, most likely because it leaves individuals feeling overwhelmed and helpless. However, the effect is not entirely problematic since moderately high levels of depressed affect also seem to predict higher levels of readiness for change in gamblers during treatment (Gomes & Pascual-Leone, 2009). This positive relationship between readiness for change and depressed affect is well supported in the addiction literature (Willoughby & Edens, 1996; Grothues et al., 2005). Here, it is as if

the depression is so aversive that it serves as a warning sign signifying the urgency of change, propelling the person through the contemplation stage of readiness. Thus, depressed individuals in treatment seem to desire change, but lack the self-efficacy required to carry it out.

This complicated effect of depression on the treatment process certainly warrants further examination, especially since comorbid depression is related to poor treatment outcomes with the substance abuse disorders. Surprisingly, despite the overwhelming evidence of a link between PG and depression (O'Brien, 2011), few studies have been published which directly assess the influence of depression on PG treatment outcomes. One such study found that problem gamblers with less depressive symptoms responded better to treatment (i.e., had greater reductions in gambling severity), according to counsellor evaluations (Maccallum, Blaszczynski, Ladouceur, & Nower, 2007). Thus, depressed affect appears to have a hindering relationship with PG treatment. However, this same study was unable to find a predictive relationship between high levels of depressed affect and rates of attrition. Leblond and colleagues (2003) also did not find a relationship between depressed affect and dropout. Furthermore, McCormick and Taber (1988) were unable to find a predictive relationship between baseline levels of depressed affect and post-treatment relapse rates in veterans attending inpatient PG treatment. This reported inability to predict both relapse and dropout suggests a lack of a treatment hindering relationship. Yet, the fact that the McCormick and Taber (1988) study examined a very specific population (i.e., war veterans) may mean a lack of generalizability to other populations of problem gamblers, particularly those who have not been to war. In any case, the literature does appear mixed regarding a potential

treatment hindering effect of depressed affect. Thus, a goal of the current study was to further examine the possibility of depressed affect having a hindering relationship with PG treatment.

Life Stress

Whether it is on account of premorbid difficulties, trying to pay back debt, or having to conceal losses from loved ones, the lifestyle of the problem gambler is likely to be filled with a great deal of stress. Among other things, gambling at a problematic level seems to result from deficits in coping since individuals who problem gamble almost always have difficulty coping with various life stressors (Wood & Griffiths, 2007; McCormick, 1994), such as financial uncertainty (usually brought on by the gambling), interpersonal conflict (e.g., an argument with a spouse or family member), personal loss (e.g., the death of a loved one), change (e.g., retirement), the absence of a social network (e.g., living alone and/or having few friends), or even boredom. For many gamblers, escaping from this life stress becomes a primary motivator for continued gambling behaviour (Wood & Griffiths, 2007). In fact, addictive behaviour in general is often thought of as a dysfunctional coping strategy aimed at gaining relief from such stressful events (Jacobs, 1986; Alexander, 2008).

Since many of the stressors experienced by those with addictions are chronic (Brady & Sonne, 1999), they are not likely to disappear simply because the individual has entered treatment and therefore have the potential to become problematic during recovery. For example, most gamblers entering treatment have ongoing problems with spouses and family members as a result of the lying and/or stealing caused by their gambling addiction (Federman, Drebing, & Krebs, 2000). This familial strife and

uncertainty will likely cause the individual to be distracted by, and worried about, the events going on at home. Since the individual is focused elsewhere, these stressful life events may prevent the individual from receiving the full benefit that treatment has to offer. Even more problematic, the continuation of this familial difficulty after treatment may provide the individual with a continued need for escape, pushing him or her toward further gambling behaviour and relapse. It is because of this negative influence of life stress that many treatments for PG include a coping skills component to help individuals to manage their stress once treatment is complete (McCormick, 1994). Furthermore, Petry and colleagues (2007) found that improvements in coping skills mediated the long-term effectiveness of cognitive-behavioural treatment. Thus, the inclusion of life stress as a variable of interest is important for examining the factors that may affect gambling treatment outcomes.

The treatment hindering effect of life stress is generally supported by the treatment outcome literature. For instance, higher levels of chronic and acute life stress were found to significantly predict relapse after treatment in those with comorbid substance abuse and depression (Tate et al., 2008). In addition, those with higher levels of chronic stress relapsed much more quickly. Consistent with the current study, these authors propose a possible depletion of coping resources (i.e., social support and financial resources) as the mode of action for this effect of life stress on relapse. Another study also found that alcohol abusers experiencing high levels of resource taxing psychosocial stress were more likely to succumb to posttreatment relapse (Brown et al., 1995). Based on their results, these authors even proposed the aforementioned stress-vulnerability model of relapse (Brown et al, 1990; Brown et al., 1995) which implies that the

experience of negative life circumstances, whether chronic or acute, is a major cause of relapse throughout the treatment process. Although there are no studies that examine the relationship between life stress and gambling treatment outcomes, it seems likely that this is a client factor that has a great potential to reduce the effectiveness of any treatment, including those for PG. It was for this reason that a goal of the current study was to examine the role that life stress plays during the treatment process of problem gamblers.

Study Rationale and Hypotheses

Although many problem gamblers are greatly helped by professional treatment programs, others continue to gamble despite the best efforts of skilled professionals. As mentioned, treatment attrition and poor outcomes, such as relapse, are serious problems that reduce the ability of all health professionals to successfully treat individuals who problem gamble. An examination of the addiction literature, however, suggests that client factors such as social support, abstinence self-efficacy, readiness for change, motivation for change, emotion-focused coping, depressed affect, and life stress, may collectively explain at least part of the variability in treatment outcome and treatment completion. Since none of these seven client variables are specific to a theoretical orientation or type of treatment, they can all be thought of as common factors that are likely to have an effect on most types of treatment. In this way, these client variables seem well suited for the task of explaining the problems of poor treatment outcomes and attrition.

In this study, the term "recovery resources" will be used to refer to the five treatment facilitating client factors (social support, self-efficacy, readiness, motivation,

and emotion-focused coping). The term recovery resources implies that each of these variables, when present in high levels, can be utilized by individuals to their advantage during the recovery process. In this way, recovery is like work: if one does not have the strength and energy (i.e., resources) to work, then one will not be able to get a job done (i.e., complete treatment and maintain abstinence). In contrast, the term "psychosocial stressors" is used here to refer to the two treatment hindering client factors (depressed affect and life stress). This term is used because it suggests that these two variables, when present in high levels, will strain individuals and their available resources, leaving fewer personal resources to be directed toward treatment and recovery.

Current addiction research does support a relationship between treatment outcome (including reduced gambling severity, maintained abstinence, and treatment completion) and client factors such as the recovery resources and the psychosocial stressors. However, the nature of these relationships is much less clear when it comes to PG. That is, variables such as abstinence self-efficacy and readiness for change have been well studied while examining the treatment of other addictive behaviours, such as alcoholism, but few studies, if any, have linked these variables to treatment outcome for PG. Consequently, longitudinal research is needed to examine the capacity of these client variables to predict treatment outcome. If it were found, for example, that individuals with low readiness for change are more likely to drop out, then promoting this in those who are apparently less ready for change may serve to prevent them from dropping out. Similarly, if continued life stress during treatment were found to predict relapse, then treatment interventions might be best focused on stress management techniques. Accordingly, longitudinal research examining the relationship that these client factors

have with treatment outcome would be very beneficial to treatment providers as it will provide suggestions for how to make treatment more effective.

Accordingly, this study has two main purposes. The first purpose is to examine how the presence of recovery resources and the absence of psychosocial stressors at different stages in the recovery process predict positive treatment outcomes (i.e., reduced gambling severity, continued abstinence, and increased quality of life). Individuals were followed for the first four months of treatment and their recovery resources and psychosocial stressors were assessed at four different points in time: baseline, early progress point (one month after treatment had begun), mid progress point (two months after treatment had begun), and late progress point (four months after treatment had begun). It was expected that individuals with good recovery resources at the various assessment points would likely be more open to treatment and more able to do the work required to change and recover. Similarly, individuals with less negative affect and fewer life stressors would likely have less competition for resources, allowing them to focus what resources they have primarily on the treatment process. As such, individuals who have good resources and less stressors distracting them when they enter treatment are likely to get more out of the treatment experience and thus will have the greatest gains during treatment. Additionally, those with the most available resources late in treatment are likely to be those who are most able to continue on the road to recovery and thus should have the best long-term outcomes. Indeed, increasing these resources and reducing the impact from stressors is likely to be one of the main changes that treatment programs are attempting to produce in individuals; essentially creating a mindset focused

on change. From this, I propose two hypotheses to address the first issue regarding treatment success:

1) Higher levels of each recovery resource (social support, self-efficacy, readiness, motivation, and emotion-focused coping) and lower levels of each psychosocial stressor (depressed affect and life stress) at *baseline* will predict the greatest amount of positive change in gambling behaviour (i.e., reduced gambling severity, fewer relapses, and increased quality of life) and social adjustment at the *early progress point* (one month after treatment has begun) and at the *mid progress point* (two months after treatment has begun).

2) Higher levels of each recovery resource and lower levels of each psychosocial stressor at the *mid progress point* (two months after treatment has begun) will predict the greatest amount of positive change in gambling behaviour at the *late progress point* (four months after treatment has begun).

The second main purpose of this study is to examine which recovery resources and psychosocial stressors at baseline predict treatment dropout. Individuals entering treatment who do not possess a sufficient amount of resources to devote to the recovery process, either because these resources do not exist or because their resources are focused elsewhere (dealing with depression or other stressful life circumstances), are likely going to find the recovery process far more difficult than individuals who do have these resources available. For instance, an individual who lacks abstinence self-efficacy will not likely have the belief that recovery is possible, making treatment appear to be a futile endeavour. Similarly, an individual who lacks motivation for change will not likely see the arduous task of recovery as being worthwhile. As a result, individuals with

impoverished recovery resources will be more likely to drop out of treatment since the recovery process will be too taxing on them emotionally and cognitively, causing them to give up on recovery and treatment. The hypothesis addressing this second issue states that:

> 3) Lower levels of each recovery resource and higher levels of each psychosocial stressor at *baseline* will predict higher rates of *treatment dropout* over the first two months of treatment.

The three hypotheses are represented in diagram form in Figure 1a, Figure 1b, and Figure 1c, respectively. As can be seen in Figure 1a and Figure 1c, the first and third hypotheses focus on using variables measured at baseline to predict early treatment outcomes (over the first two months of treatment). This focus on baseline variables will provide some sense of the influence that these client factors have early in treatment and may serve to identify client needs, which, if not addressed, may result in poor outcomes. The second hypothesis (see Figure 1b), on the other hand, focuses on how the client factors measured after two months of treatment can predict later outcomes (four months). Here, the purpose is to examine the influence of these client factors later in treatment, particularly after treatment has had a chance to have some effect.

These three hypotheses obviously do not exhaust all of the predictive models that could have been created using the four assessment points (e.g., there is no stated hypothesis using baseline to predict four month outcomes, etc.). However, for practical purposes, I chose to focus primarily on the early treatment process, since it was expected that dropout and relapse would be particularly likely to occur during this time, and the late treatment process, in order to examine what factors are most important for

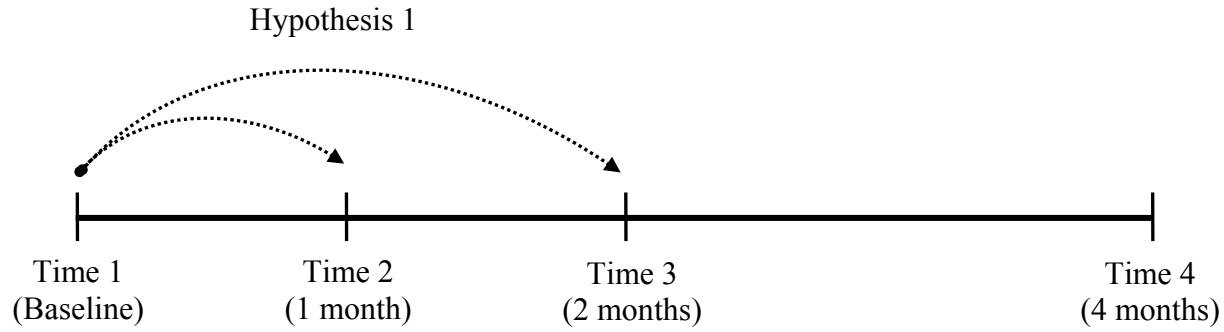

Figure 1a. Hypothesis 1 as a function of study timeline.

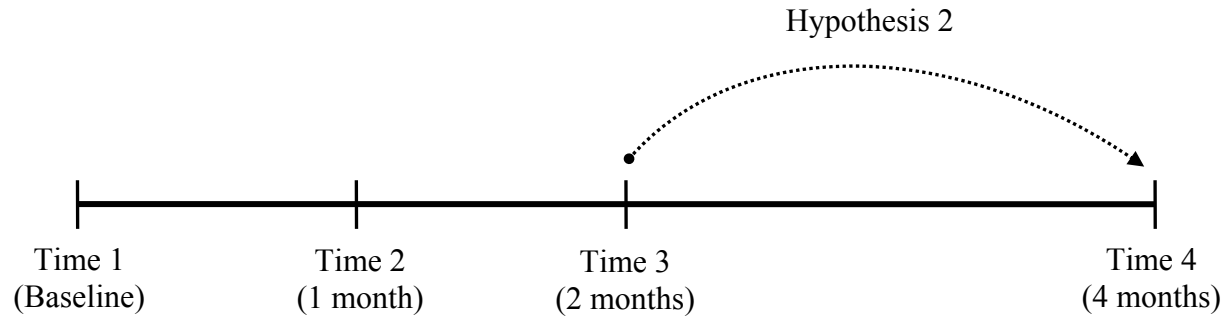

Figure 1b. Hypothesis 2 as a function of study timeline.

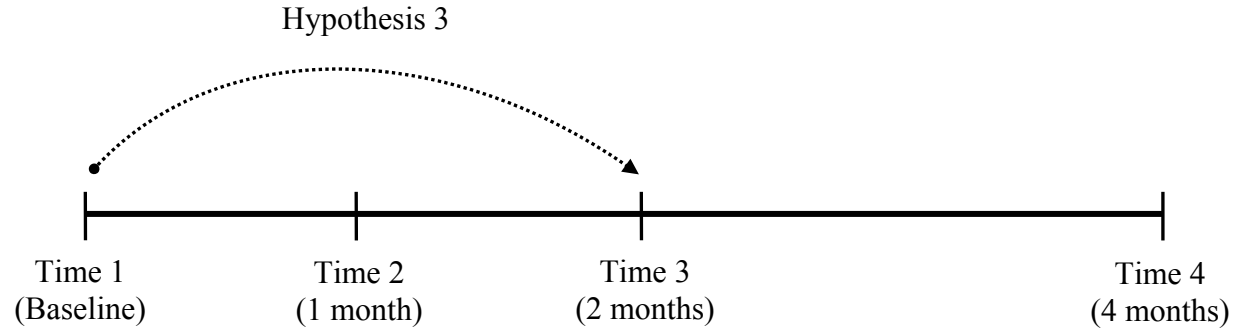

Figure 1c. Hypothesis 3 as a function of study timeline.

individuals who are having some success with treatment (i.e., have remained in treatment for longer than two months). As well, Joe and colleagues (1991) found that, for substance abuse treatment, events that occur late in treatment are better predictors of long term outcomes than are events that occur early in treatment. Thus, it seems important to examine the influence of these client factors during the later stages of treatment, especially for predicting long term (4 month) outcomes.

With its focus on treatment outcomes, including attrition and relapse, the proposed study will examine a few important issues within the context of one large study. By doing so, both the recovery resources and the psychosocial stressors can be examined regarding their influence on treatment completion and success (i.e., reduced gambling severity and maintained abstinence). It is important to note that although these factors may have an influence on treatment, they are not part of the treatment per se, but rather they describe dynamic client characteristics. They are what clients bring to therapy and also what therapists help clients make use of. Each client is likely to have a unique set of strengths and weaknesses and being able to make predictions based on the presence of available resources and psychosocial stressors may allow for a custom tailoring of treatment to meet the unique needs of each individual. For this reason, Allen and Kadden (1995) suggest that assessing various client factors at the beginning of treatment may aid in the process of matching clients to the treatment that will be most beneficial to them. Indeed, the central purpose behind hypothesis 1 and hypothesis 3 is to identify important client needs at baseline, which could possibly be used to inform this matching process. Thus, the results of the current study is intended to have clinical implications, potentially

enhancing the ability of treatment providers to target individuals who are likely to dropout and/or relapse so that additional interventions can be provided.

CHAPTER II

Methodology

Participants

Sample

Participants were 50 individuals entering treatment for problem gambling (PG) at the Problem Gambling Services (PGS) centre of the Windsor Regional Hospital in Windsor, Ontario. Each participant received "treatment as usual" according to the procedures of PGS. In general, every person began with individual outpatient treatment which occurred weekly or as needed. Approximately half (52.0%), at various points, also engaged in group outpatient treatment and a small minority (10%) became involved in the centre's residential (inpatient) program.

The age of the participants ranged from 19-73 years and had a mean of 45.0 years. Almost two thirds (64.0%) were male and most identified themselves as Caucasian (87.8%), with a small number identifying as Aboriginal (6.1%) and the rest belonging to various other ethnicities.

Approximately half of the sample (53.1%) reported having received treatment for PG prior to entering the current study and treatment program. The duration of prior treatment received ranged from 2 to 24 weeks and had an average of 2.86 weeks. A quarter of the participants (26%) identified themselves as current members of Gamblers Anonymous (GA) and had spent an average of 17.8 weeks in GA with a range of 1 to 156 weeks.

Participants were asked to report any substances that they abuse or use problematically and 40% reported "abusing" at least one substance, with 20% abusing

nicotine, 16% abusing alcohol, and 5.5% abusing an illegal drug. Only two of these individuals (10% of those reporting substance abuse) were concurrently receiving treatment for their substance abuse and, in both cases, it was for alcohol abuse. As well, one person reported concurrently receiving treatment for over-eating.

Regarding mental health status, 16 participants (32%) reported experiencing a mental health problem in the past year, with the majority (12 participants) reporting specific problems with depression. Other concurrent, mental health issues were reported and include anxiety (three participants), bipolar disorder (two participants), and post-traumatic stress disorder (one participant). As well, two individuals reported experiencing both depression and anxiety. Of those having experienced mental health issues, 13 (81.3%) reported seeking help for their problems.

Treatment Setting and Context

The Problem Gambling Services (PGS) centre of the Windsor Regional Hospital is a no-charge community-based treatment program offered in Windsor, Ontario. This centre deals strictly with problem gambling and provides treatment and counselling services to individuals who are problem gamblers and individuals who are coping with the effects of a problem gambler (e.g., family members). At its core, PGS takes a cognitive-behavioural therapy approach to treatment, but also incorporates many other therapeutic elements, including art therapy, family therapy, and some of the 12-steps. PGS provides a variety of treatment options to its clients. A counsellor's first task with a new gambling client is to assess the individual, including the severity of his or her gambling problem, to decide, among many things, whether the individual should receive inpatient or outpatient treatment (N. Rupcich, personal communication, October 22,

2008). In addition, the counsellor also decides whether the client would benefit from, and is suitable for, group treatment. These decisions are part of the "matching" process, where individual clients are matched to the treatment that is believed to be most beneficial (Allen & Kadden, 1995). In this way, the course of treatment is usually decided after the gambler begins meeting with his or her counsellor and is adjusted as factors in the client's life change. The result is that there is variability in the types of treatment that the participants are engaged in at the treatment centre. In addition, although clients may be attending individual and group treatment, at what point in the treatment process group treatment begins varies since individuals often must wait until a new treatment group begins, which could be a month or more after they first enter treatment. Some also engage in aftercare groups once the formal group treatment is completed as a way to maintain their treatment gains. Accordingly, there was also variability in the length of time that participants spent in the treatment process.

Also noteworthy about this treatment centre is that, despite strongly encouraging clients to have a treatment goal of complete abstinence, individuals are allowed to have a goal of controlled gambling. This perspective is quite controversial since the classic 12-step view is that any gambling, no matter how controlled, will eventually trigger the person into further problematic gambling (Gamblers Anonymous, 1984). At PGS, the belief is that some flexibility is required when setting treatment goals in order to establish a solid working alliance (N. Rupcich, personal communication, October 22, 2008) and this position has generally been supported by the literature (Blaszczynski, McConaghy, & Frankova, 1991; Ladouceur, 2005). As a result, some clients in the current study did have treatment goals that allowed for certain forms of gambling and precautions were

taken to ensure that these allowable forms of gambling were not considered to be relapses (see the operationalization of relapse in the Measures section below).

Research Design

As previously mentioned, there is variability in the length and type of treatment that is offered by the target treatment centre. For this reason, rather than using a pretreatment, post-treatment, follow-up assessment schedule, the current study followed participants for the first four months of their treatment and required them to complete a questionnaire package once a month for the first two months with a progress update at four months. Thus, the design used a total of four assessment points: Time 1 (baseline), Time 2 (one month from baseline; early progress point), Time 3 (two months from baseline; mid progress point), and Time 4 (four months from baseline; late progress point). Since each questionnaire asked participants to consider the past month when answering the questions, Time 1 assessed for the month prior to starting treatment, Time 2 assessed for the first month of treatment, Time 3 assessed for the second month of treatment, and Time 4 assessed for the fourth month (this last assessment occurred whether the client was in treatment or not).

The purpose of this study was not *treatment* evaluation per se and thus, a client's treatment was not fixed (or controlled) by the study. Instead, the assessment points were predetermined to track client factors and were largely unrelated to the course of treatment, saving only for those clients that dropped-out (clients who dropped from treatment were not assessed further). This fixed assessment schedule was the most practical since it structured the assessment process for easier comparisons and

accommodated the length of treatment that each individual received (up to 4 months). In addition, by establishing the baseline at the point when participants were first assessed for treatment services, this study was able to obtain a dropout rate that was representative of all individuals who seek "treatment as usual" for PG at the target clinic, not just those who attend a certain service (such as a specific treatment group).

Although these differences in the type of treatment received were recorded, this study assumed that individuals entering treatment were provided with the type of treatment that was most suited to their individual circumstances and that they followed treatment as usual. In this fashion, participants were not excluded based on the type of treatment received after they had entered treatment. Thus, the final sample consisted of individuals in outpatient, inpatient, individual, and group therapies, or some combination of these. Although the differences in received treatment are likely to have influenced treatment outcome, the collected sample was believed to be more representative of the practiced "treatment as usual" that is carried out at the treatment centre. The current study on client factors is therefore somewhat more generalizable to individuals who are entering treatment for PG in other comparable community settings.

Recruitment

As indicated, the sample was recruited from the Problem Gambling Services centre of the Windsor Regional Hospital. As this study gathered four-month treatment outcome data from participants, the centre was offered a promise of information about the long-term effectiveness of its treatment program as an incentive for providing its clients the opportunity to participate as volunteers in this study.

Measures

The current study measured two types of client factors to be used as predictors, these being recovery resources and psychosocial stressors. As well, in order to provide a more complete assessment of treatment outcome and symptom improvement, a number of different outcome variables were included, these being: gambling severity, relapse, and impact on quality of life. Finally, treatment attrition was also assessed for use as an index of outcome. The measurement of each of these different categories of variables is described in turn.

Measurement of Recovery Resources

Social support. Social support was measured using two instruments that are administered in parallel: the Social Support Questionnaire for Transactions (SSQT) and the Social Support Questionnaire for Satisfaction (SSQS) with the supportive transactions (Doeglas et al., 1996). Together, these two measures consist of 23 item pairs in which the SSQT asks about the frequency of social support transactions, and the SSQS asks about satisfaction with the frequency of each of these types of transaction. The 23 item pairs assess both emotional and instrumental forms of support. For emotional support, there are 16 item pairs and the current data yielded internal consistencies of $\alpha = .82$ for transactions and $\alpha = .88$ for satisfaction. For instrumental support, there are seven item pairs and the current data yielded internal consistencies of $\alpha = .67$ for transactions and $\alpha = .67$ for satisfaction. However, for the purposes of this study, an overall social support score encompassing both subscales was used. Items on each of these two measures are rated on a 4-point Likert scale with “seldom or never” (score = 0), “now and then” (score = 1), “regularly” (score = 2), and “often” (score = 3) as values for the SSQT, and “much

less than I like" (score = -2), "less than I like" (score = -1), "just as much as I like" (score = 0), and "more than I like" (score = -1) as values for the SSQS. As such, a high score on the SSQT indicates greater levels of support and a score close to zero on the SSQS indicates greater satisfaction (neither too much nor too little) with the amount of social support received. The SSQT and SSQS were chosen because they adequately assess different types of support and consider not only the person's perception of the amount of support, but also his or her satisfaction with the support received, thereby taking further individual differences into account. See Appendix A for a complete list of the items.

Abstinence self-efficacy. The Gambler's Self-Efficacy Questionnaire (GSEQ) was used to assess abstinence self-efficacy (May, et al., 2003). This 16 item measure assesses perceived self-efficacy to regulate one's own ability to resist gambling in high-risk gambling situations. An example item is, "I could resist gambling . . . if I felt I had let myself down." Statements are rated by participants on a 6-point Likert scale that ranges from 0% confidence to 100% confidence in their ability to resist gambling in the provided situation. An average score of confidence, taken across all items, was used for the analyses. The GSEQ was chosen since it has high internal consistency ($\alpha = .93$ in the current data set) and is commonly used to assess abstinence self-efficacy in problem gamblers. See Appendix B for a complete list of the items.

Readiness for change. The University of Rhode Island Change Assessment (URICA) scale as adapted for gambling by Petry (2005b) was used to assess readiness for change. This measure consists of 32 statements that are potential beliefs that individuals may have about the need to change their gambling behaviour. An example item is, "I've been thinking that I might want to change something about my gambling". Participants

are asked to indicate their level of agreement with each change-related statement on a 5-point Likert scale ranging from "strongly agree" (score = 5) to "strongly disagree" (score = 1). The URICA is based on Prochaska and DiClemente's (1992) transtheoretical model of change and assesses the four stages of change: pre-contemplation (nine items), contemplation (four items), action (eight items), and maintenance (eight items). An overall readiness for change score was created by adding together the scores on the items for the contemplation, action, and maintenance stages and subtracting this by the scores on the items for the pre-contemplation stage. The four stage factors generally have good internal consistency (α's ranging from .57 to .79 in the current data set). The URICA was chosen since it is commonly used and has been validated with a number of different populations, including cigarette smokers (Prochaska & DiClemente, 1985), alcohol abusers (Carbonari & DiClemente, 2000), illicit drug users (Siegal, Li, Rapp, & Saha, 2001), and incarcerated adolescents (Cohen, Glaser, Calhoun, Bradshaw, & Petrocelli, 2005). See Appendix C for a complete list of the items.

Motivation for change. A version of the Reasons for Quitting (RFQ) scale that was previously modified and empirically validated for use with problem gamblers (see Gomes & Pascual-Leone, 2009) was used to assess motivation for change. This gambling-specific measure consists of 16 statements, each of which is a potential reason for quitting gambling behaviour (i.e., motivation for change). This measure assesses both intrinsic and extrinsic motivation for change and can be divided into four factors with emotional well-being concerns and self-control assessing intrinsic motivation and social influence and financial concerns assessing extrinsic motivation. Items for each of the four factors have high face validity and ask specifically about issues that are pertinent to

the factor. For example, an item assessing concerns about self control has as a reason for quitting, "To show myself that I can quit if I really want to," and an item assessing social influence has as a reason for quitting, "Because people I am close to will be upset with me if I don't quit." Participants rate their agreement with each statement on a 5-point Likert scale that ranges from "not at all true" (score = 0) to "extremely true" (score = 4). An overall motivation for abstinence score that encompasses all four factors was calculated by adding together the ratings for all items on the measure. The RFQ was chosen as it is the only scale that measures abstinence motivating factors for addictive behaviours. This modified version of the RFQ (Gomes & Pascual-Leone, 2009) had good overall internal consistency in the current data set ($\alpha = .76$), and good internal consistency for each factor, including emotional concern ($\alpha = .67$), self-control ($\alpha = .44$), social influence ($\alpha = .76$), and financial concern ($\alpha = .54$). These internal consistencies are generally quite similar to those found on the other RFQ measures (Tobacco $\alpha = .53$-.77; Marijuana $\alpha = .33$-.75; Cocaine $\alpha = .48$-.76; McBride et al., 1994). See Appendix D for a complete list of the items.

Emotion-focused coping. The Emotion Approach Coping (EAC) scale (Stanton et al., 2000) was used to assess emotion-focused coping. This 8-item measure assesses both emotional processing (e.g.. "I realize that my feelings are valid and important") and emotional expression (e.g., "I allow myself to express my emotions"). Participants rate how often they engage in the emotional-coping task described by the item on a 4-point Likert scale that ranges from, "I usually don't do this at all" (score = 1) to, "I usually do this a lot" (score = 4). This measure was chosen because it does not contain items that relate to psychological distress or pathology, as do some of the other emotion coping

instruments described by Stanton and colleagues (2000). As a result, the EAC focuses on adaptive forms of emotion-focused coping and excludes any maladaptive means of using emotion to cope (e.g. blowing up in anger). The EAC generally has good psychometric properties, including a high degree of internal consistency found in the current data set (α = .88). See Appendix E for a complete list of the items.

Measurement of Psychosocial Stressors

Depression. Depressive affect was assessed using the Beck Depression Inventory - II (BDI-II; Beck, Steer, & Brown, 1996). The BDI consists of 21 groups of statements, where each group relates to a different depressive symptom (e.g. sadness, guilty feelings, self-dislike, etc.). Each group contains four statements which range from not experiencing the depressive symptom to greatly experiencing the depressive symptom and participants are asked to choose which statement best represents them. The BDI-II had a high degree of internal consistency in the collected data (α = .89).

Life stress. The Life Experiences Scale (LES; Sarason, Johnson, & Siegel, 1978) was used to assess the level of stress in participants' lives. This measure lists 47 potentially stressful life changing events, such as marriage, death of a spouse, and changes in sleeping habits, and asks participants to indicate which of these events they have recently experienced. For each event endorsed, participants are then asked to indicate the impact that the event has had on them using a 7-point Likert scale that ranges from "extremely negative" (score = -3) to "extremely positive" (score = +3). For example, the event of "divorce" could be viewed as either having a negative impact (e.g., losing a spouse, the stress of becoming a single parent, etc.) or a positive impact (e.g., the freedom of leaving an abusive relationship). In this way, the LES allows participants to

assign their own appraisals, either positive or negative, to an event. As such, scores on this measure are typically either positive (indicating "good" stress) or negative (indicating "bad" stress) with zero indicating no impact. Since this study is interested in the effects of "bad" stress, scores on this questionnaire were reversed so that higher scores would relate to higher levels of negatively impacting life stress. This measure was chosen as it accounts for a wide variety of events that individuals find stressful and would require various resources in order to cope with. In addition, the LES has good psychometric properties and has been used extensively as a measure of life stress for research purposes. See Appendix F for a complete list of the items.

Measurement of Treatment Outcome

Gambling treatment outcomes were measured using several indices; namely, severity of gambling behaviour, relapse, dropout, and the impact of gambling on quality of life. The assessment of each outcome is described in turn.

Gambling severity. The Problem Gambling Severity Index (PGSI) is a 9-item subscale of the Canadian Problem Gambling Index (CPGI; Wynne, 2003) which was used to provide a measurement of an individual's problem gambling behaviour. Each item is rated on a 4-point Likert scale which ranges from "never" (scored 0) to "almost always" (scored 3). Thus, scores in the range of 0 to 27 are obtained. In order to make comparisons across assessment points, the measure was modified so that it asks participants about gambling behaviour over the past month instead of 12 months. The PGSI was used as it is relatively brief and has good concurrent validity with both the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) and criteria in the Diagnostic and Statistics Manual of Mental Disorders-Fourth Edition (DSM-IV-TR;

APA, 2000). The PGSI also had a high internal consistency in the collected data (α = .86). See Appendix G for a complete list of the items.

Relapse. A relapse measure, constructed for the purposes of this study (2009; appendix H), was included to further assess gambling behaviour and treatment progress directly. This measure included five questions asking participants about gambling behaviour over the preceding month. For instance, participants were asked to indicate the number of times that they had gambled, as well as the number of urges that they had had to gamble. In addition, participants were asked to indicate whether their current treatment goal is "complete abstinence" or some form of "controlled gambling." They were also asked if they believed that their amount of gambling was acceptable given their treatment goal according to themselves and their counsellor. These items were included in order to get a sense of whether any gambling that had occurred should be considered a relapse or was acceptable under the participant's goal for treatment. Psychometric properties of this instrument have not been established but it was designed to have high face validity. See Appendix H for a complete list of items.

For the purposes of this study, a "relapse" was operationalized as levels of reported gambling that was not acceptable given the identified current treatment goal. For individuals whose goal was "complete abstinence," no amounts of gambling were acceptable and thus any gambling was considered to be a relapse. For individuals whose goal was "controlled gambling" or "gambling under certain conditions," some level of gambling was allowed if the individuals also reported that both they and their counsellor believed their amount of gambling to be acceptable given their treatment goal. If the gambling was deemed acceptable, then the participant was not considered to have

relapsed. If the gambling was not deemed acceptable, then the participant was considered to have relapsed and was treated accordingly. This consideration of participant treatment goal resulted in one individual at Time 2 and one individual at Time 3 not have their gambling recorded as a relapse. For quantitative purposes, each reported incident of gambling was counted as a relapse and a continuous variable was created with scores representing the number of relapse episodes reported.

Dropout. In the operationalization of "dropout," individuals were considered to have dropped-out of treatment if they stopped attending sessions, either individual or group, for longer than a month without providing their counsellor with a prior explanation for their absence. Since the end of treatment was not predetermined by the treatment as usual protocol, participants who completed a minimum of two months of treatment were considered in this study to have completed treatment. Thus, participants were allowed (by the study) to terminate treatment after completing the Time 3 questionnaire without being considered a dropout. Although two months of treatment may not have been sufficient to address all of the person's issues, it was deemed to have been a complete course of treatment for the purposes of this study. In this sample, some individuals informed the counsellor that they would no longer be attending treatment while other individuals just stopped attending and were not heard from again (despite attempts by counsellors to contact them). Counsellors informed the researcher when clients had dropped-out according to the study definition and no further effort was made by the researcher to contact these individuals.

Impact on quality of life. Since PG has a negative impact on many aspects of the person's life, this study also assessed the impact of gambling on the quality of life of

participants at each assessment point using the Work and Social Adjustment (WASA) scale (Mundt, Marks, Shear, & Greist, 2002). This five-item questionnaire asks participants how their disorder (PG for these individuals) has negatively affected their ability to function in five different areas of their lives, including work, home management (i.e., home and child care), social leisure activities, private leisure activities, and ability to form and maintain close relationships with others. As such, this scale assessed the positive life changes that occur as individuals recover from PG and was included to be used primarily as an outcome measure. This brief measure was used since it can be administered quickly and has good psychometric properties, including a high degree of internal consistency found in the current data set ($\alpha = .82$). In addition, it has successfully been used in prior PG treatment outcome studies (e.g., Battersby et al., 2008). See Appendix I for a complete list of the items.

Demographics

Along with demographic variables such as age, gender, and ethnicity, additional questions were asked about prior treatment history, GA involvement, substance abuse, and Axis I and II mental health history. See Appendix J for a complete list of the items.

Procedures

Administration of measures

Before data collection began, the treatment centre was provided with questionnaires and gift certificates to be distributed to participants (see section below for details on this). The counsellors at the centre then approached each new referral to participate in a research study examining factors that influence treatment success. To

help remind the counsellors about the study, the baseline questionnaire was placed in each new file along with the assessment materials that are used by the centre. Participants were informed of the longitudinal nature of the study and agreed to be contacted by the researcher for the follow-up by providing their contact information (i.e., phone number, mailing address, email address).

Questionnaires for the first three assessment points (baseline, 1 month, and 2 months) were administered by the counsellors and completed at the treatment centre. With these first three questionnaires, the counsellor of the participant dated the questionnaire when it was completed in order to keep track of when participants had completed each questionnaire. For the final questionnaire, the researcher contacted the participant either by phone or email and made arrangements to have the individual complete the questionnaire. For most participants, the researcher met with him or her personally at a public place which provided an opportunity for the participant to speak with the researcher directly and have any questions or concerns addressed. With this final questionnaire, the researcher dated it when it was completed by each participant.

In cases where the researcher was unable to reach the participant by phone or email (four participants), the follow-up questionnaire was mailed to the address that the individual provided at baseline. Two participants had also requested to have the questionnaire mailed, making a total of six mailed questionnaires. Whenever a questionnaire was mailed to a participant, the researcher included with the package an addressed and stamped envelope for the participant to return the questionnaire. Of the six questionnaires that were mailed, only two were not returned. Furthermore, six participants did not complete the final questionnaire but were still considered to have

completed treatment (i.e., had completed two months of treatment and the first three questionnaires). Of these individuals, two stated they were not interested in completing the questionnaire and four did not respond to the researcher's attempts to contact them (i.e., did not return phone messages, emails, or mailed questionnaires).

Participant incentive

As an incentive to participate, individuals were provided with a $20 gift certificate to either Shopper's Drug Mart or Tim Horton's (participants were given a choice) for each of the first three assessment points (baseline, one month, and two months). Then, in addition, participants were offered another $40 gift certificate to either Shopper's Drug Mart, Time Horton's, or the Real Canadian Superstore for the last assessment point (four months). In total, participants received $100 in gift certificates if they completed all four questionnaires.

Counsellor incentive

Regular contact was maintained with the counsellors at the centre by email and the counsellors were informed each time that a participant needed to fill out the next questionnaire. I also met with the counsellors on a monthly basis via a pizza lunch (provided by myself), and less formally through bi-weekly visits to the treatment centre (i.e., pick up and drop off materials, check in with the counsellors on how data collection is going, and address any issues that come up).

Assessment schedule

All measures were given at all four assessment points, except for the demographics questions (given only once, at baseline) and the relapse measure (given at every assessment point after baseline). For each measure, participants were asked to

consider the questions in regards to the previous month so that there is no overlap of time frame between the various assessment points. Table 1 provides an overview of the various assessment measures as well as the assessment schedule. The questionnaire package for each assessment point took approximately 30 to 45 minutes to complete.

Confidentiality

All participant information was kept confidential and the following procedure was used to keep contact information separate from questionnaire data: Participants provided their name on the cover page of each questionnaire that they completed. Each participant was then assigned a number, and once the completed questionnaire was received by the researcher, the cover page (containing the participant's name) was removed and the participant's number was written on the questionnaire. An encrypted excel file was used to keep track of which participant had which number. In this way, none of the data could be directly linked back to any of the participants. As well, all information provided by the participants was kept in strict confidentiality and no information collected on specific participants was provided to the treatment centre. Accordingly, participants were assured of the privacy of their research-related information and data.

Data Collection

Data collection began the first week of September 2009 and finished the first week of March 2011, taking approximately 18 months to complete. Of the 247 new referrals that the centre received during this time, only 50 individuals agreed to participate in the study, giving a response rate of 20.2%. No information was collected from those who chose not to participate and thus it was unknown if these individuals were different in some way from those who did choose to participate. Although it was

Table 1

Assessment Schedule

Measures	Time 1	Time 2	Time 3	Time 4
Recovery resources				
Social support (SSQT and SSQS)	x	x	x	x
Abstinence self-efficacy (GSEQ)	x	x	x	x
Readiness for change (URICA)	x	x	x	x
Motivation for change (RFQ)	x	x	x	x
Emotion-focused coping (EAC)	x	x	x	x
Psychosocial stressors				
Depressed affect (BDI)	x	x	x	x
Life stress (LES)	x	x	x	x
Measures of outcome				
Gambling severity (PGSI)	x	x	x	x
Relapse measure		x	x	x
Quality of life (WASA)	x	x	x	x
Demographics	x			

Note: "x" = administration of measure.

hoped that each new referral would be approached to be in the study, this was not assumed to have occurred. While most of the counsellors at the treatment centre were actively involved in recruiting participants, a few seemed to be less interested and only recruited one or two participants each. Accordingly, it seems probable that an unknown number of these new referrals were not offered to participate in this study, and therefore the response rate was likely higher than the above reported figure.

CHAPTER III

Results

Before the results of the hypothesis testing are presented, the approach to data analysis and some initial analyses are described, including the descriptive statistics of each variable measured, an assessment of change over time for each variable, and an examination of the correlations between the variables. Furthermore, some outcomes regarding the data collection process itself are also described. Finally, at the end of the section, some additional analyses are presented.

Approach to Data Analysis

Treatment of Missing Data

Generally, each measure was scored according to the instructions of the measure. When items were missing, the participants' average scores for the rest of the measure or subscale were used to replace the missing data in order to obtain scores that were all on the same scale. A decision was made to exclude any score which was based on less than 80% of the items on the scale. This resulted in one participant's URICA (readiness) and EAC (emotion-focused coping) scores being excluded at Time 1; one participant's PGSI (gambling severity), WASA (impact on quality of life), SSQT/SSQS (social support), and URICA scores and another participant's URICA and EAC scores being excluded at Time 2; and one participant's GSEQ (self-efficacy) score and another participant's RFQ (motivation) score being excluded at Time 3. Although at each time point the missing data was generally from one or two participants, only one of these participants had missing data at two different time points.

As well, a small minority of participants had apparently completed the LES (life stress) incorrectly (counsellors at PGS had also commented that participants were having difficulty following the instructions of this particular measure). For instance, most of these individuals indicated an extremely negative or extremely positive impact from every circumstance listed on the measure. Since it is unlikely that, for example, the person's parents, grandparents, brother, and sister had all died in the last month, it was decided that these scores were invalid and were not included in the analyses. This resulted in three scores being excluded at Time 1, two scores being excluded at Time 2, and one score being excluded at Time 3. All other measures appeared to be completed properly by these individuals and thus only their LES scores were excluded.

Finally, as already mentioned, three individuals who did not drop out of treatment did not complete the questionnaire at Time 2: two due to scheduling conflicts and one due to administrative error. Accordingly, these three individuals were excluded from analyses that included scores from Time 2.

Initial Analyses

Return rate and fidelity to assessment schedule

For an overview of the data collection process, see Table 2. In general, the first questionnaire was completed during the intake assessment, which was either the participant's first or second meeting with the counsellor. The second questionnaire was completed, on average, 34 days after the first questionnaire was completed, with a range of 23 to 48 days. The third questionnaire was also completed, on average, 34 days after the second questionnaire was completed, with a range of 22 to 52 days. Finally, the

Table 2

Overview of Data Collection Process

	Questionnaire/Time			
	1	2	3	4
Eligible for return	-	50	39	30
Number collected	50	36	30	24
Return rate	-	72.0%	76.9%	80.0%
Average days of return	-	34	34	65
Range for days of return	-	23 - 48	22 - 52	51 - 123

fourth questionnaire was completed, on average, 65 days after the third questionnaire was completed, with a range of 51 to 76 days, with a single outlier of 123 days.

The participant who completed the fourth questionnaire at 123 days had been mailed the questionnaire to complete two months after he completed the third questionnaire (arrangements had been made with the participant to do this since he moved to another city after completing the third questionnaire) and the researcher received the questionnaire approximately two months later. An attempt was made to contact this individual to assess when the questionnaire was actually completed since it was possible that he had completed it immediately but then forgot to mail it back. Unfortunately, the participant did not respond to the request to solicit this information. However, the main analyses were completed with and without this questionnaire and no significant differences were found in the results. As such, this questionnaire was included in the study despite having been received quite far outside the four month range. This was the only questionnaire in the study that did not have an accurately recorded date of completion.

Treatment and Sample Attrition

As can be seen in Table 2, the sample began with 50 participants at Time 1 (baseline). By Time 2, eleven participants (22%) had dropped-out of treatment. Also, three participants (described above) who had not dropped-out did not complete the questionnaire at Time 2, resulting in a Time 2 sample size of 36 participants. By Time 3, an additional nine participants (23.1% of the remaining sample) had dropped-out of treatment, resulting in a Time 3 sample size of 30 participants. In total, 20 participants dropped-out of treatment in the first two months, providing a total dropout rate of 40%

for this study. Overall, the dropouts appear to have occurred quite uniformly across the first two months. No individuals who remained in treatment dropped-out of the study at either Time 2 or Time 3. For Time 4, the researcher attempted to contact each of the remaining 30 participants and 24 were willing to complete the fourth questionnaire, leaving a sample size of 24 participants for Time 4 (48% of the original sample at baseline). Of the six who did not complete the final questionnaire, two had refused to complete it and can be considered to have dropped-out of the study. The remaining four were unable to be contacted, leaving no information as to why they did not complete the questionnaire. Overall, 20 participants dropped-out of treatment, two dropped-out of the study, and four were unaccounted for.

It should be noted that one of the participants who dropped-out in the first month did so to enter into a residential alcohol treatment program. Since this individual was no longer in PG treatment, he was no longer eligible to remain in the study and was considered to have dropped-out of treatment. However, his case was different since he was still in (another) treatment, but for a different issue. As such, there was a concern that including this individual could alter the results since he may not be characteristic of those who dropped-out of treatment, thus altering the look of the dropout group being used to test the third hypothesis. To address this issue, the analyses used to test the third hypothesis (presented below) were conducted with and without this participant to explore his influence, and his inclusion did not alter the results in any significant way. Therefore, he was included in the analyses.

Descriptive statistics

Descriptions of central tendency and variability are now presented for each variable measured. Subscales, where applicable, are also described.

Recovery resources. The mean scores and standard deviations for each recovery resource measured at each time point are presented in Table 3. Beginning with social support, as measured by the Social Support Questionnaire for Transactions (SSQT) and the Social Support Questionnaire for Satisfaction (SSQS) with the supportive transactions, scores for overall social support are presented as well as scores for emotional and instrumental support. Since the scales for emotional support and instrumental support are comprised of a different number of items, average scores (out of 3) were used in order to make comparisons between them possible. As well, the average scores for the SSQT (transactions; scores out of 3) and SSQS (satisfaction; scores between -2 and 1) are presented separately for both emotional and instrumental support in order to further assess the participants' perceptions about their support. Overall, the participants generally reported low levels of social support throughout the four month period.

Regarding abstinence self-efficacy, average scores on the Gambler's Self-Efficacy Questionnaire measured at each time point are presented (see Table 3). In general, the participants were reporting, on average, moderate self efficacy scores (around 50% confident in ability to remain abstinent) at the beginning of treatment and were reporting moderately high scores (around 80% confident) by the end of the four month period.

Table 3

Descriptive Statistics for Recovery Resources

	Time 1		Time 2		Time 3		Time 4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Social support	16.34	14.79	23.89	16.68	24.33	17.32	26.33	14.73
Emotional support	.78	.75	1.16	.83	1.28	.86	1.29	.76
Transactions	1.35	.42	1.54	.50	1.56	.60	1.59	.47
Satisfaction	-.57	.42	-.38	.45	-.28	.37	-.29	.43
Instrumental support	.54	.65	.76	.63	.54	.67	.80	.45
Transactions	.99	.46	1.38	1.28	1.28	1.42	1.38	1.33
Satisfaction	-.44	.38	-.29	.33	-.33	.44	-.22	.34
Abstinence self-efficacy	55.97	22.57	68.17	25.84	78.28	22.76	83.24	18.88
Readiness for change	70.61	12.28	71.42	10.69	64.58	14.86	62.00	17.29
Precontemplation stage	1.51	.60	1.52	.58	1.66	.68	1.57	.60
Contemplation stage	4.57	.54	4.42	.49	4.14	.93	3.98	.99
Action stage	4.48	.49	4.60	.39	4.30	.64	4.08	.66
Maintenance stage	3.76	.81	3.82	.67	3.55	.87	3.45	.88
Motivation for change	48.82	8.41	49.17	8.39	47.07	8.15	47.04	8.89
Intrinsic reasons	26.66	4.42	26.61	4.36	25.79	4.89	26.67	4.42
Emotional concerns	13.72	2.54	13.75	2.42	13.90	2.19	14.04	1.76
Self-control	12.94	2.81	12.86	2.59	11.90	3.28	12.63	3.02
Extrinsic reasons	22.16	5.76	22.56	5.59	21.28	5.77	20.38	5.80
Social influences	8.16	4.79	8.33	4.71	7.48	4.64	7.12	4.75
Financial concerns	14.00	2.30	14.22	2.18	13.79	2.44	13.25	2.61
Emotion-focused coping	18.94	5.82	21.88	5.27	22.70	5.54	24.08	5.05

For readiness for change, as measured by the University of Rhode Island Change Assessment scale, average scores are provided for overall readiness as well as for each of the different stages of change (see Table 3). Since this measure uses a different number of items to represent each stage, average scores were used for each of the stage scores since this allowed for comparisons to be made between the stages. Overall, the scores on the URICA are quite high throughout the four month period, suggesting that these individuals were generally in the later stages of readiness.

In measuring participants' motivation for change, the Reasons for Quitting scale provides a total score as well as several other scores, each for a different area of concern that individuals have regarding their gambling behaviour (see Table 3). The high moderate average scores for overall motivation suggest that many of the items on the RFQ represent concerns that the sample had about their gambling behaviour across the entire four month period. As well, comparisons between the subscales indicate that the participants in this study seemed to be particularly motivated to change by the concerns they had about the financial and emotional consequences of their gambling.

For emotion-focused coping style, the Emotion Approach Coping scale provides a single overall coping score (see Table 3). The average scores on this measure indicate that, throughout the four month period, participants generally reported that they were expressing their emotions in moderately adaptive ways, such as allowing themselves to feel their emotions and talking to people about them.

Psychosocial stressors. The mean scores and standard deviations for each psychosocial stressor measured at each time point are presented in Table 4. Starting with depressed affect, which was measured by the Beck Depression Inventory II, participants

Table 4

Descriptive Statistics for Psychosocial Stressors

	Time 1		Time 2		Time 3		Time 4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Depressed affect	21.0	9.20	15.66	10.98	12.97	11.13	9.04	10.07
Life stress	11.02	12.72	2.48	11.80	0.38	9.68	-2.54	10.77

scored on average in the "moderate depression" range at Time 1, in the "mild depression" range at Time 2, and in the "minimal depression" range at Time 3 and Time 4. This indicates that, after the second month of treatment, participants were generally not reporting levels of depressed affect that would be clinically significant or diagnosable. However, it must be noted that there was great variability in the scores on this measure at all four time points, indicating that some individuals did have levels of depressed affect that could be diagnosable at any point in the study. Indeed, some even reported that they had been diagnosed with depression and were receiving treatment for it.

Regarding life stress, the Life Experiences Survey provides a single life stress score which ranges from a negative impact from life experiences (positive scores) to a positive impact from life experiences (negative scores; see Table 4). At the start of treatment, the average life stress scores were quite high, indicating high levels of life stress. Later in treatment, the average life stress scores were quite low, indicating a lack of stress, or at least that the positive impact of events was balancing out the negative impact. Indeed, the negative mean at Time 4 indicated that the impact from the events of the past month had been more positive than negative for most of these individuals (i.e., improved relationships, reduced impact of accumulated debt, etc.).

Treatment outcome. The mean scores and standard deviations for both gambling severity and impact on quality of life measured at each time point are presented in Table 5. Descriptions of the information gathered by the relapse measure at each time point are also presented.

For gambling severity, the Problem Gambling Severity Index was used to assess the severity of each person's gambling problem (see Table 5). For this measure, a score

Table 5

Descriptive Statistics for Treatment Outcome

	Time 1		Time 2		Time 3		Time 4	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Gambling severity	15.10	6.16	5.52	5.01	5.17	6.01	4.00	4.62
Impact on quality of life	16.42	10.05	6.43	9.92	7.23	10.20	3.83	7.46

of 8 or more places a person in the "problem gambling" range (Wynne, 2006). At Time 1 (baseline) 90.0% of the sample (45 individuals) scored in the problem gambling range. Although five people did not score in the problem gambling range at baseline, they were still included in the study since they still met the inclusion criteria for the study (i.e., entering treatment for PG) and it may be that they had reduced some of their gambling symptoms over the past month before entering treatment. For Time 2, only 22.2% of the remaining sample (eight individuals) still scored in the problem gambling range. Thus, after the first month of treatment, most had gambling severity scores that were below the problem gambling range. At Time 3, 20.0% of the remaining sample (six individuals) still scored in the problem gambling range and, at Time 4, 20.8% of the remaining sample (five individuals) still scored in the problem gambling range.

Regarding impact on quality of life, scores on the Work and Social Adjustment scale reflect the effect that gambling has had on different aspects of one's life, including work, relationships, and leisure. Overall, participants seemed to be reporting that their gambling behaviour had a moderate impact on their lives when treatment began and had only a minor impact after the four month assessment period. This pattern was consistent with the observed gambling severity scores.

In assessing relapse, this study considered not only the number of gambling incidents in the past month, but also the treatment goal and the acceptability of the gambling given the treatment goal (see Table 6). At each time point, most participants reported having a goal of complete abstinence, resulting in their gambling being considered a relapse. However, of those who had gambled and whose treatment goal was "controlled gambling" or "gambling under certain circumstances," one individual at

Table 6

Summary of the Relapse Descriptives

	Time 2	Time 3	Time 4
Number of participants	36	30	24
Participants who gambled	16	12	6
Percentage who gambled	44.4%	40.0%	25.0%
Average number of gambling incidents	1.28	2.30	1.20
Range for number of gambling incidents	1 - 10	1 - 12	1 - 4
Participants reporting goal of abstinence	31	27	18
Participants considered to have relapsed	15	11	6

Time 2 and one individual at Time 3 deemed their amount of gambling to be completely acceptable by both themselves and their counsellor given their treatment goal. Therefore, these two individuals were not considered to have relapsed since they had gambled within the limits they had set for themselves and thus, for the purposes of this study, were treated as if they had not gambled. After applying this consideration, the relapse rates above were adjusted so that 15 participants at Time 2 (41.7%) and 11 participants at Time 3 (36.7%) were considered to have relapsed over the past month. As expected, these numbers are quite high, but were lower by the end of the four months. On a positive note, 17 of the individuals who completed the study reported not having gambled at any of the assessment points and thus had managed to remain abstinent for at least three months of their recovery (the first, second, and fourth).

Assessing Change over Time through Mean Comparisons

To further assess how scores on the key variables changed over the course of the four month assessment period, a repeated measures ANOVA with four levels (one for each time point) was conducted for each of the key variables, except for motivation for change since mean scores on this variable did not change across time. Since these analyses require the use of the same participants across time, only those who completed all four assessment points were included.

In examining social support, the issue of sphericity must first be addressed. Repeated measures ANOVA statistics require sphericity in the data, meaning that there must be consistency in the measures of variance across measurement time. For social support, Mauchly's test indicated that the data violated the assumption of sphericity ($\chi^2(5) = 20.81$, $p < .05$) and thus the degrees of freedom were corrected using

Greenhouse-Geisser estimates of sphericity ($\varepsilon = .61$). The results of ANOVA indicate that social support did significantly increase over the four month time period ($F(1.83, 38.43) = 6.63$, $p < .05$). The comparisons between individual time points indicate that there was a significant increase in social support between Time 1 and Time 2 ($F(1, 21) = 6.67$, $p < .05$) and between Time 3 and Time 4 ($F(1, 21) = 4.36$, $p < .05$). No significant difference was found between Time 2 and Time 3. These results indicate that the participants generally experienced an increase in their social support during the first month of treatment and a further increase four months into recovery.

For abstinence self-efficacy, Mauchly's test indicated that the assumption of sphericity had been violated ($\chi^2(5) = 13.54$, $p < .05$) and thus the degrees of freedom were corrected using Greenhouse-Geisser estimates of sphericity ($\varepsilon = .75$). The results indicate that self-efficacy did significantly increase over the four month time period ($F(2.26, 47.35) = 8.28$, $p < .05$). The comparisons between individual time points indicate that there was a significant increase in self-efficacy between Time 1 and Time 2 ($F(1, 21) = 7.97$, $p < .05$), but that there was no significant increase between Time 2 and Time 3 or between Time 3 and Time 4. As such, these results indicate that the participants generally gained in their confidence to remain abstinent during the first month of treatment.

Concerning readiness for change, the results of the ANOVA indicate that readiness for change did significantly decrease over the four month time period ($F(3, 57) = 3.64$, $p < .05$). In comparing change between the individual time points, the results indicate that there was no significant change between Time 1 and Time 2, between Time 2 and Time 3, or between Time 3 and Time 4. However, the change between Time 2 and

Time 3 did approach significance ($F(1, 19) = 4.09$, $p = .057$). As such, the results indicate that there was no significant change in readiness for change between any of the assessment points, but that readiness did significantly decrease across the four month time period, especially between Time 2 and Time 3.

Regarding emotion-focused coping, the results of the ANOVA indicate that emotion-focused coping did significantly increase over the four month time period ($F(3, 57) = 3.32$, $p < .05$). The comparisons between individual time points indicate that there was not a significant change in emotion-focused coping between Time 1 and Time 2, between Time 2 and Time 3, or between Time 3 and Time 4. Even so, the trend in results seems to suggest that emotion-focused coping did gradually increase over the four month period, but that the increase was too slow to register a significant change between any of the time points.

For depressed affect, the results of the ANOVA indicate that participants' reported symptoms of depression did significantly decrease over the four month time period ($F(3, 60) = 13.48$, $p < .05$). The comparisons between individual time points indicate that there was a significant decrease in depressed affect between Time 1 and Time 2 ($F(1, 20) = 11.67$, $p < .05$) and between Time 3 and Time 4 ($F(1, 20) = 4.50$, $p < .05$). No significant difference was found between Time 2 and Time 3. The findings suggest that there was a significant decrease in depressive symptoms in the first month and a significant decrease between the second month and the fourth month.

Regarding life stress, the results of the ANOVA indicate that perceived life stress did significantly decrease over the four month time period ($F(3, 51) = 6.17$, $p < .05$). The comparisons between individual time points indicate that there was a significant decrease

in life stress between Time 1 and Time 2 ($F(1, 17) = 4.74$, $p < .05$), but that there was no significant change between Time 2 and Time 3 or between Time 3 and Time 4. Thus, these findings suggest that the majority of the decrease in perceived life stress occurs during the first month of treatment.

For gambling severity, the results of the ANOVA indicate that gambling severity did significantly decrease over the four month time period ($F(3, 63) = 37.00$, $p < .05$). Comparisons were conducted between the individual time points and the results indicate that there was a significant decrease in gambling severity between Time 1 and Time 2 ($F(1, 21) = 52.29$, $p < .05$), but that there was no significant difference between Time 2 and Time 3 or between Time 3 and Time 4. This finding suggests that most of the change that occurs in regards to gambling behaviour happens within the first month of treatment.

Finally, for impact on quality of life, the results of the ANOVA indicate that the impact that gambling has on quality of life did significantly decrease over the four month time period ($F(3, 63) = 13.85$, $p < .05$). The comparisons between individual time points indicate that there was a significant decrease in the impact on quality of life between Time 1 and Time 2 ($F(1, 21) = 21.59$, $p < .05$) and between Time 3 and Time 4 ($F(1, 21) = 6.41$, $p < .05$). No significant difference was found between Time 2 and Time 3. These results indicate that the negative impact that gambling has on one's quality of life decreases during the first month of treatment and then has another decrease in the fourth month of recovery, possibly due to a sleeper effect of the treatment.

Correlations

Pearson product moment correlations were conducted between all of the variables, including the demographic and descriptive variables assessed, at each of the four time points. This was done to provide some indication of the extent of the relationships between variables. Generally, all relationships between the variables were in the expected direction. The more interesting trends and relationships have been highlighted below, as well as any unexpected results. A significance level of $p < .05$ was chosen for all correlational analyses.

Abstinence self-efficacy. Among the treatment facilitating recovery resources, abstinence self-efficacy was the only variable to be consistently correlated with gambling behaviour across the four assessment points (see Tables 7 to 10 for each of the different measurement times). Specifically, abstinence self-efficacy was negatively correlated with gambling severity at Time 1 (r = -.329), Time 2 (r = -.435), Time 3 (r = -.628), and Time 4 (r = -.436). As well, abstinence self-efficacy was negatively correlated with impact on quality of life at Time 1 (r = -.286), Time 3 (r = -.483), and Time 4 (r = -.416). Abstinence self-efficacy was also negatively correlated with the psychosocial stressors depressed affect and life stress at Time 2 (r = -.380 and r = -.392, respectively), Time 3 (r = -.366 and r = -.492, respectively), and Time 4 (r = -.586 and r = -.512, respectively). Taken all together, abstinence self-efficacy seems to be the variable that has the strongest relationship with treatment throughout the first four months of recovery since those participants with the most confidence to remain abstinent were also the ones with the least amount of gambling behaviour, depressed affect, and life stress. Additionally, abstinence self efficacy was positively correlated with social support at

Table 7

Time 1 - Correlations between the Main Variables

Variables	1	2	3	4	5	6	7	8
Recovery resources								
1. Social support	-							
2. Abstinence self-efficacy	.068	-						
3. Readiness for change	-.075	-.186	-					
4. Motivation for change	.047	-.160	.282*	-				
5. Emotion-focused coping	.034	.159	-.029	.206	-			
Psychosocial stressors								
6. Depressed affect	-.170	-.268	.079	.109	-.012	-		
7. Life stress	-.350*	-.160	.117	.248	.046	.470*	-	
Treatment outcomes								
8. Gambling severity	-.065	-.329*	.138	.124	.137	.527*	.415*	-
9. Impact on quality of life	-.462*	-.286*	.251	.030	.177	.488*	.555*	.565*

Note: correlations with relapse are not presented since there were no scores for this variable at baseline; *$p < .05$.

Table 8

Time 2 - Correlations between the Main Variables

Variables	1	2	3	4	5	6	7	8	9
Recovery resources									
1. Social support	-								
2. Abstinence self-efficacy	-.025	-							
3. Readiness for change	.133	-.121	-						
4. Motivation for change	.076	.095	.348*	-					
5. Emotion-focused coping	.041	.037	.403*	.197	-				
Psychosocial stressors									
6. Depressed affect	-.366*	-.380*	-.003	-.076	-.332	-			
7. Life stress	-.436*	-.392*	.083	.015	.116	.484*	-		
Treatment outcomes									
8. Gambling severity	-.342*	-.435*	-.010	-.048	-.326	.598*	.529*	-	
9. Relapse	.066	-.204	-.042	-.232	-.043	.149	.295	.267	-
10. Impact on quality of life	-.358*	-.302	.008	-.040	-.381*	.498*	.606*	.665*	.164

Note: *$p < .05$.

Table 9

Time 3 - Correlations between the Main Variables

Variables	1	2	3	4	5	6	7	8	9
Recovery resources									
1. Social support	-								
2. Abstinence self-efficacy	.368*	-							
3. Readiness for change	.257	.027	-						
4. Motivation for change	.470*	.242	.317	-					
5. Emotion-focused coping	.213	.445*	.157	.369*	-				
Psychosocial stressors									
6. Depressed affect	-.328	-.366	.259	-.335	-.395*	-			
7. Life stress	-.235	-.492*	-.078	-.245	-.316	.568*	-		
Treatment outcomes									
8. Gambling severity	-.317	-.628*	.239	-.306	-.195	.700*	.602*	-	
9. Relapse	-.029	-.676*	-.008	-.267	-.238	.210	.395*	.514*	-
10. Impact on quality of life	-.326	-.483*	.065	-.158	.064	.537*	.504*	.806*	.321

Note: *$p < .05$.

Table 10

Time 4 - Correlations between the Main Variables

Variables	1	2	3	4	5	6	7	8	9
Recovery resources									
1. Social support	-								
2. Abstinence self-efficacy	.420*	-							
3. Readiness for change	-.073	.114	-						
4. Motivation for change	.080	.146	.146	-					
5. Emotion-focused coping	.184	.364	-.114	.075	-				
Psychosocial stressors									
6. Depressed affect	-.269	-.586*	.175	.109	-.314	-			
7. Life stress	-.177	-.512*	-.265	-.119	-.306	.616*	-		
Treatment outcomes									
8. Gambling severity	-.311	-.436*	.176	.112	-.418*	.846*	.407*	-	
9. Relapse	-.066	-.452*	-.079	-.411*	-.230	.355	.344	.265	-
10. Impact on quality of life	-.112	-.416*	.226	.216	-.410*	.824*	.533*	.858*	.219

Note: *$p < .05$.

Time 3 (r = .368) and Time 4 (r = .420) and positively correlated with emotion-focused coping at Time 3 (r = .445). This suggests some relationship with some of the other proposed treatment facilitating recovery resources.

Social support and emotion-focused coping. Among the remaining recovery resources, only social support and emotion-focused coping were related to gambling behaviour and some of the other variables (see Tables 7 to 10). Social support was negatively correlated with gambling severity at Time 2 (r = -.342) and negatively correlated with impact on quality of life at Time 1 (r = -.462) and Time 2 (r = -.358). In addition, social support was negatively correlated with life stress at Time 1 (r = -.351) and Time 2 (r = -.436) and negatively correlated with depressed affect at Time 2 (r = -.366). As such, social support seems to be most important within the first two months of treatment. Emotion-focused coping, on the other hand, had no relationship with the other variables at Time 1, but was negatively correlated with gambling severity at Time 4 (r = -.418) and negatively correlated with life stress at Time 2 (r = -.381) and Time 4 (r = -.410). As well, emotion-focused coping was negatively correlated with depressed affect at Time 3 (r = -.395) and had positive correlations with some of the other treatment facilitating recovery resources, including the already mentioned relationship with abstinence self-efficacy. Thus, emotion-focused coping seems to have some relationship later on in recovery, but does not seem to be as central as some other variables.

Readiness for change and motivation for change. Surprisingly, neither readiness for change nor motivation for change had much bearing on outcome in this study (see Tables 7 to 10). While both these variables have a couple of correlations with some of the other recovery resources, neither was correlated with gambling severity, impact on

quality of life, depressed affect, or life stress. Thus, it does not seem that either of these variables was very influential during the recovery process and will therefore be excluded from the main analyses.

Psychosocial stressors. In regards to the treatment hindering psychosocial stressors (see Tables 7 to 10), depressed affect was positively correlated with both gambling severity and impact on quality of life at Time 1 (r = .527 and r = .488, respectively), Time 2 (r = .598 and r = .498, respectively), Time 3 (r = .700 and r = .537, respectively), and Time 4 (r = .846 and r = .824, respectively). Life stress was also positively correlated with both gambling severity and impact on quality of life at Time 1 (r = .411 and r = .553, respectively), Time 2 (r = .529 and r = .606, respectively), Time 3 (r = .602 and r = .504, respectively), and Time 4 (r = .407 and r = .533, respectively). In addition, depressed affect and life stress were positively correlated with each other at Time 1 (r = .465), Time 2 (r = .484), Time 3 (r = .568), and Time 4 (r = .616). These relationships, in addition to the negative relationships with the recovery resources mentioned above, suggest that both depressed affect and life stress have strong relationships with the recovery process. Indeed, they both seem to be linked to higher levels of gambling behaviour throughout the four month period.

Gambling severity and impact on quality of life. Concerning the treatment outcome variables (see Tables 7 to 10), gambling severity and impact on quality of life were highly correlated at Time 1 (r = .565), Time 2 (r = .665), Time 3 (r = .806), and Time 4 (r = .858). Indeed, the strength of these correlations suggests a great deal of overlap between these two variables; so much so that there may not be much difference between them. For this reason, impact on quality of life was excluded as an outcome

variable in the hypothesis testing since its inclusion with gambling severity was deemed redundant.

Relapse. Regarding relapse (see Tables 8 to 10), a positive correlation was found with gambling severity at Time 3 (r = .514), but not at Time 2 or Time 4. Furthermore, relapse was not significantly correlated with impact on quality of life at any of the time points. Based on the nature of these relationships, relapse appears to be a similar but distinct construct to gambling severity and a completely different construct from impact on quality of life. As such, the inclusion of both gambling severity and relapse as outcomes seems warranted. In relation to the recovery resources, relapse was negatively correlated with abstinence self-efficacy at Time 3 (r = -.676) and Time 4 (r = -.452) and with motivation to change at Time 4 (r = -.411). Thus, individuals with higher levels of these two recovery resources at their respective times appeared to have fewer relapses. Regarding psychosocial stressors, relapse was positively correlated with life stress at Time 3 (r = .395), indicating that, during the second month of treatment, those who were most stressed were also those who had the most relapses.

Dropout. Following the operationalization of dropout, participants were categorized as either having dropped-out of treatment or having completed treatment. The resulting dichotomous variable was then correlated with all main variables measured at baseline. None of these relationships yielded a significant correlation, which was inconsistent with the third hypothesis. However, participants' age was positively correlated with drop-out (r = .407), which suggests that whether or not someone drops out of treatment may have to do with developmental stage (and possibly the impact of problem gambling at that stage) in addition to the individual's cognitive mindset or

psycho-social resources. As such, age was subsequently included as a predictor variable in the testing of the third hypothesis, which relates to drop-out.

Demographics. Neither age nor gender was correlated with any of the main variables (besides age's relationship with drop-out mentioned above). When participants are grouped as either Caucasian (88% of participants) or other, differences were found in that not identifying as Caucasian was positively correlated with life stress at Time 1 (r = .463) and Time 4 (r = .407). This suggests that minority individuals (i.e., non-Caucasians) who present for services may be experiencing a greater amount and severity of stressors, possibly making treatment more difficult to focus on. Indeed, only one of the six participants from a minority group completed treatment. In regards to other mental health issues, having had a mental health problem in the past year was correlated with some key symptom related variables, including gambling severity at Time 2 (r = .505), Time 3 (r = .376), and Time 4 (r = .528), depressed affect at Time 2 (r = .473), Time 3 (r = .438), and Time 4 (r = .499), and life stress at Time 2 (r = .408). This suggests that some participants likely had more severe and/or complex mental health issues. In addition, having had previous treatment for problem gambling was positively correlated with gambling severity at Time 2 (r = .374), Time 3 (r = .372), and Time 4 (r = .407) and with relapse at Time 2 (r = .357) and Time 3 (r = .509). Therefore, having had previous PG treatment may be an indicator of individuals who have greater gambling severity and who are at risk for future relapse.

Main Analyses: Testing Hypotheses about Treatment Outcome

Approach to Hypothesis Testing

To test the first hypothesis, that higher levels of each recovery resource and lower levels of each psychosocial stressor at baseline will predict the greatest amount of positive change in gambling behaviour at Time 2 (one month) and Time 3 (two months), multiple regression analyses (MRA) were employed. Both motivation for change and readiness for change were not included in the analyses since, as mentioned above in the correlation section, neither was correlated with the outcome variables (i.e., gambling severity, impact on quality of life, and relapse). As such, only three of the recovery resources (social support, abstinence self-efficacy, and emotion-focused coping) and the two psychosocial stressors (depression and life stress) were entered as predictors. For outcomes, both the PGSI (gambling severity) scores and relapse scores at Time 2 and Time 3, respectively, were entered, which resulted in the testing of four predictive models: two for each outcome. All predictors were entered into the model at once and a backward stepwise method was used to obtain the most efficient model by removing those predictors that made little contribution to the regression. As already mentioned in the correlations section above, these analyses were not conducted with scores on the WASA (impact on quality of life) as the outcome since the WASA scores were too highly correlated with the PGSI scores.

To test the second hypothesis, that higher levels of each recovery resource and lower levels of each psychosocial stressor at Time 3 (two months) will predict the greatest amount of positive change at Time 4 (four months), only those participants who completed all four assessment points were included. A MRA was employed with scores

on the three remaining recovery resources and two psychosocial stressors at Time 3 being entered as predictors and scores on the PGSI and relapse measure at Time 4 being entered as the outcome. Therefore, two models, one for each outcome, were tested. A backward stepwise procedure was also used to reduce the model to its most significant predictors.

To test the third hypothesis, that lower levels of each recovery resource and higher levels of each psychosocial stressor at baseline will predict higher rates of treatment dropout (over the first two months of treatment), all participants were included. A dichotomous outcome variable was created to distinguish those participants who completed the study (and therefore remained in treatment) from those who dropped-out of treatment. Logistic regression analysis (LRA) was used to test the hypothesis with scores on the three remaining recovery resources and two psychosocial stressors at baseline being entered as predictors and the dichotomous attrition variable, dropout, was entered as the outcome. In addition, age was added as a predictor to this model because of its strong correlation with dropout (as described above in the correlation section). A backward stepwise procedure was again used for these analyses.

Assumptions

In order for a regression analysis to be valid, certain assumptions about the data have to be verified. For MRA, the assumptions include the ratio of cases to independent variables, independence of errors, multicollinearity, linearity, homoscedasticity, normality, and the absence of outliers (Tabachnick & Fidell, 2001). For LRA, the assumptions include the ratio of cases to independent variables, independence of errors, multicollinearity, linearity in the logit, and the absence of outliers. Since MRA and LRA

do not share all of the same assumptions, the results of the assumption testing are presented separately for each type of analysis.

Multiple regression analysis. The first assumption to be addressed for MRA is the ratio of cases to independent variables (IV). Green (1991) offers a rule of thumb that calculates the number of participants required for a regression analysis given a certain number of IVs and a medium effect size. This formula is $N \geq 50 + 8m$, where m is the number of IVs. With five IVs, as is desired for these analyses, the formula indicates that 90 participants are required. Given that the sample for this study was 50 participants and was reduced down to only 24 at Time 4, the data does not meet this requirement. Tabachnick and Fidell (2001) suggest dealing with this issue by removing some of the IVs. Accordingly, two IVs (motivation for change and readiness for change) have been removed and although this did help the situation, it was not entirely able to correct the issue. However, it is not uncommon for studies utilizing clinical samples to have fewer participants than is recommended by best practices for statistical testing of this kind. For example, of the twelve PG treatment outcome studies included in Melville and colleagues (2006) meta-analysis, three had sample sizes even smaller than the current study. So, despite a shortcoming in the current sample size it is, nonetheless, well placed among the current literature. Regardless, it is important to keep this limitation in mind when considering the results of this study.

The assumption of independence of errors was analyzed using the Durbin-Watson statistic. All of the models had values close to 2 (and none are below 1 or above 3), indicating that the assumption of independence of errors was not violated for any of the regression analyses (Tabachnick & Fidell, 2006). The assumption of multicollinearity

was assessed with the tolerance statistic. None of the five predictors had tolerance values less than 0.1 in any of the models, indicating that the assumption of multicollinearity was not violated (Field, 2005). To assess the assumption of linearity for MRA, bivariate scatterplots were conducted between the predictor and outcome variables. None of these scatterplots indicated any clearly non-linear relationships and thus this assumption was met. Also for MRA, the assumption of homoscedasticity was explored using standardized residual plots for all three regression analyses. These scatterplots indicated that the assumption of homoscedasticity was not violated for any of these regression analyses.

The assumption of normality was assessed using the Kolmogorov-Smirnov test. At Time 1, none of the variables had significant test scores, indicating that they did not significantly differ from a normal distribution. At Time 2, both gambling severity and impact on quality of life were significant, indicating that their distributions were non-normal. However, this lack of normality is to be expected since most of this "in treatment" sample was reporting lower levels of gambling behaviour at this time which would skew these two distributions. At Time 3, gambling severity and impact on quality of life were again significant, as well as abstinence self-efficacy, depressed affect, and life stress. As well, at Time 4, significant results were found for gambling severity, impact on quality of life, abstinence self-efficacy, and depressed affect. Overall, the lack of normality observed for these distributions was consistent with what would be expected from individuals who are in treatment and starting to change their gambling behaviour. For example, one would expect that most of this "in treatment" population would be reducing their gambling behaviour, gaining confidence in their ability to remain

abstinent, and learning how to better manage symptoms of depression and life stress. Thus, this lack of normality was likely an artifact of the population that the sample was taken from and may not be indicative of bias in the sample. In addition, Tabachnick and Fidell (2006) explain that normality is desired, but not necessary, for these analyses. Therefore, no transformations were made on the data.

To identify outliers, standardized residuals, leverage statistics, DFITS, and Mahalanobis distance were all examined for each model. One potential outlier was identified with these various statistics. However, the MRA analyses were conducted with and without this participant and there were no significant differences in the results. As such, this case was included in the analyses.

Logistic regression analysis. In regards to the assumption of the ratio of cases to variables, the model being tested with LRA contains the same five predictors as the model tested with MRA with age being added as a sixth variable. According to Green's (1991) rule of thumb, 98 participants are needed for this analysis. With only 50 participants, this data does not meet this assumption. However, as discussed above, it is not uncharacteristic of research using clinical samples to have smaller than required sample sizes due to the difficulty of recruiting participants (c.f., Melville et al., 2006). Still, this limitation must be kept in mind when interpreting the results of this analysis.

The assumption of independence of errors was assessed using a Durbin-Watson test (Tabachnick & Fidell, 2001). For the model predicting dropout from baseline predictors, this statistic is 2.01, indicating that this model does not violate the assumption. To address the assumption of multicollinearity, the tolerance statistic was used. None of the six predictors had tolerance values less than 0.1 in any of the models, indicating that

the assumption of multicollinearity was not violated (Field, 2005). The assumption of linearity in the logit was assessed using the Box-Tidwell approach (Tabachnick & Fidell, 2006). None of the variables in this model violated the assumption. To identify outliers, standardized residuals, leverage statistics, DFITS, and Mahalanobis distance were all examined. Based on these statistics, none of the participants appear to be multivariate outliers.

Testing Hypothesis #1: Using baseline variables to predict early outcome

Hypothesis 1 (see Figure 1a on page 37) stated that: social support, abstinence self-efficacy, emotion-focused coping, depressed affect, and life stress at baseline will each predict positive change in gambling behaviour at the early progress point (Time 2) and the mid progress point (Time 3). The first set of analyses will predict gambling severity followed by analyses that predict relapse.

Predicting gambling severity at the early progress point (Time 2). All five predictors measured at baseline were entered at once and a backward stepwise procedure reduced the model to abstinence self-efficacy and depressed affect (see Table 11 for a full summary of these results). This two variable model significantly predicted gambling severity at Time 2 (the early progress point, one month into treatment; $F(2, 30) = 4.846$, $p < .05$) and accounted for 24.4% of the variance in gambling severity scores at Time 2. An examination of the beta weights indicates that none of the predictors were significant in the full model or in the two variable model. However, both abstinence self-efficacy and depressed affect did approach significance in the two variable model ($\beta = -.307$, $p = .077$, and $\beta = .302$, $p = .081$, respectively) and may have been significant had there been a larger sample size. As well, abstinence self-efficacy negatively predicted gambling

Table 11

Summary of Results from Multiple Regression Analysis for Predicting Gambling Severity at the Early Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.286	-
Social support	-.037	.061	-.110	.549		
Self-efficacy	-.072	.037	-.346	.061		
Emotion-focused coping	.121	.135	.152	.381		
Depressed affect	.134	.099	.264	.189		
Life stress	.018	.076	.049	.813		
Step 2					.284	.002
Social support	-.044	.055	-.128	.432		
Self-efficacy	-.071	.036	-.345	.057		
Emotion-focused coping	.127	.131	.160	.342		
Depressed affect	.145	.086	.286	.103		
Step 3					.268	.016
Self-efficacy	-.072	.036	-.348	.053		
Emotion-focused coping	.126	.130	.159	.340		
Depressed affect	.151	.085	.297	.087		
Step 4					.244	.024
Self-efficacy	-.063	.035	-.307	.077		
Depressed affect	.153	.085	.302	.081		

severity and depressed affect positively predicted gambling severity, indicating that those with more self-efficacy and less depressed affect at baseline were more likely to report fewer gambling symptoms at Time 2. This finding was consistent with the hypothesis, and although only two of the original seven predictor variables had relationships with the outcome, some support for the hypothesis was found.

Predicting gambling severity at the mid progress point (Time 3). All five predictors measured at baseline were entered at once and a backward stepwise procedure was applied, yielding a model of just self-efficacy and depressed affect (see Table 12 for a full summary of these results). This two variable model significantly predicted gambling severity at Time 3 (the mid progress point, two months into treatment; $F(2, 23) = 10.903$, $p < .05$) and accounted for 48.7% of the variance in gambling severity scores at Time 3. An examination of the beta weights indicates that self-efficacy was a significant predictor in the full model ($\beta = -.383$, $p < .05$) and that both self-efficacy and depressed affect were significant predictors in the two variable model ($\beta = -.356$, $p < .05$, and $\beta = .505$, $p < .05$, respectively). Again, abstinence self-efficacy negatively predicted gambling severity and depressed affect positively predicted gambling severity, indicating that those with more self- efficacy and less depressed affect at baseline were more likely to report fewer gambling symptoms at Time 3. This finding was consistent with expectations and provided some support for the hypothesis.

Predicting relapse at the early progress point (Time 2). All five predictor variables measured at baseline were entered at once and a backward stepwise procedure resulted in a model of just social support and abstinence self-efficacy (see Table 13 for a full summary of these results). This two variable model significantly predicted relapse at

Table 12

Summary of Results from Multiple Regression Analysis for Predicting Gambling Severity at the Mid Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.519	-
Social support	.042	.070	.094	.559		
Self-efficacy	-.098	.042	-.383	.031		
Emotion-focused coping	-.046	.178	-.042	.799		
Depressed affect	.223	.125	.373	.090		
Life stress	.122	.113	.224	.294		
Step 2					.517	.002
Social support	.041	.069	.093	.55		
Self-efficacy	-.099	.041	-.387	.026		
Depressed affect	.228	.121	.381	.074		
Life stress	.115	.107	.210	.296		
Step 3					.509	.008
Self-efficacy	-.098	.041	-.384	.024		
Depressed affect	.228	.119	.381	.069		
Life stress	.104	.104	.191	.328		
Step 4					.487	.022
Self-efficacy	-.091	.040	-.356	.032		
Depressed affect	.303	.094	.505	.004		

Table 13

Summary of Results from Multiple Regression Analysis for Predicting Relapse at the Early Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.296	-
Social support	.057	.024	.423	.026		
Self-efficacy	-.033	0.14	-.400	.031		
Emotion-focused coping	.018	.053	.058	.737		
Depressed affect	-.023	.039	-.114	.561		
Life stress	.048	.030	.327	.123		
Step 2					.294	.002
Social support	.058	.024	.428	.022		
Self-efficacy	-.032	.014	-.386	.029		
Depressed affect	-.024	.038	-.118	.541		
Life stress	.050	.029	.339	.098		
Step 3					.284	.010
Social support	.056	.023	.414	.023		
Self-efficacy	-.029	.013	-.354	.033		
Life stress	.041	.025	.281	.115		
Step 4					.219	.065
Social support	.040	.022	.299	.074		
Self-efficacy	-.031	.013	-.377	.027		

Time 2 (the early progress point, one month into treatment; $F(2, 30) = 4.196$, $p < .05$) and accounted for 21.9% of the variance in relapse scores at Time 2. An examination of the beta weights for this model indicated that abstinence self-efficacy was a significant predictor of relapse ($\beta = -.377$, $p < .05$) whereas social support only approached significance ($\beta = .299$, $p = .074$). As well, abstinence self-efficacy is a negative predictor, which suggests that individuals who had higher levels of abstinence self-efficacy at baseline were less likely to relapse during the first month of treatment. This finding was consistent with the hypothesis. Surprisingly though, social support was a positive predictor, which suggests that individuals who had higher levels of social support at baseline were more likely to relapse during the first month of treatment. Although social support was not a significant predictor, the direction of this relationship was unexpected and inconsistent with the hypothesis. Thus, some support for the hypothesis was found with two of the recovery resources predicting relapse, but only one of them (abstinence self-efficacy) in the hypothesized direction.

Predicting relapse at the mid progress point. All five predictor variables were entered at once and a backward stepwise method was applied (see Table 14 for a full summary of these results). This procedure was unable to yield a model that significantly predicted relapse at Time 3 (the mid progress point, two months into treatment). As such, it appears that these five variables measured at baseline are poor predictors of relapse during the second month of treatment. This null result did not support the hypothesis.

Testing Hypothesis 2: Using Mid Progress Variables to Predict Late Outcome

Hypothesis 2 (see Figure 1b on page 37) stated that: social support, abstinence self-efficacy, emotion-focused coping, depressed affect, and life stress at baseline will

Table 14

Summary of Results from Multiple Regression Analysis for Predicting Relapse at the Mid Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.291	-
Social support	.057	.033	.330	.102		
Self-efficacy	-.039	.020	-.392	.065		
Emotion-focused coping	-.002	.084	-.004	.984		
Depressed affect	-.078	.059	-.334	.204		
Life stress	.096	.054	.452	.088		
Step 2					.291	.000
Social support	.057	.032	.330	.093		
Self-efficacy	-.039	.019	-.392	.058		
Depressed affect	-.078	.057	-.333	.189		
Life stress	.096	.051	.451	.072		
Step 3					.228	.063
Social support	.057	.033	.329	.099		
Self-efficacy	-.030	.019	-.304	.120		
Life stress	.054	.041	.253	.201		
Step 4					.167	.061
Social support	.048	.033	.278	.158		
Self-efficacy	-.031	.019	-.312	.115		
Step 5					.090	.077
Self-efficacy	-.030	.019	-.300	.136		
Step 6					.000	.090

each predict positive change at the late progress point (Time 4). The first set of analyses will predict gambling severity followed by analyses that predict relapse.

Predicting gambling severity at the late progress point (Time 4). All five predictors measured at Time 3 (the mid progress point, two months into recovery) were entered into the model at once and a backward stepwise method was applied, yielding a model of just depressed affect and life stress (see Table 15 for a full summary of these results). This two variable model significantly predicted gambling severity at Time 4 (the late progress point, four months into recovery; $F(2, 21) = 5.322$, $p < .05$) and accounted for 33.6% of the variance in gambling severity scores at Time 4. Examining the beta weights reveals that depressed affect was a significant predictor in both the full model ($\beta = .611$, $p < .05$) and the two variable model ($\beta = .646$, $p < .05$), indicating this variable's importance at this late point in the recovery process. As well, the direction of the relationship indicates that those with more depressive symptoms at Time 3 were more likely to have more gambling symptoms at Time 4, which is consistent with the hypothesis. Life stress was not a significant predictor in either model, although it approached significance in the two variable model ($\beta = -.375$, $p = .075$), suggesting it may have been significant with a larger sample size. Unexpectedly, the direction of this relationship, if it were significant, suggests that those with greater life stress at Time 3 actually had fewer gambling symptoms at Time 4. This was inconsistent with the hypothesis and appears to be counterintuitive. However, the lack of significance reduces the importance of this result. Overall, the findings on depressed affect provide some support for the hypothesis, but unfortunately none of the recovery resources were influential in this model.

Table 15

Summary of Results from Multiple Regression Analysis for Predicting Gambling Severity at the Late Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.393	-
Social support	-.059	.052	-.223	.275		
Self-efficacy	-.022	.045	-.107	.636		
Emotion-focused coping	.058	.190	.071	.765		
Depressed affect	.258	.092	.611	.011		
Life stress	-.323	.173	-.407	.078		
Step 2					.390	.003
Social support	-.065	.050	-.211	.278		
Self-efficacy	-.016	.040	-.079	.693		
Depressed affect	.252	.087	.596	.009		
Life stress	-.329	.168	-.415	.064		
Step 3					.385	.005
Social Support	-.060	.048	-.228	.223		
Depressed affect	.252	.085	.597	.008		
Life stress	-.309	.157	-.390	.063		
Step 4					.336	.049
Depressed affect	.273	.085	.646	.004		
Life stress	-.298	.159	-.375	.075		

Predicting relapse. All five predictors measured at Time 3 (the mid progress point) were entered into the model at once and a backward stepwise method reduced the model to just life stress (see Table 16 for a full summary of these results). This single variable model significantly predicted relapse at Time 4 (the late progress point; $F(1, 22) = 7.846$, $p < .05$) and accounted for 26.3% of the variance in relapse at Time 4. An examination of the beta weights reveals that life stress was a significant predictor ($\beta = .513$, $p < .05$) and has a positive relationship with relapse. This indicates that those with greater life stress after two months of treatment are more likely to relapse during the fourth month of recovery. This finding is consistent with the hypothesis and provides some support for it.

Testing Hypothesis 3: Predicting Dropout

The third hypothesis (see Figure 1c on page 37) states that: social support, abstinence self-efficacy, emotion-focused coping, depressed affect, and life stress measured at baseline will each predict dropout over the first two months of treatment. Since dropout is a dichotomous variable, logistic regression was used to test this hypothesis.

All six predictors measured at baseline (including age, as mentioned above) were entered into the model at once and a backward stepwise method resulted in a model with only age as a predictor (see Table 17 for a full summary of these results). This single variable model significantly predicted dropout over the first two months of treatment ($\chi^2(1) = 7.869$, $p < .05$) and correctly identified 65.2% of individuals as either dropouts or completers. An examination of the beta values reveals that age was a significant predictor of dropout ($B = -.068$, $p < .05$). As well, age has a negative relationship with

Table 16

Summary of Results from Multiple Regression Analysis for Predicting Relapse at the Late Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.339	-
Social support	-.007	.014	-.099	.637		
Self-efficacy	-.004	.012	-.075	.750		
Emotion-focused coping	-.039	.052	-.181	.466		
Depressed affect	.007	.025	.063	.785		
Life stress	.077	.047	.372	.119		
Step 2					.336	.003
Social support	-.007	.014	-.107	.598		
Self-efficacy	-.004	.012	-.069	.761		
Coping style	-.042	.049	-.197	.404		
Life stress	.082	.043	.396	.070		
Step 3					.333	.003
Social support	-.008	.013	-.113	.565		
Coping style	-.048	.044	-.226	.285		
Life stress	.085	.041	.409	.052		
Step 4					.322	.011
Coping style	-.056	.041	-.262	.192		
Life stress	.086	.040	.414	.045		
Step 5					.263	.059
Life stress	.107	.038	.513	.010		

Table 17

Summary of Results from Logistic Regression Analysis for Predicting Dropout

	B	*SE B*	*Exp(B)*	*Sig.*	R^2*	ΔR^2*
Step 1					.290	-
Social support	-.003	.024	.997	.893		
Self-efficacy	-.013	.017	.987	.420		
Emotion-focused coping	-.045	.060	.956	.454		
Depressed affect	-.065	.049	.937	.184		
Life stress	.037	.036	.964	.304		
Age	-.063	.027	.939	.022		
Step 2					.290	.000
Self-efficacy	-.013	.017	.987	.419		
Coping style	-.045	.059	.956	.450		
Depressed affect	-.065	.049	.937	.179		
Life stress	.038	.034	.963	.260		
Age	-.062	.027	.940	.023		
Step 3					.276	.014
Self-efficacy	-.014	.016	.986	.381		
Depressed affect	-.064	.048	.938	.182		
Life stress	.038	.034	.963	.269		
Age	-.064	.027	.938	.017		
Step 4					.258	.016
Depressed affect	-.053	.047	.949	.262		
Life stress	.039	.034	.962	.253		
Age	-.067	.027	.935	.013		

Step 5					.225	.033
Life stress	.021	.028	.979	.452		
Age	-.066	.027	.936	.013		
Step 6					.211	.014
Age	-.068	.027	.934	.011		

***** *Nagelkerke* R^2

dropout, indicating that those who were younger were more likely to dropout than those who were older. Since none of the measured variables predicted dropout as hypothesized, these findings do not support the hypothesis, but they do offer an interesting and significant finding with respect to the age of treatment participants.

Additional Analyses

Using Variables at Time 2 to Predict Time 3 Gambling Severity and Relapse

The main analyses assessed the ability of baseline variables to predict early outcomes (Time 2 and Time 3; testing hypothesis 1) and the ability of variables measured after two months of treatment (Time 3) to predict late outcomes (Time 4; testing hypothesis 2). However, these analyses did not assess the ability of variables measured after the first month of treatment (Time 2) to predict outcomes at the mid progress point (Time 3). As such, little is known about the influence of these variables during this middle period. As the topic of a hypothesis, this analysis was not thought to be particularly meaningful since outcomes over this time period were already examined by the first hypothesis and since it was assumed that baseline predictors of outcome during this time period (assessed by hypothesis 1) would be more useful clinically (i.e., identifying client needs at baseline is more useful than after one month of treatment). However, the examination of this middle time period is presented here as an additional analysis for the sake of completeness. In assessing this time period further, two MRA analyses were conducted: one with gambling severity as the outcome and one with relapse as the outcome. All of the assumptions of MRA were tested for these two models and none were violated.

With gambling severity as the outcome, all five main predictors measured at Time 2 (social support, self-efficacy, emotion-focused coping, depressed affect, and life stress) were entered at once and a backward stepwise procedure reduced this model to just depressed affect and life stress (see Table 18 for a full summary of these results). This two variable model significantly predicted gambling severity at Time 3 ($F(2, 19) = 11.481$, $p < .05$) and accounted for 54.7% of the variance in gambling scores at Time 3. An examination of the beta weights reveals that depressed affect was a significant predictor in both the full model ($\beta = .466$, $p < .05$) and the two variable model ($\beta = .490$, $p < .05$). This indicates that those with more depressive symptoms after the first month of treatment were more likely to have high levels of gambling symptoms at two months into treatment. The beta weights for life stress indicate that it was not a significant predictor in the full model nor in the two variable model. However, life stress did approach significance in the two variable model ($\beta = .347$, $p = .075$), suggesting that it may have been significant with a larger sample size. As well, the direction of the relationship suggests that those with more life stress at Time 2 had greater gambling severity at Time 3. Accordingly, it appears that the psychosocial stressors are better predictors of treatment success than are the recovery resources at this midpoint in the recovery process. Overall, the findings of this analysis are generally consistent with the themes of this study and serve to add further weight to the influence that depressed affect appears to have during the recovery process.

With regards to relapse, all five main predictors measured at Time 2 were entered at once and a backward stepwise procedure yielded a model of just life stress (see Table 19 for a full summary of these results). This single variable model did not significantly

Table 18

Summary of Results from Multiple Regression Analysis for Predicting Gambling Severity at the Mid Progress Point by Variables at the Early Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.624	-
Social support	-.024	.081	-.052	.775		
Self-efficacy	-.047	.051	-.182	.366		
Emotion-focused coping	.316	.215	.243	.162		
Depressed affect	.246	.115	.466	.049		
Life stress	.195	.125	.313	.137		
Step 2					.622	.002
Self-efficacy	-.047	.049	-.182	.355		
Emotion-focused coping	.306	.207	.236	.158		
Depressed affect	.259	.103	.492	.022		
Life stress	.193	.121	.309	.129		
Step 3					.602	.020
Emotion-focused coping	.323	.206	.249	.134		
Depressed affect	.293	.096	.555	.007		
Life stress	.237	.112	.379	.048		
Step 4					.547	.055
Depressed affect	.258	.097	.490	.016		
Life stress	.217	.115	.347	.075		

Table 19

Summary of Results from Multiple Regression Analysis for Predicting Relapse at the Mid Progress Point by Variables at the Early Progress Point

	B	*SE B*	*β*	*Sig.*	R^2	ΔR^2
Step 1					.216	-
Social support	-.012	.046	-.068	.796		
Self-efficacy	-.002	.029	-.022	.938		
Emotion-focused coping	.092	.122	.181	.462		
Depressed affect	-.057	.066	-.276	.396		
Life stress	.131	.071	.535	.082		
Step 2					.216	.000
Social support	-.012	.045	-.068	.790		
Coping style	.093	.118	.182	.443		
Depressed affect	-.056	.060	-.268	.370		
Life stress	.133	.064	.543	.051		
Step 3					.212	.004
Coping style	.088	.114	.172	.450		
Depressed affect	-.049	.053	-.235	.373		
Life stress	.132	.062	.538	.047		
Step 4					.186	.026
Depressed affect	-.058	.051	-.280	.272		
Life stress	.127	.061	.516	.051		
Step 5					.132	.54
Life stress	-.089	.051	.363	.097		

predict relapse at Time 3. However, this model was not too far from being significant ($F(1, 20) = 3.030$, $p = .097$) and may have been significant with a larger sample size. Although this potential influence of life stress was consistent with the hypotheses, it was not significant and thus holds little weight in the overall results of this study.

A Further Examination of the Relationship between Age and Dropout

The analyses testing the third hypothesis revealed that there was a strong relationship between age and dropout in that those who were younger tended to drop out of treatment and those who were older tended to complete treatment (see Figure 2). Indeed, if the extremes of age are considered, of the ten youngest participants, seven of them dropped-out (70%), whereas of the ten oldest participants, only one of them dropped-out (10%). Based on this finding, it seems that there may be some important differences between those who are younger and those who are older in regards to dropout. Furthermore, it may be that there are actually different populations represented in this sample, each with their own distinct set of needs. Unfortunately, the sample was too small to properly explore these differences with anything beyond two different groups. Thus, the sample was divided into two with the mean age of 45 used as the dividing point. This yielded a younger group, aged 45 and below, which consisted of 21 individuals, and an older group, aged 46 and above, which consisted of 29 individuals. (Although using the median of 47 as the dividing point would have created two equal groups, there were only 3 individuals who dropped-out above the age of 47, meaning there would have been very little variability in regards to dropout in the older group which would have made the analyses difficult at best.) The resulting sizes of these groups are much smaller than would be ideal for the analyses that follow. However, these

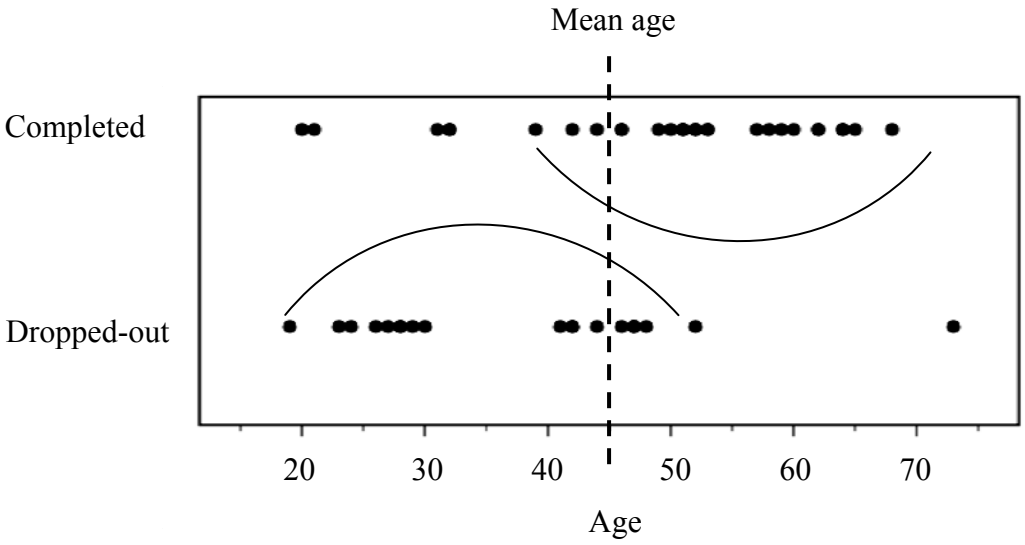

Figure 2. Scatter plot of relationship between dropout and age. Arches are diagrammatic to highlight patterns of grouping found in the data.

analyses are only exploratory and are intended to suggest trends for future research. The model used to test the third hypothesis (using baseline predictors) was again tested using LRA on each of these groups independently to get a sense of whether or not these two age groups differ in regards to predictors of dropout.

First to be examined was the younger group. All five predictors measured at baseline were entered into the model at once and a backward stepwise method reduced the model to self-efficacy and emotion-focused coping (see Table 20 for a full summary of these results). This two variable model significantly predicted dropout ($\chi^2(2) = 7.052$, $p < .05$) and correctly classified 75.0% of individuals as either dropouts or completers. An examination of the beta values reveals that neither self-efficacy nor emotion-focused coping were significant predictors. However, self-efficacy did approach significance ($B = -.058$, $p = .077$) and may have been significant with a larger sample size. Both variables had negative relationships with dropout, suggesting that in this younger group, those who had lower levels of abstinence self-efficacy and emotion-focused coping were more likely to drop out of treatment.

Examining the older group, all five predictors measured at baseline were entered into the model at once and a backward stepwise method was used, yielding a model containing depressed affect and life stress (see Table 21 for a full summary of these results). This two variable model significantly predicted dropout ($\chi^2(2) = 6.361$, $p < .05$) and correctly predicted 73.1% of participants as either dropouts or completers. The beta values for this two variable model indicate that depressed affect was a significant predictor of dropout ($B = -.171$, $p < .05$), whereas life stress was not. As well, depressed affect had a negative relationship with dropout, which suggests that, in this older group,

Table 20

Summary of Results from Logistic Regression Analysis for Predicting Dropout in the Younger Group

	B	*SE B*	*Exp(B)*	*Sig.*	R^2*	ΔR^2*
Step 1					.459	-
Social support	.008	.060	1.008	.890		
Self-efficacy	-.056	.040	.946	.162		
Emotion-focused coping	-.196	.131	.822	.135		
Depressed affect	.067	.133	1.069	.616		
Life stress	.039	.054	.962	.470		
Step 2					.458	.001
Self-efficacy	-.058	.037	.943	.115		
Coping style	-.202	.125	.817	.104		
Depressed affect	.059	.120	1.061	.623		
Life stress	.035	.046	.965	.443		
Step 3					.447	.011
Self-efficacy	-.062	.035	.939	.077		
Coping style	-.207	.123	.813	.093		
Life stress	.038	.045	.963	.404		
Step 4					.409	.038
Self-efficacy	-.058	.033	.943	.077		
Coping style	-.181	.110	.834	.100		

* *Nagelkerke* R^2

Table 21

Summary of Results from Logistic Regression Analysis for Predicting Dropout in the Older Group

	B	*SE B*	*Exp(B)*	*Sig.*	R^2*	ΔR^2*
Step 1					.353	-
Social support	-.025	.037	.976	.512		
Self-efficacy	.024	.033	1.024	.466		
Emotion-focused coping	.001	.104	1.001	.993		
Depressed affect	-.178	.100	.837	.074		
Life stress	.107	.071	.898	.133		
Step 2					.353	.000
Social support	-.025	.037	.976	.503		
Self-efficacy	.024	.032	1.024	.455		
Depressed affect	-.178	.100	.837	.074		
Life stress	.107	.071	.898	.132		
Step 3					.333	.020
Self-efficacy	.019	.030	1.019	.530		
Depressed affect	-.184	.095	.832	.053		
Life stress	.118	.066	.889	.074		
Step 4					.315	.018
Depressed affect	-.171	.087	.843	.050		
Life stress	.108	.063	.898	.085		

* *Nagelkerke* R^2

those with lower levels of depressed affect were more likely to drop out of treatment. The direction of this relationship was unexpected and seems to run counter to the initial hypotheses. Life stress, on the other hand, was not significant but did have a positive relationship with dropout ($B = .108$, $p = .085$), suggesting that, in the older group, those with greater life stress were more likely to drop out of treatment.

In conclusion, it appears that for younger individuals, a lack of recovery resources, specifically self-efficacy and emotion-focused coping, are predictive of dropout, where as for older individuals, the psychosocial stressors seem to be more predictive, with greater levels of life stress and lower levels of depressed affect being linked to dropout. Overall, these findings suggest that recovery resources and psychosocial stressors can be used to predict dropout, and in this way, provide some support for the third hypothesis.

Summary of Results

Overall, the results of the study provide some support for the three hypotheses. For an overview of the results pertaining to each hypothesis, see Table 22. All of the findings from this study are further summarized in the discussion section below and some interpretations are offered.

Table 22

Summary of Hypothesis Testing

	Reduced Model	*Variables in Reduced Model*	*Significance*
Hypothesis 1			
Predicting gambling severity at Time 2	Sig.	Abstinence self-efficacy	$p = .077$
		Depressed affect	$p = .081$
Predicting gambling severity at Time 3	Sig.	Abstinence self-efficacy	$p < .050$
		Depressed affect	$p < .050$
Predicting relapse at Time 2	Sig.	Abstinence self-efficacy	$p < .050$
		Social support	$p = .074$
Predicting relapse at Time 3	Not Sig.	-----	------
Hypothesis 2			
Predicting gambling severity at Time 4	Sig.	Depressed affect	$p < .050$
		Life stress	$p = .075$
Predicting relapse at Time 4	Sig.	Life stress	$p < .050$
Hypothesis 3			
Predicting drop out	Sig.	Age	$p < .050$

Note: Sig. indicates that the predictive model was significant at $p < .05$.

CHAPTER IV

Discussion

First to be presented are summaries and interpretations of all the major findings in the study. The results of the five recovery resources (social support, abstinence self-efficacy, motivation for change, readiness for change, and emotion-focused coping) and two psychosocial stressors (depressed affect and life stress) are each addressed in turn. Next, the participants response to treatment is described, followed by some potential treatment implications of the findings. To conclude, the limitations of the study are discussed and some directions for future research are offered.

Main Findings: Relating Client Factors to Treatment Outcome

Predicting Gambling Severity and Relapse throughout the Treatment Process

The first purpose of this study, which was addressed by the first two hypotheses, was to discover if certain resource-like client factors, when measured at various points in the treatment process, could predict who would have positive treatment outcomes (i.e., reduced gambling severity and maintained abstinence) and who would have poor outcomes (i.e., return to gambling and relapse). The findings of the study generally supported the predictive model, but there are some limitations. With regard to the first hypothesis, abstinence self-efficacy and depressed affect measured at the start of treatment were able to predict gambling severity scores at both one month and two months into treatment. As well, self-efficacy and social support measured at the start of treatment were able to predict who would relapse over the first month of treatment. However, none of the variables measured at the start of treatment could predict relapse

over the second month of treatment. Overall, these findings indicate that client factors, particularly self-efficacy and depressed affect, measured at baseline can predict outcomes over the first month of treatment and, to some extent, over the second month of treatment as well. In addition, these client factors were able to account for a substantial proportion of variance in treatment outcomes, with one predictive model accounting for almost 50% of the variance in gambling severity. Thus, some support was found for the first hypothesis and it appears that these client factors are indeed important factors to consider when examining influences on PG treatment outcomes.

One unusual finding regarding the first hypothesis was that the model predicting two month outcomes accounted for twice as much variance in gambling severity scores as the model predicting one month outcomes. This suggests that abstinence self-efficacy and depressed affect measured at baseline are better predictors of two month outcomes than of one month outcomes. However, one would expect that variables measured more closely in time would be more strongly related since there has been less time and opportunity for the variables to diverge and be influenced by other factors. The one difference between these models was that the analyses predicting gambling severity at two months were based on a smaller sample size since almost twice as many participants had dropped out of treatment at two months as opposed to one month. A smaller sample size in itself is unlikely to increase the strength of the relationship, but it is possible that the participants who had dropped out by two months were somehow different from those who completed treatment and thus the added heterogeneity of their presence at one month resulted in a weaker relationship. If this were so, then maybe this predictive relationship applies more to those who remain in treatment, rather than those who drop out.

To examine this possibility, the analyses testing the one month outcome model were repeated with the same sample that was used in the two month outcome model (results not reported). The results with the reduced sample showed an almost 50% increase in the amount of variance accounted for, but was not the 100% increase observed before. Thus, attrition can account for half of this difference, but not all of it. With no other statistical explanation, these results suggest that baseline variables are indeed better predictors of gambling severity at two months than at one month. However, this effect was not observed testing the same models and samples with relapse as the outcome, which places some question into the authenticity of this result. Without additional research, the true reason for this unexpected finding remains unknown.

For the second hypothesis, which addressed four month treatment outcomes, some support was also provided from the study results. Depressed affect and life stress, measured two months into treatment, were capable of predicting gambling severity after four months of treatment, and life stress, also measured at two months, was capable of predicting relapse over the fourth month of treatment. However, none of the recovery resources (social support, abstinence self-efficacy, readiness for change, motivation for change, and emotion-focused coping) had much predictive power in this late stage of treatment, suggesting that their importance may wane as individuals get into the more maintenance-oriented stage of the recovery process.

Overall, these findings suggest that some of the variables that predict success at the beginning of treatment are different from those that predict success later in treatment, which in itself is a noteworthy finding. At the beginning of treatment, depressed affect and some of the recovery resources, particularly self-efficacy, were the processes that

were most related to early treatment outcomes. Then, during the later stages of treatment, levels of depressed affect and life stress at two months were most related to treatment outcomes at four months. Accordingly, it appears that early success depends a lot on what the individuals bring with them to treatment (i.e., recovery resources such as self-efficacy and social support). Indeed, people who are confident in their ability to remain abstinent seem to do better over the first month of treatment than those who lack confidence. Furthermore, those who are experiencing symptoms of depression seem to do worse with respect to their gambling problem over the first month of treatment, likely since depression is an additional affliction that requires resources to overcome. As treatment progresses and the individuals begin to gain a grasp on their recovery, the recovery resources seem to lose their importance as the psychosocial stressors, especially life stress, become dominant as predictors of outcome. Indeed, it appears that life stress later in treatment may overwhelm individuals in such a way that they became unable to continue with the recovery strategies that they learned earlier in treatment, resulting in relapse.

The finding that stressful life events predicted subsequent relapse is quite consistent with the stress-vulnerability model proposed by Brown and colleagues (1995). According to their model, relapse can result when a person's threshold for stress is overwhelmed by the build-up of both chronic and acute stressors. Furthermore, the model states that a person's vulnerability to the harmful effects of stress, and therefore relapse, is determined by the interplay of both protective factors which reduce the likelihood of relapse and risk factors which increase its likelihood. In the current study, it was found that certain factors seemed to facilitate the treatment process by promoting

positive outcomes, such as maintained abstinence, whereas other variables seemed to hinder the treatment process by promoting poor outcomes, such as relapse. Accordingly, the stress-vulnerability model of relapse appears to apply to problem gamblers as well as substance abusers.

The results also appear to support the application of a resource-based theory of self-regulation (Baumeister et al., 1998) to the treatment process of problem gamblers. Indeed, the variables described as "recovery resources" did seem to increase one's ability to successfully change, whereas the variables described as "psychosocial stressors" appeared to impair one's ability to successfully change. This dynamic between facilitating and hindering factors is essentially what was predicted by the conceptual framework. The utility of applying this resource-based framework to the treatment process comes from the increased understanding it offers in regards to the distinction made between helpful and harmful client factors. For example, in thinking about recovery resources, clinicians may consider whether or not the person has enough of each of these resources in order to succeed and also about the possibility of providing the person with more. Furthermore, Stiles (1996) explains that therapeutic interventions aimed at increasing levels of specific resources or "process components" is only beneficial if the person is lacking in that resource. If the person already has enough, then adding more will not have much influence on improving outcome. For instance, a person who has a lot of self-efficacy will likely not benefit as much from interventions that increase self-efficacy as a person who lacks self-efficacy. Thus, this resource-based framework describes these variables as being quite dynamic in nature. As well, the description of psychosocial stressors suggests client factors which interact with the

recovery resources and work to impede their ability to have their positive influence. Indeed, the onset of depressive symptoms, such as feelings of worthlessness and self-dislike, will probably reduce one's confidence to remain abstinent, therefore depleting a valuable resource and making the change process less likely to be successful. Again, a much more dynamic process is described.

The resource model also helps with describing the recovery process in general and why some individuals have positive outcomes whereas others do not. For instance, recovery often involves learning new ways to do things, such as new ways to interact with loved ones, new ways to cope with stress, new ways to find entertainment, possibly even making new friends (Centre for Addiction and Mental Health, 2004). This is all in contrast to a person's old habitual or automatic way of doing things, which has been built up over years of doing it that particular way and has likely contributed to the gambling problem. To do these things (e.g., interact with loved ones, etc.) in a new way takes a great deal of motivation and conscious effort, essentially a great deal of psychological resources; just as doing any new task requires a lot of focus and concentration to execute it properly (Ashcroft, 1998). As such, it appears that individuals are able to keep up all of these new strategies and ways of living as long as they have the resources available to make a sustained effort. When problem gamblers become stressed or depressed, then some of their resources now go toward dealing with those new difficulties, leaving fewer resources available to maintain the effort to stay on the recovery path. In these situations, the person may resort back to their old automatic ways of doing things (i.e., using gambling as an avoidance coping strategy), partially because old coping styles are well practiced, but also because the constant self-monitoring needed to prevent falling back

into old habits requires resources which may not be available. Thus, individuals seem able to maintain their recovery as long as they are not overwhelmed by other resource consuming issues.

There were, however, two findings in this study that run counter to this explanation and do not support the resource theory. The first was that those reporting the most social support at the start of treatment were most likely to relapse during the first month of treatment. The second finding was that those with the most life stress after two months of treatment were most likely to have the least amount of gambling symptoms two months later. Essentially, these findings have a recovery resource (social support) with a seemingly hindering influence and a psychosocial stressor (life stress) with a seemingly facilitating influence. However, both of these relationships only approached significance and should therefore be considered with scepticism if they are interpreted at all. Regardless, both of these possible relationships are peculiar and may require additional research before they can be fully disregarded.

One surprising finding regarding the outcomes of gambling severity and relapse was that they had very little relationship with each other. Indeed, these two variables were only correlated at the two month assessment point, which was unexpected since relapse seems to be a variable that would heavily relate to one's gambling severity scores. For example, if an individual relapses, this means that there is new gambling behaviour which could result in the maintenance, or even an increase, in the person's gambling severity score. However, based on how it was measured, gambling severity seems to relate more to the impact and consequences of gambling, rather than specific gambling acts, as is the case with relapse. Adding further weight to this distinction was the lack of

relationship between relapse and impact on quality of life at all three time points. Consequently, relapse as operationalized in this study appears to be a similar but distinct construct from gambling severity and a very different construct from impact on quality of life.

Predicting treatment dropout

The third hypothesis addressed the ability of the recovery resources and psychosocial stressors to predict dropout over the first two months of treatment. At first examination, the results did not support this hypothesis as none of the proposed variables were able to predict dropout. This was similar to the results of Leblond and colleagues (2003) who also found that client factors such as lowered motivation and depressed affect were unable to predict dropout in problem gamblers. Smith and colleagues (2010), examining social support in gamblers, were also unable to find a predictive relationship with dropout. One study, however, did find that depressed affect predicted dropout (Maccallum et al., 2007), but that finding was not a major focus of the study. In the current study, the only successful predictor of dropout was age, with younger individuals being more likely to drop out than older individuals. None of the other studies examining predictors of dropout reported any relationship with age and Leblond and colleagues (2003) actually reported that age was not correlated with dropout in their study. Thus, the relationship between age and dropout in the current study appears to be a unique finding.

In order to explore this effect of age further, the sample was divided into a younger participant group and an older participant group and the same predictive model was tested on both groups. These results produced significant predictors with each group

having its own unique set of predictors. For younger individuals, self-efficacy and emotion-focused coping were both negative predictors of dropout. This indicated that those in the younger group who lacked confidence in their ability to remain abstinent and who preferred to suppress their emotions, rather than feel and express them, were most likely to drop out. This finding was quite consistent with the hypotheses and the overall results of the study since abstinence self-efficacy appeared to be facilitating treatment.

For older individuals, life stress was a positive predictor of dropout and depressed affect was a negative predictor of dropout. This suggests that, for this older age group, those with more life stress and fewer symptoms of depression were at the greatest danger of dropping out of treatment. So, after additional exploration the treatment hindering influence of life stress was consistent with the third hypothesis after all, in that the life stress of these older individuals when treatment began seems to have made it more likely that they would drop out. At the same time, depressed affect appeared to precede positive treatment outcomes since older individuals with symptoms of depression at baseline were actually more likely to complete treatment. This finding was exactly opposite to what was hypothesized. Nevertheless, it is possible that for this older age group, the comorbid symptoms of depression were just additional reasons driving these individuals to seek help. Or maybe their symptoms of depression were being treated along with their problematic gambling, resulting in even greater positive perceptions about the usefulness of treatment. Whatever the reason, for this older age group, depressed affect at the start of treatment appears to decrease dropout, rather than increase it, a finding which does not support the original hypothesis.

Taking the findings on age and dropout as a whole, it seems that the factors that predict dropout for younger individuals are very different from those for older individuals. This finding is intriguing since it suggests that different treatment strategies may be needed for younger and older clients. This influence of age was not predicted by the third hypothesis, but once age was taken into consideration, the results do suggest that dropout can be predicted by both recovery resources and psychosocial stressors measured at baseline. These findings therefore appear to provide some support for the third hypothesis.

Furthermore, the finding that younger individuals were more likely to dropout than older individuals seems to make sense from a life stage perspective. For example, the consequences of losing one's savings as a result of gambling are very different depending on a person's age. When individuals are under 45 and relatively young, they still have many years to rebuild their savings, and in this way, the consequences of gambling are not as devastating. In contrast, when individuals who are over 45 and relatively older, they likely have a family to support and are facing retirement in twenty or twenty-five years. These life factors make the consequences of gambling quite severe for this group, especially since dependents may be affected and the shortage in time to rebuild financial resources may result in financial difficulties during the retirement years. Arguably then, treatment could be much more critical for older individuals than younger individuals, possibly giving older individuals a much greater desire to remain in treatment. Consistent with this explanation, a longitudinal study examining predictors of cigarette smoking cessation also found that those who are older are more likely to quit

smoking than those who are younger (Hyland, Li, Bauer, Giovino, Steger, & Cummings, 2004).

Recovery Resources

Abstinence self-efficacy. Of the recovery resources examined in this study, abstinence self-efficacy was by far the most predictive of positive treatment outcomes. This means that those who were the most confident about their ability to remain abstinent were also the ones who were most likely to remain abstinent. In fact, abstinence self-efficacy measured at the start of treatment was a negative predictor of gambling severity after one month and still after two months of treatment. Self-efficacy was also a negative predictor of relapse over the first month of treatment. Moreover, self-efficacy measured at the start of treatment was even a negative predictor of dropout for younger individuals. Taken together, these results firmly indicate that those who entered treatment with higher levels of confidence to remain abstinent were most likely to have positive treatment outcomes, both in regards to maintained abstinence and their ability to complete treatment. Thus, abstinence self-efficacy does appear to be a resource that is beneficial during the treatment process of problem gamblers.

Although there are no problem gambling treatment outcome studies that examine abstinence self-efficacy for comparison, the results of the current study are generally consistent with the findings of the substance-based addiction treatment literature. For example, both Ilgen and colleagues (2005) and McKay and colleagues (2005) also found abstinence self-efficacy to be one of the best predictors of maintained abstinence in their samples of alcohol and drug abusers. Nevertheless, in the current study, the predictive ability of self-efficacy seemed to only occur during the first month of treatment, as self-

efficacy measured later in treatment was unable to predict any of the longer term outcomes, as was the case in the Ilgen and colleagues (2005) study. However, Ilgen and colleagues (2005) did specifically measure self-efficacy for abstinence after discharge, whereas the current study examined generalized abstinence self-efficacy which was not linked specifically to any time frame or stage of the treatment process. This difference in how the variable was measured could have accounted for differing results. Furthermore, self-efficacy in the current study was negatively correlated with many of the unwanted treatment outcomes throughout the four months, indicating a potential facilitating relationship even at the later stages of the treatment process. Indeed, abstinence self-efficacy was the only recovery resource to be negatively correlated with gambling severity at all four time points. It was also negatively correlated with both relapse and impact on quality of life at the two month and four month assessment points. Thus, although abstinence self-efficacy could not predict the outcomes later in treatment, it was still negatively correlated with them during these later times.

Beyond treatment outcomes, abstinence self-efficacy was negatively correlated with both depressed affect and life stress at the one month, two month, and four month assessment points. This indicated that those who were most confident in their ability to remain abstinent also tended to experience fewer depressive symptoms and stressful life circumstances. The relationship with depressed affect in particular makes intuitive sense given that the symptoms of depression, such as pessimism, self-dislike, and feelings of worthlessness, are not likely to be found in those with a high degree of self-confidence. This relationship has also been previously established in the PG treatment literature where depressed affect was the strongest correlate of abstinence self-efficacy (Gomes &

Pascual-Leone, 2009). The negative relationship with life stress has also been found before in both regular and in-treatment problem gamblers (Casey, Oei, Melville, Bourke, & Newcombe, 2008). Thus, abstinence self-efficacy appears to be the antithesis of harmful factors such as depressed affect and life stress, which further supports its role as a beneficial recovery resource.

Overall, the consistency of these negative relationships over time with the unwanted outcomes and the treatment hindering psychosocial stressors does seem to add further support to the idea of self-efficacy as a dynamic client characteristic that insulates individuals against poor outcomes throughout the treatment process, essentially making it a good resource for recovery. Abstinence self-efficacy, as a construct, could even be the treatment focused mindset that results when individuals gain confidence from their resources and are free from the self-doubt that comes from depressive symptoms and life stress. Whatever its nature, abstinence self-efficacy does appear to be a resource that reflects an individual's ability to adhere to treatment goals.

Concerning the literature as a whole, the results of the current study successfully extend support for a treatment facilitating role of abstinence self-efficacy into the problem gambling field. Moreover, the current study extended beyond the typically examined treatment outcome of maintained abstinence by also finding a predictive relationship between decreased abstinence self-efficacy and treatment dropout in younger individuals. To the best of the author's knowledge, this is the first problem gambling treatment study to report these broad results regarding the influence of abstinence self-efficacy.

Social support. Social support is the type of variable that has become so synonymous with positive change that to find a positive effect is the status quo, rather than the exception. Subsequently, it was surprising that social support did not have a larger impact on the recovery process of the participants in this study, as was hypothesized. While social support did have some impact, it seemed to be most influential during the first month of treatment. For instance, the correlation analyses suggested that those with higher levels of social support at both baseline and at one month into treatment had lower levels of gambling severity, impact on quality of life, depressed affect, and life stress. These negative relationships in the early stages of treatment are consistent with the idea of social support working as a buffer against negative outcomes. These findings are also consistent with the findings of Petry and Weiss (2009) who found a negative correlation between social support and gambling severity at baseline. Thus, it does appear that social support is a resource that is beneficial during the treatment process of problem gamblers.

However, unlike the Petry and Weiss (2009) study which continued to find a positive influence of social support later on in treatment, the importance of social support in the current study seemed to wane as time progressed, even though the reported levels of social support increased. This difference in findings could be due to the fact that all participants in the Petry and Weiss (2009) study, whether they received professional treatment or not, were referred to and attended Gamblers Anonymous (GA). This difference in the treatment provided could create a difference in the findings regarding social support during the later stages of treatment, especially since GA provides its attendees with continued social support that distinctly promotes abstinence. While only a

quarter of the participants in the current study identified as GA members and only half attended treatment groups where they would have received treatment specific support, neither group treatment was a requirement of the study, resulting in many participants not having received this additional group support. Consequently, it could be that the levels of support reported by the participants in the Petry and Weiss (2009) study were more closely linked to abstinence, creating a significant relationship between these two variables where the current study did not find one. In addition, the sample size of the Petry and Weiss (2009) study, at 231 participants, was far larger than the current study and would have had more power to detect smaller effects which the current study was not be capable of finding. Further research is required to assess the possibility of different sample populations being the reason for the discrepant results.

If the results of the current study are typical of in-treatment populations of gamblers who are not required to attend GA, then it may be possible that social support is most needed, and thus has its greatest relevance, during the most difficult and stressful times, such as the first month of PG treatment. One interpretation is that, once individuals have gotten through the initial shock of treatment, they become more capable of handling the recovery on their own and thus do not need to feel as supported to maintain their gains. As well, it may be that these individuals had built up their social support during that first month to levels that were sufficient to promote the change process. If this were so, then increases in social support past the first month would have little impact since, according to Stiles (1996), increases in a resource are only beneficial when the person is lacking in that resource. Thus, it is not that social support loses its importance after the first month, but rather that increases in this resource are most

beneficial, and therefore most predictive of outcome, during this early time when individuals may be lacking in this resource. Regardless of the reason, the results of the current study, in conjunction with the results from Petry and Weiss (2009), suggest that the presence of social support early in treatment does seem to promote maintained abstinence from gambling.

One finding from this study that runs counter to the idea of social support acting as a buffer, particularly early on, was that individuals with higher levels of social support at the beginning of treatment seemed to be more likely to relapse over the first month of treatment. Although this finding only approached significance, it was still quite unexpected, especially considering the other significant findings regarding social support during this same time frame (i.e., negative correlations with gambling severity and impact on quality of life). In addition, Petry and Weiss (2009) found the opposite, that those with the most social support at baseline were the least likely to relapse over the first two months of treatment, and their finding was significant. In the current study, it may be possible that some individuals who reported high levels of social support did so because of high levels of received financial support; support that provides the individuals with a means to continue gambling. However, even though one can speculate that this finding would have been significant with a larger sample, the results from Petry and Weiss (2009) suggest otherwise and thus without future research to support this claim, the importance of this non significant result is doubtful.

Adding to this, the current study did not find a relationship between social support and dropout. This null result adds to the one reported by Smith and colleagues (2010), who failed to find a relationship between social support and dropout in their Australian

sample. Overall, the results of the current study regarding social support are consistent with the literature in that social support seems to promote abstinence, at least early in treatment, but does little to prevent treatment attrition.

Emotion-focused coping. For the purposes of this study, emotion-focused coping was conceptualized as an adaptive emotional process where individuals cope with difficulties by attending to their emotional states and expressing their feelings in functional ways. This variable was included as a predictor since it was believed to be a process that would help participants reduce their reliance on avoidant coping strategies such as gambling. The role of emotion-focused coping in this study was, however, quite minimal. Despite having correlations with some of the other predictor variables and even some of the outcome variables, particularly gambling severity and impact on quality of life at four months, emotion-focused coping was not impactful enough to remain in any of the hypothesized predictive models after they were reduced in the stepwise procedure. The only predictive relationship that emotion-focused coping did have was with dropout for younger individuals in the additional analyses. As such, high levels of emotion-focused coping may be an influential factor, but only with certain types of individuals, particularly those who are aged 19 to 45.

Despite its minimal predictive power, emotion-focused coping did have significant correlations with some of the other variables, including negative relationships with gambling severity at four months and impact on quality of life at one month and four months. In general, those who adaptively used emotions to cope (e.g., talked about one's feelings with a close other) also had higher levels of the other recovery resources and were less likely to have poor treatment outcomes. Thus, although higher levels of

emotion-focused coping only seem to have a minimal influence on the recovery process of problem gamblers, its influence does appear to be positive. These findings are consistent with Stanton and colleagues (2000) description of the adaptive use of emotional expression for coping with difficult circumstances. Indeed, younger individuals in this study who were less emotionally expressive with their coping style were also more likely to drop out of treatment. In this way, the findings from this study do suggest, albeit to a limited degree, that emotion-focused coping can be used adaptively and may facilitate the treatment process of problem gamblers, especially among those who are younger.

Readiness and motivation for change. Given the importance attributed to both readiness for change and motivation for change in the treatment literature, it was expected that both of these variables would be essential factors for predicting treatment outcomes. This was particularly the case for readiness for change which has previously been found to predict decreased gambling behaviour (Petry, 2005b). Moreover, among substance abusers, readiness for change has also predicted greater abstinence (Project MATCH Research Group, 1997) and treatment completion (Edens & Willoughby, 2000). Even motivation for change has been previously found to predict greater engagement during the treatment process (Joe et al., 1999) and less relapse among substance abusers (Miller et al., 1996). However, neither of these variables figured prominently as treatment facilitators in the current study, only having minor relationships with some of the other predictor variables and having no relationship with any of the outcome variables. In fact, the lack of correlations resulted in both of these variables being excluded from the main analyses. Thus, the results, or lack thereof, regarding readiness

for change and motivation for change were unanticipated and did not support the hypotheses.

One explanation for the null results is that there was a lack of variability in participant scores of both readiness and motivation. In essence, on each variable, all participants generally scored at about the same level. However, without variability, these variables could not sufficiently differentiate among people, leaving them unable to act as discriminating predictors of any kind (Tabachnick & Fidell, 2001). Overall, this appears to be what happened in the current study: regarding the assessments of readiness and motivation, participants were simply too similar to each other.

One could speculate that this homogeny could be the result of a self-selection process in that only those who were sufficiently ready and motivated to change had volunteered to participate in the study. However, another explanation stems from the fact that the participants all share one feature in common: they have all successfully undergone the help-seeking process and have entered treatment. Thus, it may be that the process of deciding to enter treatment involves the building of readiness and motivational resources, which could result in a plateauing effect if, for instance, individuals only enter treatment once their levels of readiness and motivation pass a certain threshold. Although both explanations are plausible, the results of the study do lend some support to the latter explanation.

For instance, most participants in this study had high scores on readiness for change, especially at baseline, indicating that they had already moved through both the precontemplation and contemplation stages and had decided to take action by entering treatment. Thus, the vast majority of these individuals were already in the later stages of

readiness when they entered the study, meaning that much of this readiness building process had already occurred. Similarly for motivation for change, participants' scores were also quite high at baseline and remained at this level throughout the study. Of course, given that the sample consisted only of those who had remained in treatment, one would expect some consistency in scores over time since continued participation in the study required at least enough motivation to attend treatment. As a result, motivation may have been more like a constant in this study, serving as a marker of the participants' continued desire to attend treatment. Overall, the participants appeared to have sufficient levels of both of these resources when they began treatment. Therefore, according to Stiles (1996), these resources would likely not be predictive of outcome since increases in "process components," such as readiness and motivation, are only beneficial and able to predict outcome when individuals lack sufficient levels of them. Accordingly, these two client factors may be more predictive of outcome among populations that are less ready and less motivated to change.

Furthermore, if the meaning of these variables is considered, then both seem to relate to the mitigating factors that cause an individual to seek help and enter into treatment. Consider readiness for change, this variable fundamentally relates to the mindset of the individual regarding change. Here, those with low readiness have little interest in change and have likely not entered treatment, whereas those with high readiness likely have begun making changes and possibly have entered treatment. In this way, entering treatment might be a possible end product of the readiness process since the mindset of the person in the later stages of readiness is one that is focused on making change happen, thus making treatment more desirable. One can speculate that readiness

for change would be a good predictor of which problem gamblers actually enter treatment and begin to change. At minimum, one would likely find greater variability in readiness scores among a sample of gamblers who have not yet entered treatment, allowing for greater differentiation and predictability of later outcomes.

For motivation for change, the operationalization used in the study involved motivating factors (i.e., emotional distress, lack of self-control, social pressure to quit, and financial problems) which would likely play an important role for driving an individual to seek help, but may play less of a role once the individual has obtained some degree of abstinence. Supporting this notion, a motivation-focused literature review did find that the motivating factors for help-seeking behaviour tend to relate to the consequences of problematic gambling behaviour, such as financial problems, emotional distress, and social pressure (Suurvali, Hodgins, & Cunningham, 2010); all factors that were included in the current study's operationalization of motivation for change. On the other hand, the motivating factors that were most commonly cited for quitting or reducing gambling did include some personal consequences of gambling, but focused more on changes in lifestyle and environment and the weighing of the pros and cons of continued gambling; neither of which was included in the current study. Considering this research, it seems that the operationalization of motivation for change in the current study may not have been ideal for a sample that was already sufficiently motivated to enter treatment. From this, it seems possible that if motivation for change were to be operationalized differently, maybe reflecting the pros and cons of continued gambling, then a treatment facilitating effect would be found. Additional research is required to assess this possibility.

Taken as a whole, one can speculate that both motivation for change (at least how it was assessed in this study) and readiness for change might have a greater influence on help seeking than on treatment outcomes. Moreover, since the current sample had already completed the help seeking process, the influence that these two variables might have on the recovery process may have already occurred. Even though the substance abuse literature does suggest that these two variables do influence the treatment process, it may be that the influence of motivation and readiness on gamblers is somehow different or less potent. Additional research is required to assess this possibility.

Psychosocial Stressors

Depressed affect. As was expected, depressed affect played an important role in the patterns of change presented in the study. Regarding the hypotheses tested, depressed affect had a particularly strong relationship with gambling severity. In fact, depressed affect was a predictor in every model that predicted gambling severity (i.e., at one month, two months, and four months into treatment). Depressed affect was also correlated with both gambling severity and impact on quality of life at all four assessment points, and the correlations with gambling severity became quite high by the end of the assessment period. As one might expect, all of these relationships were in the positive direction indicating quite strongly that higher levels of depressed affect go hand in hand with higher levels of gambling severity. These findings were consistent with the literature which suggests a strong relationship between PG and depression (Kim et al., 2006; O'Brien, 2011) as well as a diminished response to treatment for PG among those with depressive symptoms (Maccallum et al., 2007).

Furthermore, for the participants in this study, symptoms of depression significantly decreased over the four month assessment period. And most interestingly, almost half of this decrease (44.6%) in depressed affect occurred within the first month of treatment, the time period that also saw a major decrease (86.4%) in gambling severity. Thus, for many of these individuals, their symptoms of depression seemed to decrease in tandem with the decreases in their gambling behaviour. Previous studies have found a similar relationship and generally agree that gamblers who maintain abstinence experience a decrease in their depressive symptoms (Blaszczynski et al., 1991; Russo, Taber, McCormick, & Ramirez, 1984). Although no causal direction was established, this finding does add further strength to the relationship between these two disorders.

Since these two variables are so highly related throughout the treatment process, there may be some overlap between the two constructs. For instance, the PGSI, which was used to assess gambling severity, examines primarily the negative consequences that have resulted from the person's gambling. Likely, the participants in this study would have felt a host of negative emotions, particularly guilt, shame, regret, and sadness, when considering the consequences of their gambling behaviour. It seems reasonable to assume that these negative consequences and negative emotions would have an impact on these individuals' mood, possibly even resulting in symptoms of depression. Moreover, the BDI-II, which was used to assess depressed affect, asked participants about guilty feelings, punishment feelings, past failure, and self-criticism or blame; all of which are experiences commonly reported by individuals who are dealing with the aftermath of their problematic gambling (Blaszczynski, 1998). Thus, there appears to be overlap in the symptoms of emotional distress assessed in these two measures, making some degree

of relationship to be expected. More importantly though, it simply appears that certain symptoms of depression are likely to be experienced during the recovery process since individuals are forced to face the consequences of their destructive behaviour.

In addition to gambling severity, depressed affect was positively correlated with the other psychosocial stressor, life stress, at all four assessment points. This particularly strong relationship indicates that those who were most depressed tended to also suffer the most stress. This relationship is consistent with the literature given that PG has been described as both a dysfunctional coping strategy used to deal with life stress (Jacobs, 1986; Alexander, 2008) and a behavioural stress reaction used to regulate emotions and cope with symptoms of depression (Blaszczynski & McConaghy, 1989). In addition, as already discussed, depressed affect had relationships with the recovery resources, including consistently negative correlations with abstinence self-efficacy at one month and four months, social support at one month, and emotion focused coping at two months. These negative relationships indicate that participants with more depressive symptoms tended to have fewer resources available to devote to the treatment process. Although no causal direction can be determined, high depressive symptomatology seems to be problematic during treatment since it was associated with greater life stress and diminished recovery resources.

In contrast, depressed affect did not have much of a relationship with relapse and only had a limited relationship with dropout. Indeed, depressed affect was not a significant predictor in any of the models that predicted relapse nor did it have any significant correlations with relapse at any time. Thus, although participants continued to suffer some depressive symptoms throughout the first four months of their treatment, this

did not seem to have much relationship with an individual's rate of relapse into PG. Similar results have been found in the literature. For instance, studying problem gamblers, McCormick and Taber (1988) were unable to find a predictive relationship between levels of depressed affect and subsequent relapse rates. A study examining comorbid substance abuse and depression was also unable find a predictive relationship between depressed affect and relapse (Tate et al., 2008). However, the sample of this latter study had all been diagnosed with depression which may have resulted in an absence of variability in depression scores and consequently a reduced ability to predict outcomes. Furthermore, an additional study on alcoholics without comorbid depression did find that high levels of depressed affect, at any stage in the treatment process, can predict subsequent relapse (Kodl et al., 2008). Nevertheless, although there is some inconsistency in results across studies, the evidence seems to suggest that, at least for PG treatment, depressed affect has little influence on relapse rates.

Regarding dropout, the current study at first did not find any relationship between depressed affect and attrition rates, which was similar to the null results found by both Maccallum and colleagues (2007) and Leblond and colleagues (2003). However, after examining a curious correlation between dropout and age, the current study did find a relationship between depressed affect and dropout, but it was in the opposite direction of what was hypothesized. Indeed, those with moderate as compared to low levels of depression actually seemed to be more likely to remain in treatment rather than dropout, and interestingly, this predictive relationship only occurred in a subsample of older participants. Thus, it appears that treatment was most attractive to participants who were older and had the most depressive symptoms. One possible explanation is that older

participants were actually attending treatment to deal with both their gambling and depression symptoms, making treatment even more valuable. Although the treatment as usual in the target setting did not have an official depression component, there is reason to believe that some depressive symptoms would have been treated along with the gambling symptoms, especially considering their overlap (N. Rupcich, personal communication, October 22, 2008). Nevertheless, these particular results on older gamblers represent only a subsample of an already smaller than desired sample and must be considered with caution. At best, they provide an interesting direction for future research to examine.

Overall, the findings of this study, although mixed, do provide some support for the hypothesized hindering relationship of depressed affect with the treatment process of problem gamblers. Taken together, the results suggest that depressed affect likely has less influence on overt actions, such as relapse, and instead hinders treatment by depleting the coping resources, such as self-efficacy, which are important for moving through the process of recovery. Thus, the current study does suggest that depressed affect, to some extent, is a psychosocial stressor which has a deleterious relationship with the treatment process of problem gamblers.

Life stress. Of all the variables examined in this study, life stress appeared to be the one that was most associated with relapse, especially later in treatment. In fact, life stress was the only variable measured at the two month mark that predicted relapse over the fourth month of treatment. And, although it only approached significance, life stress was the only variable measured at the one month mark that seemed to predict relapse over the second month of treatment. Thus, relapse during this mid to late period of

treatment seems to be best predicted by the presence of stressful life circumstances (i.e., familial worries, financial difficulties, workplace problems, etc.) since it was often high levels of stress that preceded these returns to gambling. Previous substance abuse literature has found this predictive relationship between life stress and consequent relapse (Tate et al., 2008; Brown et al., 1995), but to the author's knowledge, this is the first study reporting this relationship in a sample of in-treatment problem gamblers. As such these findings speak to life stress as a risk factor that could be monitored by clinicians who have regular contact with their clients.

Although life stress did not predict any other outcome, it was positively correlated with both gambling severity and impact on quality of life at all four assessment points, suggesting a further association with negative treatment outcomes. Furthermore, as already discussed, life stress was positively correlated with depressed affect at all four assessment points and negatively correlated with self-efficacy later in treatment and with social support early in treatment. Taken together, these findings suggest that, throughout treatment, those who were most stressed were also those who were likely to have diminished recovery resources, increased depressed affect, and poorer treatment outcomes, particularly with respect to relapse. Tate and colleagues (2008) found similar results in that their sample of depressed substance abusers were more likely to relapse if they had high levels of life stress and low levels of abstinence self-efficacy. The current results are also quite consistent with the stress-vulnerability model of relapse proposed by Brown and colleagues (1995; 1990) which implies that life stress interacts with both protective factors (i.e., abstinence self-efficacy and social support in the current study) and risk factors (i.e., depressive symptomatology in the current study) to cause relapse.

From this, it appears that individuals in recovery who experience challenging life circumstances, but do not have sufficient resources to cope, will likely become overwhelmed and return to gambling as a way to escape from the emotional distress. Accordingly, these results support the hypotheses and suggest that life stress is a psychosocial stressor that has a hindering influence on treatment for PG, especially since it is so heavily associated with relapse.

Based on this strong evidence for a link between life stress and relapse, it was surprising that life stress measured at baseline was unable to predict subsequent relapse over the first or second month of treatment. It was not until after the first month of treatment that measurements of life stress gained their predictive ability. In this sample, average life stress scores were quite high at baseline and then significantly decreased over the first month of treatment. It may be that, at the early stage of treatment, all individuals were stressed to some degree (perhaps on account of PG symptoms or entering treatment itself), introducing noise and reducing the ability of life stress scores to predict future outcomes. However, once the first month had passed and gambling severity levels decreased, the levels of stress reduced for most individuals, leaving only those for whom life stress had not diminished to be at risk for subsequent relapse. Indeed, it could be that there is something different about these individuals who continued to report high levels of stress into the later portions of treatment. For example, one might speculate that these individuals were generally more susceptible to the effects of stress perhaps physiologically or in terms of personality style. If this were so, then life stress would be more likely to overwhelm their ability to cope and disrupt their recovery process. In support of this explanation, alcoholics assessed at baseline as being more

vulnerable to stress have been found to be more likely to relapse post-treatment (Brown et al., 1995). Thus, vulnerability to stress, rather than simply the presence of stress, may be more important as a risk factor for later relapse.

Sample Characteristics and Response to Treatment

The sample obtained in this study had approximately two times more men than women. This was generally representative of the larger population of problem gamblers in Canada who generally tend to be male (Wiebe et al., 2006). Ethnically, the sample mainly consisted of Caucasians, and therefore the study may have less generalizability to non-Caucasian gamblers. Although there was large variability in the age of participants, they tended to be middle aged, which is typical for treatment-seeking populations of gamblers (e.g., Jiménez-Murcia et al., 2007; Leblond et al., 2003). As well, approximately a third of the participants reported having experienced mental health problems in the past year, particularly depression, which is also typical for this population (Lorains, Cowlishaw, & Thomas, 2011). Overall, the demographics of the sample were quite similar to the samples employed by other PG studies.

For the most part, the participants in this study, at least those who completed treatment, seemed to improve during the course of the treatment program. Overall, scores on gambling severity, impact on quality of life, depressed affect, and life stress all significantly decreased over the four month period, suggesting that a beneficial process was occurring which may have been the result of treatment. Moreover, scores on social support, abstinence self-efficacy, and emotion-focused coping all significantly increased over the four months, suggesting that these individuals' recovery resources were

strengthened within the context of recovery and ongoing treatment. Interestingly, most of the change in these scores occurred during the first month of treatment, which suggests that clients experience the bulk of their personal change in the first month. However, without a control group, it may be that the described change in symptoms, resources, and stressors occurs in everyone one who decides to change their gambling behaviour, whether in treatment or not. Thus, the current study cannot comment directly on the effectiveness of treatment.

Regarding treatment outcomes, 17 participants (34%) reported not having gambled at any of the assessments, indicating that these individuals had remained abstinent for the duration of the study. This percentage was actually quite high in comparison to other studies that have examined relapse. For instance, one study found that only 16.5% of their participants remained abstinent (Petry et al, 2006) and another study found that only 8% remained abstinent (Hodgins & el-Guebaly, 2004). Thus, the result in the current study regarding abstinence and relapse may not be typical of problem gamblers in general, and instead may be specific to the target treatment centre.

Examining attrition, the current study had a total dropout rate of 40% during the first two months of treatment. The attrition generally occurred uniformly across the two months in that there was a similar amount of dropout in the first (22%) and second month (23% of the remaining sample). Previous studies have reported similar dropout rates, including Leblond and colleagues (2003) who had a total dropout rate of 38% and Maccallum and colleagues (2007) who had 25% dropout in the first month of treatment.

Treatment Implications

From the results of this study, certain ideas can be gleaned about how treatment or the client factors that are concomitant to treatment might be shaped to better meet the needs of individuals who are at risk for poor treatment outcomes. To begin with, individuals who lack self-efficacy when entering treatment seem to have poorer outcomes than those who had a higher sense of self-efficacy. Thus, individuals who are assessed upon entering into treatment as lacking confidence in their ability to remain abstinent may require some additional interventions in the service of preventing their relapse and dropout. In short, this is an early treatment marker that could help identify clients that will not benefit as much from the presenting treatment context. To help address this problem, treatment providers could actively try to promote clients' self-efficacy. Exactly how to do this remains a complex area of research but it may include focusing on clients' past successes, perhaps even in areas outside PG treatment. As well, upon identifying clients who have a low sense of self-efficacy, treatment providers may want to begin work on relapse prevention earlier than usual with these clients and spend more time bolstering the value of the treatment in the minds of these individuals.

On the topic of depressed affect, clients with high levels of this psychosocial stressor seemed to have poor treatment outcomes throughout the entire four month period. As such, it may be useful for treatment providers to monitor depressive symptoms throughout the entire treatment process, as this information may provide some markers about key difficulties that the clients are having and which will likely come to bear on their treatment for PG. Additionally, treatment providers may want to spend additional time addressing the actual symptoms of depression within the treatment for

PG. Indeed, for those individuals who appear to be clinically depressed, treatment could temporarily focus on addressing depressive symptoms while concerns related to gambling behaviour are still being monitored in the background and indirectly being addressed. In sum, if the individuals' depression is getting in the way of their recovery, then the depression likely needs to be addressed, especially since its presence may result in poor treatment outcomes (i.e., continued high gambling severity).

Life stress in this study was most predictive of poor treatment outcomes after the first month of treatment, particularly relapse. Consequently, as with depressive symptoms, treatment providers should pay special attention to the stressful circumstances that clients are dealing with since a great amount of stress may foreshadow a relapse. For clients who are under a lot of stress or who seem to be more susceptible to stress, interventions that focus on managing stress, such as teaching stress management techniques, may contribute greatly to their success in managing the urge to gamble. Teaching clients to better identify when they are stressed or to anticipate stressful situations so that the individuals can take extra precautionary measures may also be useful.

Finally, the results regarding the prediction of dropout point at the possibility that younger individuals may have different treatment needs than older individuals. To start, younger individuals were much more likely to drop out of treatment than older individuals. Thus, treatment providers may want to spend additional efforts to determine the needs of their younger clients and to ensure that goals are mutually established. As well, the study suggested that, for younger individuals, low self-efficacy and poor emotion-focused coping at baseline was an indicator of future dropout. This suggests that

it may be beneficial to spend more time in the early stages of treatment focusing on building up these younger individuals' confidence in themselves and abilities to express their emotions in adaptive ways. For older individuals, in contrast, the presence of life stress and the absence of depressed affect were both indicators of subsequent dropouts in this study. From this, it appears that treatment for older individuals should focus more on managing stressful life situations and monitoring and perhaps directly addressing their depressed affect.

Strengths and Limitations of the Study

Conducting a longitudinal study with a clinical sample, even if only for four months, poses a number of challenges. With both treatment attrition and study attrition to contend with, sample size using this design shrank rather quickly, which was especially problematic when beginning with an already smaller than desired sample. However, it is worth noting that much of the sample reduction that occurred was due to treatment attrition rather than directly due to study attrition per se. In fact, the only assessment point that suffered from study attrition was the final assessment, which was completed with the researcher outside of the treatment centre. Even among the six participants that did not complete the last questionnaire, it is likely that some had also dropped out of treatment and were refusing to participate since the study was affiliated with the treatment centre. This was the case for at least one of these participants. Thus, not all of the dropouts at this point were due to study attrition. Overall, it appeared that the data collection procedures were well designed and quite effective.

One likely reason for the relatively good participant retention overall was the fact that questionnaires were completed on-site at the treatment centre and administered directly by participants' counsellors. This greatly facilitated the tracking of participants over time since there was always a personal and regular contact with study participants, via their counsellors. As well, completing the questionnaires was convenient for the participants since they were able to complete them after designated treatment sessions. One downside to this, however, was that the researcher had less direct control over the recruitment practices and the administration of the questionnaires. For instance, three participants who remained in the study did not complete the second questionnaire during a lapse in the protocol for data collection when the treatment centre converted from a paper to a computer-based appointment schedule. (Fortunately, the issue was addressed quickly). Thus, there was a trade-off to having the treatment centre administer study questionnaires: on the one hand, there was strong sample retention, but on the other hand, there was less control over the actual administration of measures.

Another challenge for the current study was being able to accommodate the differing types and lengths of treatment that are offered by the treatment centre and to negotiate the potential range of treatment(s) as usual. To deal with this issue, the study utilized a design where treatment progress was measured using a framework of points in time, rather than being contingent on the course of each individual's treatment. This time-based design seemed to be the most practical since it allowed for treatment to occur "as usual" and for any new incoming referrals, regardless of their course of treatment, to participate. Both of these design features increased the external validity of this study. For example, to have followed the progress of individuals enrolled in a closed treatment

group would have excluded all of those individuals who engaged in other types of treatment or who did not remain in treatment long enough to be enrolled in a group, consequently limiting the generalizability of the study. By establishing the baseline at the same time that individuals were assessed for treatment, this study was able to accommodate the varying treatments offered at a given centre while simultaneously being able to generalize more broadly to the population of all individuals presenting for treatment.

A chief limitation of this study was the small sample size. In the original design, 60 participants were sought, which was expected to eventually be reduced by an anticipated 50% attrition rate (i.e. 30 individuals) at the final assessment time. The current study eventually recruited 50 participants due to a lower enrolment at the treatment centre than anticipated, and this sample was reduced by attrition to 24 by the fourth questionnaire. So, in the end, the study came close to meeting the original sample goal, but unfortunately still lacked the statistical power to detect small effects, and in many instances, even medium sized effects. For instance, a few of the analyses were not significant at the .05 level, although they approached significance and may have been significant if the sample had been larger. As well, this sample size was too small for use with regression analyses using five predictors. As it was, two of the hypothesized predictors were excluded from the analyses in an attempt to address this issue, but even then the sample was still too small for some of the statistical test. Accordingly, additional research using larger sample sizes is needed and can likely be created by drawing participants from more than one treatment centre or simply having a longer recruitment period.

The use of only a single treatment centre for the recruitment of the participants poses another limitation of the study. The intention of controlling for treatment setting was to increase the homogeneity of the sample, such that every participant received a relatively similar treatment in the same treatment and sociogeographic milieu. Furthermore, unless a multi-site study involves randomization and multiple on-site collaborators, one is faced with the problem of "nested data" during the analysis stage (i.e., having disparate samples within the sample, usually as a result of recruiting from multiple treatment centres) – and the current design strategically avoided this issue. Despite these efforts, however, controlling for treatment setting means that the generalizability of the current results to other populations is unknown. For instance, it may be that results found in this study apply only to participants attending this particular treatment centre or treatment approach or to the Windsor community, and they may not generalize to other treatment centres or even private practice settings. Thus, similar studies conducted at different treatment centres are needed before these results can be generalized to all individuals in treatment for PG.

Finally, although the longitudinal aspect of this study provides a clear sense of temporal direction for the results, without additional controls and randomization the relationships discovered in this study remain correlational in nature and thus the true direction of the effects remains unknown. However, this issue is inherent in the nature of research conducted on real world populations and is part and parcel of the complexity of health care research using clinical samples.

Directions for Future Research

Due to the extent of the problematic nature of both relapse and dropout, further research is required to assess the predictors of these negative treatment outcomes. The examination of client-based factors in the current study was particularly fruitful, suggesting that other client factors be examined as well (e.g., impulsivity, anxiety, anger, etc.). In addition, the PG literature has few, if any, studies that examine the role of abstinence self-efficacy, depressed affect, and life stress on the treatment process. Given the particularly promising results with these variables, further research is obviously required, not only for replication of findings, but also to gain a better understanding of exactly how these variables influence treatment. Models which examine mediating and moderating effects would be especially useful in this regard. In addition, since the current study only examined four month outcomes, future research is required to explore the influence of these variables on long-term treatment outcomes (e.g., six months, one year, etc.). The current study also suggested a possible influence of age on treatment, particularly that different age groups have different predictors of dropout. This intriguing relationship is a new finding that should be explored further, especially since it may suggest sub-groups which respond differently to certain treatment interventions.

Given the limitations of this study regarding sample size and recruitment, similar studies utilizing larger samples and different treatment centres are also required. With a larger sample size, any medium or small effects that were unable to be detected in the current study may be found. In addition, with larger samples, one can have more confidence in the findings since they are likely to be more generalizable and less likely to be specific to the sample utilized. Furthermore, studies that recruit from other treatment

centres would add to the generalizability of the current study's findings, especially if the results were replicated. Even studies that examine the effectiveness of different types of treatment could include assessments of client factors as this would aid in generalizing these results beyond this population of problem gamblers who receive treatment from the target treatment centre.

Future studies of this kind would also benefit from the inclusion of a randomized control group (e.g., waitlist or no–treatment) which would provide some insight into whether or not the recovery processes described by this study are influenced by treatment or are typical of all individuals who have decided to change their problematic gambling behaviour (whether in treatment or not). Of course, without a no-treatment control group, this study cannot speak to the effectiveness of treatment. However, the original purpose of this study was not to assess treatment efficacy, but rather to examine how different client factors change throughout treatment and interact with treatment outcomes. While a control group would have provided a greater understanding of the role of treatment in the recovery process, it was not practical for this study and is the logical next step in this program of research.

Conclusion

Since client factors account for a much larger proportion of variance in treatment outcomes than do treatment factors (22% as opposed to 8%; Wampold, 2001), the current study examined the role that various client factors play in the treatment process of problem gamblers. Specifically, social support, abstinence self-efficacy, readiness for change, motivation for change, and emotion-focused coping were hypothesized to have

resource-like treatment facilitating roles, whereas depressed affect and life stress were hypothesized to be psychosocial stressors with treatment hindering roles. With the exception of readiness for change and motivation for change, the results generally support the direction of hypotheses of the study. Moreover, the recovery resources were found to have most of their influence on treatment outcomes during the early stages of treatment, particularly in the first month. For the psychosocial stressors, depressed affect had an influence on treatment outcomes spanning four months, the bulk of the treatment process; whereas, in contrast, life stress was most influential during the later stages of treatment (after two months). As well, treatment attrition was heavily predicted by age. Indeed, younger individuals (under 45) were more likely to dropout, with a lack of recovery resources being the strongest predictor of their dropout. Older individuals (over 45), on the other hand, were more likely to remain in treatment, with the psychosocial stressors being most predictive of their dropout. Finally, it is worth mentioning that the proportion of variance in treatment outcomes explained by these client factors was quite substantial, reaching around 50% for two sets of analyses. Thus, the client factors explored in this study appear to be quite important when considering factors that influence PG treatment outcomes.

Overall, the results of this study have implications for the treatment process, especially regarding the improvement of treatment outcomes for PG and the reduction of treatment attrition. Furthermore, this research has focused on dynamic client factors that exist independently from, although are likely influenced by, treatment. As such, the role of these client factors, as examined in this study, may also be a fruitful area of exploration among psychotherapeutic treatments in general.

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APPENDIX A

The Social Support Questionnaire for Transactions (SSQT) and the Social Support Questionnaire for Satisfaction (SSQS) with the supportive transactions (Doeglas et al., 1996):

Directions: Please circle the responses which most closely match how you feel about your interactions with others.

Daily Emotional Support

1a. Does it ever happen to you that people are warm and affectionate towards you?

1	2	3	4
seldom or never	now and then	regularly	often

1b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

2a. Does it ever happen to you that people are friendly to you?

1	2	3	4
seldom or never	now and then	regularly	often

2b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

3a. Does it ever happen that people sympathize with you?

1	2	3	4
seldom or never	now and then	regularly	often

3b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

4a. Does it ever happen that you feel understood by people?

1	2	3	4
seldom or never	now and then	regularly	often

4b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

5a. Does it ever happen to you that people are willing to lend you a friendly ear?

1	2	3	4
seldom or never	now and then	regularly	often

5b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

Problem-Oriented Emotional Support

6a. Does it ever happen to you that people make you feel at ease?

1	2	3	4
seldom or never	now and then	regularly	often

6b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

7a. Does it ever happen to you that people give you a nudge in the right direction, as it were?

1	2	3	4
seldom or never	now and then	regularly	often

7b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

8a. Does it ever happen to you that people perk you up or cheer you up?

1	2	3	4
seldom or never	now and then	regularly	often

8b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

9a. Does it ever happen to you that people reassure you?

1	2	3	4
seldom or never	now and then	regularly	often

9b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

10a. Does it ever happen to you that people tell you not to lose courage?

1	2	3	4
seldom or never	now and then	regularly	often

10b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

11a. Does it ever happen to you that you can rely on other people?

1	2	3	4
seldom or never	now and then	regularly	often

11b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

Social Companionship

12a. Does it ever happen to you that people drop in for a (pleasant) visit?

1	2	3	4
seldom or never	now and then	regularly	often

12b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

13a. Does it ever happen to you that people just call you up or just chat with you?

1	2	3	4
seldom or never	now and then	regularly	often

13b Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

14a. Does it ever happen to you that you do things like shopping, walking, going to the movies, or sports, etc., together with other people?

1	2	3	4
seldom or never	now and then	regularly	often

14b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

15a. Does it ever happen to you that people ask you to join in?

1	2	3	4
seldom or never	now and then	regularly	often

15b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

16a. Does it ever happen to you that you go out for the day with other people just for the enjoyment of it?

1	2	3	4
seldom or never	now and then	regularly	often

16b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

Daily Instrumental Support

17a. Does it ever happen to you that people help you to do odd jobs?

1	2	3	4
seldom or never	now and then	regularly	often

17b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

18a. Does it ever happen to you that people lend you small things like, for example, sugar or a screwdriver or something like that?

1	2	3	4
seldom or never	now and then	regularly	often

18b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

19a. Does it ever happen to you that people lend you small amounts of money?

1	2	3	4
seldom or never	now and then	regularly	often

19b. Is this just as much frequency as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

20a. Does it ever happen that people give you information or advice?

1	2	3	4
seldom or never	now and then	regularly	often

20b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

Problem-Oriented Instrumental Support

21a. If necessary, do people help you if you call upon them to do so unexpectedly?

1	2	3	4
seldom or never	now and then	regularly	often

21b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

22a. If necessary, do people lend you valuable things?

1	2	3	4
seldom or never	now and then	regularly	often

22b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

23a. If necessary, do people help you, for example, when you are sick, when you have transport problems, or when you need them to accompany you somewhere?

1	2	3	4
seldom or never	now and then	regularly	often

23b. Is this just as much as you like?

1	2	3	4
much less than I like	less than I like	just as much as I like	more than I like

APPENDIX B

The Gambling Self-Efficacy Questionnaire (GSEQ; May, et al., 2003):

Directions: Please circle the percentage that corresponds with how confident you feel that you could resist gambling in each of these situations. 0% means no confidence in yourself and 100% means total confidence in yourself.

	Level of Confidence to Resist Gambling					
1. If I felt I had let myself down	0%	20%	40%	60%	80%	100%
2. If there were fights at home	0%	20%	40%	60%	80%	100%
3. If I had trouble sleeping	0%	20%	40%	60%	80%	100%
4. If I had an argument with a friend	0%	20%	40%	60%	80%	100%
5. If I felt confident and relaxed	0%	20%	40%	60%	80%	100%
6. If I was enjoying myself and wanted to feel even better	0%	20%	40%	60%	80%	100%
7. If I had lost money gambling one day and felt the urge to go win it back the next day .	0%	20%	40%	60%	80%	100%
8. If I were at a place where other people were gambling	0%	20%	40%	60%	80%	100%
9. If I wondered about my self-control over gambling and felt like testing it . . .	0%	20%	40%	60%	80%	100%
10. If I were angry at the way things had turned out	0%	20%	40%	60%	80%	100%
11. If I were relaxing with a good friend and wanted to have a good time gambling . . .	0%	20%	40%	60%	80%	100%
12. If my stomach felt like it was tied in knots .	0%	20%	40%	60%	80%	100%
13. If I were with friends “out on the town” and wanted to increase my enjoyment . . .	0%	20%	40%	60%	80%	100%

	Level of Confidence to Resist Gambling					
14. If I met a friend and he/she suggested we go gambling together	0%	20%	40%	60%	80%	100%
15. If I suddenly had an urge to gamble	0%	20%	40%	60%	80%	100%
16. If I wanted to prove to my self that I could bet a few more times without losing control . .	0%	20%	40%	60%	80%	100%

APPENDIX C

The University of Rhode Island Change Assessment (URICA) scale as adopted for gambling by Petry (2005b):

Directions: Please circle the number that corresponds with your level of agreement or disagreement with each of the following statements.

	Strongly Disagree				Strongly Agree
1. As far as I'm concerned, I don't have any problems with gambling that need changing	1	2	3	4	5
2. I think I might be ready for some self-improvement regarding my gambling	1	2	3	4	5
3. I am doing something about my gambling problems	1	2	3	4	5
4. It might be worthwhile to work on my problem with gambling	1	2	3	4	5
5. I'm not the one with a problem with gambling. It doesn't make much sense for me to be in this program	1	2	3	4	5
6. It worries me that I might slip back on a problem with gambling I have already changed, so I am here to seek help	1	2	3	4	5
7. I am finally doing some work on my problem with gambling	1	2	3	4	5
8. I've been thinking that I might want to change something about my gambling	1	2	3	4	5
9. At times my problem with gambling is difficult, but I'm working on it	1	2	3	4	5
10. Being here is pretty much of a waste of time for me because I don't really have a problem with gambling	1	2	3	4	5
11. I guess I have faults, but there's nothing that I really need to change about my gambling	1	2	3	4	5

	Strongly Disagree				Strongly Agree
12. I am really working hard to change my gambling	1	2	3	4	5
13. I have a problem with gambling and I really think I should work on it	1	2	3	4	5
14. I'm not following through with what I had already changed as well as I had hoped, and I'm here to prevent a relapse of a problem with gambling	1	2	3	4	5
15. Even though I'm not always successful in changing, I am at least working on my problem with gambling	1	2	3	4	5
16. I thought once I had resolved the problem with gambling I would be free of it, but sometimes I still find myself struggling with it	1	2	3	4	5
17. I have started working on my problem with gambling, but I would like help	1	2	3	4	5
18. Maybe this program will be able to help me with my gambling problem	1	2	3	4	5
19. I may need a boost right now to help me maintain the changes I've already made regarding my gambling	1	2	3	4	5
20. I may be part of the problem, but I don't really think I am	1	2	3	4	5
21. I hope that someone here will have some good advice for me regarding gambling	1	2	3	4	5
22. Anyone can talk about changing their gambling; I'm actually doing something about it	1	2	3	4	5
23. All this talk about psychology is boring. Why can't people just forget about their problems?	1	2	3	4	5
24. I'm here to prevent myself from having a relapse of my problem with gambling	1	2	3	4	5
25. It is frustrating, but I feel I might be having a recurrence of a gambling problem I thought I had resolved	1	2	3	4	5

	Strongly Disagree				Strongly Agree
26. I have worries but so does the next guy. Why spend time thinking about them?	1	2	3	4	5
27. I am actively working on my problem with gambling	1	2	3	4	5
28. I would rather cope with my faults than try to change them	1	2	3	4	5
29. After all I had done to try and change my problems with gambling, every now and again it comes back to haunt me	1	2	3	4	5

APPENDIX D

The Reasons for Quitting (RFQ; McBride, et al., 1994) scale, as adopted for use with individuals with problem gambling:

Directions: Please circle the number that corresponds with your level of belief in the following reasons to quit gambling.

	Not at all true				Extremely true
Emotional Concern					
So that I can stop worrying about my gambling problem	0	1	2	3	4
Because excessive gambling does not fit into my self-image.	0	1	2	3	4
Because my mood will be much more positive.	0	1	2	3	4
Because I don't like the way I feel after losing	0	1	2	3	4
Self Control					
To show myself that I can quit if I really want to	0	1	2	3	4
To prove to myself that I am not addicted to gambling.	0	1	2	3	4
Because I will like myself better if I quit	0	1	2	3	4
So I can feel in control of my life	0	1	2	3	4
Social Influences					
Because my spouse, children, or other person I am close to will stop nagging me if I quit	0	1	2	3	4
So that I can get a lot of praise from people I am close to	0	1	2	3	4
Because someone has given me an ultimatum	0	1	2	3	4
Because people I am close to will be upset with me if I don't quit.	0	1	2	3	4

	Not at all true				Extremely true
Financial Concern					
Because I can't afford to lose any more money	0	1	2	3	4
Because I would prefer to spend my money on something other than gambling	0	1	2	3	4
Because deep down I know I will not win the money back	0	1	2	3	4
Because I have known or heard of other people who have suffered serious financial loss from their gambling .	0	1	2	3	4

APPENDIX E

The Emotion Approach Coping (EAC) scale (Stanton et al., 2000):

Directions: Please read each statement below and indicate how often you do each task using the provided scale.

	I usually don't do this at all			I usually do this a lot
1. I take time to figure out what I'm really feeling	1	2	3	4
2. I delve into my feelings to get a thorough understanding of them	1	2	3	4
3. I realize that my feelings are valid and important	1	2	3	4
4. I acknowledge my emotions	1	2	3	4
5. I let my feelings come out freely	1	2	3	4
6. I take time to express my emotions	1	2	3	4
7. I allow myself to express my emotions . .	1	2	3	4
8. I feel free to express my emotions	1	2	3	4

APPENDIX F

The Life Experiences Survey (LES; Sarason et al., 1978):

Directions: Listed below are a number of events which sometimes bring out change in the lives of those who experience them and which require social readjustment. *Please circle those events you have experienced in the past 30 days.*
Also, for each item checked below, *please indicate the extent to which you viewed the event as having either a positive or negative impact on your life* at the time the event occurred. A rating of -3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating of +3 would indicate an extremely positive impact.

	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
1. Marriage	-3	-2	-1	0	+1	+2	+3
2. Detention in jail or comparable institution	-3	-2	-1	0	+1	+2	+3
3. Death of spouse	-3	-2	-1	0	+1	+2	+3
4. Major change in sleeping habits (much more or much less sleep)	-3	-2	-1	0	+1	+2	+3
5. Death of a close family member:							
a. mother	-3	-2	-1	0	+1	+2	+3
b. father	-3	-2	-1	0	+1	+2	+3
c. brother	-3	-2	-1	0	+1	+2	+3
d. sister	-3	-2	-1	0	+1	+2	+3
e. grandmother	-3	-2	-1	0	+1	+2	+3
f. grandfather	-3	-2	-1	0	+1	+2	+3
g. other (specify)	-3	-2	-1	0	+1	+2	+3
6. Major change in eating habits (much more or much less food intake) . .	-3	-2	-1	0	+1	+2	+3
7. Foreclosure on mortgage or loan .	-3	-2	-1	0	+1	+2	+3
8. Death of close friend	-3	-2	-1	0	+1	+2	+3
9. Outstanding personal achievement	-3	-2	-1	0	+1	+2	+3

	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
10. Minor law violations (traffic tickets, disturbing peace, etc.)	-3	-2	-1	0	+1	+2	+3
11. *Male:* Wife/girlfriend's pregnancy	-3	-2	-1	0	+1	+2	+3
12. *Female:* Pregnancy	-3	-2	-1	0	+1	+2	+3
13. Changed work situation (different work responsibility, major change in working conditions, working hours, etc.)	-3	-2	-1	0	+1	+2	+3
14. New job	-3	-2	-1	0	+1	+2	+3
15. Serious illness or injury of close family member:							
a. mother	-3	-2	-1	0	+1	+2	+3
b. father	-3	-2	-1	0	+1	+2	+3
c. brother	-3	-2	-1	0	+1	+2	+3
d. sister	-3	-2	-1	0	+1	+2	+3
e. grandmother	-3	-2	-1	0	+1	+2	+3
f. grandfather	-3	-2	-1	0	+1	+2	+3
g. spouse	-3	-2	-1	0	+1	+2	+3
h. other (specify)	-3	-2	-1	0	+1	+2	+3
16. Sexual difficulties	-3	-2	-1	0	+1	+2	+3
17. Trouble with employer (in danger of losing job, being suspended, demoted, etc.)	-3	-2	-1	0	+1	+2	+3
18. Trouble with in-laws	-3	-2	-1	0	+1	+2	+3
19. Major change in financial status (a lot better off or a lot worse off) .	-3	-2	-1	0	+1	+2	+3
20. Major change in closeness of family members (increased or decreased closeness)	-3	-2	-1	0	+1	+2	+3

	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
21. Gaining a new family member (through birth, adoption, family member moving in, etc.)	-3	-2	-1	0	+1	+2	+3
22. Change of residence	-3	-2	-1	0	+1	+2	+3
23. Marital separation from mate (due to conflict)	-3	-2	-1	0	+1	+2	+3
24. Major change in church activities (increased or decreased attendance)	-3	-2	-1	0	+1	+2	+3
25. Marital reconciliation with mate .	-3	-2	-1	0	+1	+2	+3
26. Major change in number of arguments with spouse (a lot more or a lot less arguments)	-3	-2	-1	0	+1	+2	+3
27. *Married male:* Change in wife's work outside the home (beginning work, ceasing work, changing to a new job, etc.)	-3	-2	-1	0	+1	+2	+3
28. *Married female:* Change in husband's work outside the home (loss of job, beginning new job, retirement, etc.)	-3	-2	-1	0	+1	+2	+3
29. Major change in usual type and/or amount of recreation	-3	-2	-1	0	+1	+2	+3
30. Borrowing more than $30,000 (buying home, business, etc.) . .	-3	-2	-1	0	+1	+2	+3
31. Borrowing less than $30,000 (buying car, getting school loan, etc.)	-3	-2	-1	0	+1	+2	+3
32. Being fired from job	-3	-2	-1	0	+1	+2	+3
33. *Male:* Wife/girlfriend having abortion.	-3	-2	-1	0	+1	+2	+3
34. *Female:* Having abortion	-3	-2	-1	0	+1	+2	+3
35. Major personal illness or injury .	-3	-2	-1	0	+1	+2	+3

	extremely negative	moderately negative	somewhat negative	no impact	slightly positive	moderately positive	extremely positive
36. Major change in social activities, e.g., parties, movies, visiting (increased or decreased participation)	-3	-2	-1	0	+1	+2	+3
37. Major change in living conditions of family (building new home, remodeling, deterioration of home, neighbourhood, etc.) . .	-3	-2	-1	0	+1	+2	+3
38. Divorce	-3	-2	-1	0	+1	+2	+3
39. Serious injury or illness of close friend	-3	-2	-1	0	+1	+2	+3
40. Retirement from work	-3	-2	-1	0	+1	+2	+3
41. Son or daughter leaving home (due to marriage, college, etc.) . . .	-3	-2	-1	0	+1	+2	+3
42. Ending of formal schooling . . .	-3	-2	-1	0	+1	+2	+3
43. Separation from spouse (due to work, travel, etc.)	-3	-2	-1	0	+1	+2	+3
44. Engagement	-3	-2	-1	0	+1	+2	+3
45. Breaking up with boyfriend/ girlfriend	-3	-2	-1	0	+1	+2	+3
46. Leaving home for the first time .	-3	-2	-1	0	+1	+2	+3
47. Reconciliation with boyfriend/ girlfriend	-3	-2	-1	0	+1	+2	+3

APPENDIX G

The Problem Gambling Severity Index (PGSI; Wynne, 2003):

Directions: Please circle the number that corresponds with the response that best characterizes your gambling behaviour.

1. Thinking about the past 30 days, how often have you bet more than you could really afford to lose? Would you say:

1	2	3	4
Never	Sometimes	Most of the time	Almost always

2. Thinking about the past 30 days, how often have you needed to gamble larger amounts of money to get the same feeling of excitement?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

3. Thinking about the past 30 days, how often have you gone back another day to try to win back the money you lost?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

4. Thinking about the past 30 days, how often have you borrowed money or sold anything to get money to gamble?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

5. Thinking about the past 30 days, how often have you felt that you might have a problem with gambling?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

6. Thinking about the past 30 days, how often have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

7. Thinking about the past 30 days, how often have you felt guilty about the way you gamble, or what happens when you gamble?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

8. Thinking about the past 30 days, how often has your gambling caused you any health problems, including stress or anxiety?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

9. Thinking about the past 30 days, how often has your gambling caused any financial problems for you or your household?

1	2	3	4
Never	Sometimes	Most of the time	Almost always

APPENDIX H

Relapse Measure

Directions: Please answer the following questions about your gambling behaviour.

1. Which of the following best represents the current goal that you and your counsellor have agreed on for
your recovery?

_____ Complete abstinence from all gambling

_____ Controlled gambling

_____ Gambling only under certain circumstances

_____ Don't know yet or unsure

2. Thinking about the past 30 days, how many times have you gambled in each of the following ways?

_____ slot machines

_____ card games (poker, black jack, etc.)

_____ casino table games

_____ internet gambling

_____ scratch or lottery tickets

_____ betting on horse or dog races

_____ betting on sports

_____ betting with friends

_____ bingo

_____ other

3. Whether you have gambled or not, do you consider your amount of gambling in the last month to be
acceptable given your current recovery goal?

1	2	3	4
completely acceptable	somewhat acceptable	not very acceptable	not at all acceptable

4. Whether you have gambled or not, does your primary counsellor consider your amount of gambling in
the last month to be acceptable given your current recovery goal?

1	2	3	4
completely acceptable	somewhat acceptable	not very acceptable	not at all acceptable

5. Thinking about the past 30 days, how many times have you had an urge to gamble? (An urge to gamble
doesn't necessarily mean you did gamble, it could just be that you had a strong desire to go.)

_____

6. Thinking about the 30 days, how many times have you attended each of the following types of treatment offered by PGS?

_____ Individual (one on one) sessions

_____ Ante-up group meetings

_____ 12-week treatment group meetings

_____ Days of residential treatment

_____ +55 treatment group meetings

_____ Aftercare meetings

APPENDIX I

The Work and Social Adjustment Scale (WASA; Mundt et al., 2002):

Directions: Please rate each of the following questions on the 0 to 8 scale provided: 0 indicates no impairment at all and 8 indicates very severe impairment.

1. Because of my gambling problem, my ability to work is impaired.

0 1 2 3 4 5 6 7 8

No impairment Severely impaired

2. Because of my gambling problem, my home management (cleaning, tidying, shopping, cooking, looking after home and children, paying bills) is impaired.

0 1 2 3 4 5 6 7 8

No impairment Severely impaired

3. Because of my gambling problem, my social leisure activities (with other people, such as parties, bars, clubs, outings, visits, dating, home entertainment) are impaired.

0 1 2 3 4 5 6 7 8

No impairment Severely impaired

4. Because of my gambling problem, my private leisure activities (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired.

0 1 2 3 4 5 6 7 8

No impairment Severely impaired

5. Because of my gambling problem, my ability to form and maintain close relationships with others, including those I live with, is impaired.

0 1 2 3 4 5 6 7 8

No impairment Severely impaired

APPENDIX J

Demographic questions:

1. Age: _____

2. Sex: _____

3. Please circle the ethnicity that best describes you:

European/White African/Black East Asian South Asian Middle Eastern

Aboriginal Latin American Mixed

4. How many weeks have you spent in treatment for problem gambling prior to the treatment program you are currently involved in?

_____

5. Do you currently attend Gamblers Anonymous (GA) meetings?

yes no

6. If you answered yes to question 5, for how many weeks have you been attending GA?

_____

7. Please list any other substances that you abuse/use problematically, such as alcohol, nicotine, or any street drugs (i.e. marijuana, cocaine, etc.):

_____

(Reminder: This information will be used for research purposes only)

8. Are you currently receiving treatment for any other addiction like behaviours (e.g., alcoholism, or anything else indicated in #7)?

yes no

9. If you answered yes to question 8, please list which ones:

_____

10. Have you experienced any mental health problems in the past year?

yes no

11. If you answered yes to question 10, please describe these problems:

_____

12. If you answered yes to question 10, did you seek help for any of these problems?

yes no

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