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CERTIFICATION OF INSTITUTIONAL ETHICS REVIEW

This is to certify that the Conjoint Faculties Research Ethics Board at the University of Calgary has examined the following research proposal and found the proposed research involving human subjects to be in accordance with University of Calgary Guidelines and the Tri-Council Policy Statement on *"Ethical Conduct in Research Using Human Subjects"*. This form and accompanying letter constitute the Certification of Institutional Ethics Review.

File no:	**4652**
Applicant(s):	**Nicole E. Peden**
Department:	**Psychology**
Project Title:	**The Efficacy of Individual Community Reinforcement and Family Training (CRAFT) with Concerned Significant Others of Problem Gamblers**
Sponsor (if applicable):	

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the project and purposes described in the application.
2. Any modifications to the authorized protocol must be submitted to the Chair, Conjoint Faculties Research Ethics Board for approval.
3. A progress report must be submitted 12 months from the date of this Certification, and should provide the expected completion date for the project.
4. Written notification must be sent to the Board when the project is complete or terminated.

_____
Janice Dickin, Ph.D, LLB,
Chair
Conjoint Faculties Research Ethics Board

JAN 2 5 2006
Date:

Distribution: (1) Applicant, (2) Supervisor (if applicable), (3) Chair, Department/Faculty Research Ethics Committee, (4) Sponsor, (5) Conjoint Faculties Research Ethics Board (6) Research Services.

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The Efficacy of Individual Community Reinforcement and Family Training (CRAFT) with

Concerned Significant Others of Problem Gamblers

by

Nicole Elizabeth Peden

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE

DEGREE OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF PSYCHOLOGY

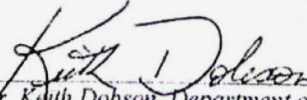CALGARY, ALBERTA

SEPTEMBER 2011

UNIVERSITY OF CALGARY

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Efficacy of Individual Community Reinforcement and Family Training (CRAFT) with Concerned Significant Others of Problem Gamblers" submitted by Nicole Elizabeth Peden in partial fulfilment of the requirements of the degree of Doctor of Philosophy.
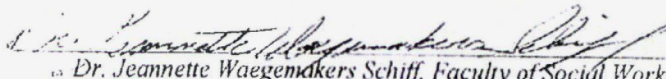
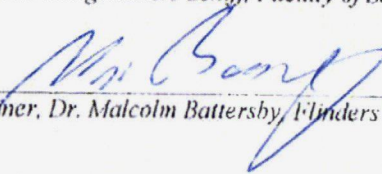Supervisor, Dr. David C. Hodgins, Department of Psychology

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Abstract

Treatment options for concerned significant others (CSOs) of problem gamblers are limited and available treatments focus exclusively on the CSOs distress. Community Reinforcement and Family Training (CRAFT) is a comprehensive treatment program for CSO's of substance abusers that has been shown to reduce CSO distress in addition to the substance abusers alcohol or drug behaviour. CRAFT capitalizes on the well-documented fact that family members have considerable influence on the substance abusers decision to enter treatment. The present study modified the CRAFT approach into an individual treatment format for CSO's of problem gamblers and examined its efficacy in comparison to a CRAFT self-help workbook in a randomized clinical trial. No statistical differences were found between the groups; however effect sizes indicate that participants who received the CRAFT individual intervention seemed to have better outcomes compared to those who received the CRAFT workbook in terms of consequences of gambling, dollars gambled by the gambler, and several areas of CSO functioning. No differences between groups were found for gambler treatment entry rates and days gambled by the gambler over the follow-up period in terms of effect sizes. The results provide limited support for the CRAFT approach delivered in an individual treatment format with CSOs of treatment resistant problem gamblers. Further research, with larger sample sizes, are needed to gauge the efficacy of the CRAFT individual intervention compared to the CRAFT workbook.

Acknowledgements

Dedicated to my kids, Quinn and Cooper
Always follow your dreams!

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Concerned Significant Others of Problem Gamblers

Pathological gambling, classified as an impulse control disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), is defined as "persistent and recurrent maladaptive gambling behaviour that disrupts personal, family or vocational pursuits" (APA, 2000, p. 671). Prevalence rates for pathological gambling are estimated to range from 0.4% to 3.4% in adults and increase with the availability of gambling, with some areas reporting rates as high as 7% (e.g., Australia) (APA, 2000). Problem gambling has been defined as "gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or the community" (Ferris & Wynne, 2001, p. 2). Using this definition of problem gambling it was estimated that approximately 5% of the adult Canadian population are at risk of developing a gambling problem or are already dealing with a gambling problem. The Canadian Public Health Association noted that gambling is a public health issue and encouraged researchers and health care practitioners to reduce the negative effects of gambling on individuals, families and communities (Korn & Skinner, 2000).

The negative consequences incurred from gambling is estimated to affect eight to ten individuals in the gambler's life (Lobsinger & Beckett, 1996) and has been reported to affect as many as 15 (Leisure & Custer, 1984). Concerned significant others (CSOs) of

problem gamblers[1] typically include individuals who are close with the problem gambler, such as spouses, common-law partners, children, parents, siblings, and close friends, and may include the extended family (cousins, brother/sister-in-laws, grandparents) as well as co-workers. CSOs can be impacted in numerous areas as a result of the problem gambling behaviour including financial and legal consequences, interpersonal and relationship difficulties, and significant psychological distress (Abbott, Cramer, & Sherrets, 1995; Petry, 2005; Shaw, Forbush, Schlinder, Rosenman, & Black, 2007; McComb, Lee, & Sprenkle, 2009).

In a survey of Gam-Anon members, CSO's reported that they experienced severe financial consequences due to the gambling including use of household and family funds, personal savings (e.g., retirement savings), and borrowing money either legally (including credit card debt, bank loans, additional mortgages) or illegally (debt with bookies or loan sharks). They also noted legal difficulties related to the gambling such as dealing with creditors (Lorenz & Shuttleworth, 1983).

In addition to the profound financial losses, CSO's have reported marital problems, family concerns, interpersonal difficulties (Hodgins, Shead, & Makarchuk, 2007; Crisp, Thomas, Jackson, & Thomason, 2001), somatic complaints (Lorenz & Yaffee, 1988, 1989)

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[1] Although all CSO's in the current study identified their gambler as "pathological" according to the DSM-IV pathological gambling criteria (APA, 2000), the term "problem gambler" will be used, as the reports of gambling behaviour are unverified by the gambler themselves.

and psychological distress (such as anger/resentment, guilt, anxiety, depression, isolation, and suicidal ideation) (Lorenz & Shuttleworth, 1983; Hodgins et al., 2007).

Abuse has also been reported at alarming rates. In a survey of Gam-Anon members, almost half of the spouses of pathological gamblers reported that the gambler had been emotionally, verbally or physically abusive toward them (Lorenz & Shuttleworth, 1983). In a more recent study where problem gamblers were recruited through news paper advertisements, 25% admitted to perpetrating severe violence toward their significant other ' (Korman, Collins, Dutton, Dhayananthan, Littman-Sharp, & Skinner, 2008). It is not surprising that problem gambling has been established as a risk factor for partner violence (Muelleman, DenOtter, Wadman, Tran, & Anderson, 2002; Liao, 2008). In fact, in a case study of ten communities where legalized casino gambling was introduced, Gerstein et al. (1999) noted an increase in the reports of family violence in six out of ten.

CSOs of problem gamblers are in need of clinical attention for several reasons. First, as described above, their lives are often financially impacted by the problem gambler's behaviour and they suffer significant psychological distress and psychosocial difficulties as a result. Second, individuals whom are close with the problem gambler are in a powerful position to hinder or hamper recovery initiatives. As with substance abusers, family influence is often cited by problem gamblers as an important factor in the ultimate decision to quit or reduce gambling behaviour as well as in maintaining abstinence (Hodgins & el-Guebaly, 2004; Hodgins, Makarchuk, el-Guebaly, & Peden, 2002). Conversely, many CSO's of problem gamblers may unintentionally contribute to the gambling problem, typically through enabling behaviours (e.g., they may join the gambler in gambling activities or provide financial bail-outs). Relationship problems have also been

cited by problem gamblers as a reason that contributed to relapse (e.g., escaping a nagging spouse). CSOs of problem gamblers have not received the research or clinical attention that is warranted given the distress they experience and their important role in recovery.

Another possible benefit of engaging CSOs in treatment is to access those problem gamblers who are resistant to seeking treatment and possibly influence their recovery initiatives. It has been determined that almost 97% of problem gamblers have never sought formal treatment for their gambling problems (National Gambling Impact Study Commission, 1999; Cunningham, 2005). Moreover, Volberg (1998) and others (e.g., Rush, Moxam, & Urbanoski, 2002) have determined that the majority of pathological gamblers are not utilizing treatment services, leaving CSOs to face the consequences of the gambling behaviour. Indeed, CSOs of problem gamblers are often the first to seek help, for themselves and for the gambler, as evidenced by research on gambling help-lines. In Canada, the United States, the United Kingdom and New Zealand, gambling help-lines are utilized by concerned individuals of problem gamblers in the range of 24-60% (Cuadrado, 1999; Griffiths, Scarfe, & Bellringer, 1999; AADAC, 2001; Potenza, Steinberg, McLaughlin, Wu, Rounsaville, & O'Malley, 2001; GamCare Care Services Report, 2008).

Locally, 24% of the calls to the Alberta provincial gambling help-line are from family members and friends of problem gamblers (Distress Centre, 2001); however treatment options are limited. The gambling help-line offers three alternatives to CSOs of problem gamblers: 1) Gam-Anon (a 12-step group that meets once a week), 2) an AADAC counseling group (a 4-week group intended for CSOs of individuals experiencing problems with alcohol, drugs and/or gambling), or 3) a self-help workbook based on the Community Reinforcement and Family Training (CRAFT) approach (Makarchuk & Hodgins, 2001).

There is also opportunity for some individuals to seek individual counseling through venues such as their Employee Assistance Program. Of these options, only the self-help workbook has been examined empirically.

The self-help workbook (Makarchuk & Hodgins, 2001) is based on Community Reinforcement and Family Training (CRAFT), an intervention first developed for use with CSOs of treatment resistant alcoholics (Sisson & Azrin, 1986). The original approach was implemented as a face-to-face intervention delivered in approximately eight sessions. CRAFT was revised into a self-help format for CSOs of problem gamblers and successfully pilot tested (Makarchuk, Hodgins, & Peden, 2002) and was also used in a large randomized controlled trial (Hodgins, Toneatto, Makarchuk, Skinner, & Vincent, 2007). In both studies (discussed in detail later), CSOs who received the CRAFT materials fared better than CSOs in the control group, reporting decreased gambling by the problem gambler and more satisfaction with the intervention. However, the groups were equivalent on the number of gambling related consequences, CSO functioning and relationship functioning, as well as gambler treatment engagement rates. Importantly, many CSOs reported the need for more support in implementing the strategies and procedures, such as how to suggest treatment in an effective manner. Further, the authors concluded that CRAFT delivered in its original format (i.e., individual face-to-face) may increase the efficacy of this approach (Hodgins, Toneatto, et al., 2007). In light of the expressed need for more guidance and support in using the CRAFT approach, the current study modified and delivered the CRAFT intervention in an individual face-to-face format to CSOs of problem gamblers.

Treatment Options for CSOs of Substance Abusers

Problem gambling has often been conceptualized, researched, and treated as an addiction, and, therefore many of the treatments for problem gamblers and their CSOs have been adapted from the substance abuse field. One of the first treatment options available to CSOs of individuals with substance abuse problems were 12-step programs, such as Al-Anon (Al-Anon Family Groups, 1984) or Nar-Anon (Narcotics Anonymous, 1993). These supportive groups share goals similar to their affiliated programs (e.g. Alcoholics Anonymous, Narcotics Anonymous) and the belief that an addiction is an illness. The CSO is presumed powerless over the addiction, and is therefore encouraged to detach from the problem and focus on helping themselves. Although improvements in CSO functioning were noted, studies utilizing a 12-step approach with CSOs of substance abusers indicate that there is little change in the addict's behaviour or his/her decision to enter treatment (Dittrick & Trapold, 1984; Miller, Meyers, & Tonigan, 1999).

Counter to the 12-Step approach, the well-known Johnson Institute Intervention (Johnson, 1986) assumes a confrontational style where the CSO and other supportive individuals in the substance abuser's life plan a surprise intervention. The CSO attempts to help the substance abuser acknowledge his/her addiction and ultimately enter treatment. This intervention includes conveying to the substance abuser the negative effects endured by the CSO as a result of the addictive behaviour and a plan to engage the substance abuser in treatment. The Johnson Institute Intervention approach has proven successful at engaging the substance abuser into treatment when CSOs are able to carry out the intervention. However, studies have shown that less than 30% of CSOs are actually able to execute this approach (e.g., Liepman, Nirenberg, & Begin, 1989). Many CSOs feel the

confrontational nature will be detrimental to their relationship with the substance abuser or report that they are uncomfortable in carrying out this style of intervention. As well, there is some evidence that relapse rates for substance abuse may be higher when treatment was initiated through the confrontational approach (Loneck, Garrett, & Banks, 1996a).

As seen above, treatment interventions for CSOs of substance abusers have typically focused on either alleviating distress of the CSO (12-step programs) or engaging the abuser into treatment (Johnson, 1986). The CRAFT approach unites these two goals and aims to influence the substance abusers' behaviour as well as help the CSO with their personal distress.

CRAFT's Theoretical Rationale

The principles of CRAFT are derived from the Community Reinforcement Approach which espouses elements of the family system perspective and is grounded in Skinner's *behaviour theory* (Azrin, 1976). A major tenet of CRAFT is the notion that the substance abuser's environment, that is, his/her social network, can facilitate as well as impede the recovery process, and is therefore instrumental in the treatment of individuals with substance abuse problems. Since CSOs are in frequent contact with the substance abuser, and tend to be emotionally invested, they can be crucial in helping the substance abuser change his/her abusing behaviour. Research has shown that treatment of the substance abusers behaviour proves most successful when involving the family system (Copello & Orford, 2002) and there is indication that conducting family therapy with one individual may be just as effective as conjoint family therapy that involves several or all family members (e.g., Szapocznik, Kurtines, Foote, Perez-Vidal, & Hervis, 1986).

CRAFT utilizes the principles of operant conditioning, specifically, those of reinforcement. The CSO learns behavioural skills designed to influence the abusers' behaviour by reinforcing clean behaviours (i.e., drug/alcohol free behaviours) and withholding reinforcement for abusing behaviours (i.e., drug/alcohol use). As well, avoiding negative reinforcement is encouraged. For example, family members often enable the substance abusing behaviour by removing natural consequences that may act as deterrents to substance use (e.g., calling in sick for the alcoholic who is too sick to work the day after drinking). CSOs are taught to let natural consequences occur and how to influence environmental contingencies in order to provide/withhold reinforcement for decreased substance use (Smith & Meyers, 2004; Smith, Meyers, & Milford, 2003; Meyers, Apodaca, Flicker, & Slesnick, 2002).

Equally important to the CRAFT approach is the psychosocial welfare of the CSO. The stress of dealing with a substance abuser often lead CSOs to seek help for their own distress, and many could benefit from taking better care of themselves and becoming more independent from the substance abuser (Smith & Meyers, 2004). The CRAFT approach teaches CSOs that personal lifestyle changes are necessary in order to affect change in their own lives, as well as the substance abusers. The notion that the CSOs distress can interfere with their ability to positively influence the substance abusers behaviour has been well documented and dates back almost 40 years (e.g., Cheek, Frank, Laucius, & Burtle, 1971). In other words, it is difficult for CSOs to reward non-using behaviours when they are personally distressed themselves. Regardless of whether the substance abusers behaviour changes, the CSOs personal functioning is worthy of clinical attention. As noted earlier,

CSO's not only experience financial consequences due to their significant others gambling, but suffer interpersonal, relational and psychological difficulties (McComb et al., 2009).

The theories underpinning CRAFT are similar to other therapies considered to be unilateral family therapies (Thomas & Santa, 1982) wherein one or more family members, other than the substance abuser, are involved in therapy. It is believed that family members, while not responsible for the abusing behaviour, are influential in engaging the substance abuser into treatment and in fact, should be involved (Garret et al., 1999; Barber & Crisp, 1994; Thomas & Ager, 1993). Family members learn coping skills and other techniques to influence the substance abusers behaviour and ultimately increase their motivation to enter treatment. The developers of CRAFT assert that the unique components of CRAFT are the inclusion of the functional analyses of behaviours, the use of positive reinforcers and time outs from positive reinforcers, and the emphasis on the CSOs personal well-being (Smith & Meyers, 2004). The CRAFT intervention also includes motivational techniques, communication training, and domestic violence precautions. Smith and Meyers (2004) assert that the rate of treatment engagement is higher for CRAFT than for unilateral family therapies alone.

Reflecting the above theoretical notations, the CRAFT approach was designed with three main goals: 1) alleviate the CSO's distress, 2) motivate the substance abuser to initiate treatment, and 3) decrease the substance abuser's substance use. The general approach is non-confrontational, directive, and supportive in nature. It is "menu-driven", meaning CSOs are taught only those techniques they need to complete each component. For example, some individuals may need only a review of positive communication skills;

whereas others may need sessions of role playing to acquire the communication skills needed to implement the procedures.

CRAFT's Empirical Support

In addition to CRAFT's strong theoretical foundation, it has favorable empirical support. CRAFT has been ranked in several meta-analyses as one of the most effective treatments for substance abusers (Holder, Longabaugh, Miller, & Rubonis, 1991; Miller, Tonigan, & Longabaugh, 1995; Finney & Monahan, 1996; Miller & Wilbourne, 2002) and has empirical support across a number of settings with ethnically diverse populations (Smith & Meyers, 2004). CRAFT has also been successfully employed with CSOs of treatment resistant substance abusers (alcoholics and drug users) as well as problem gamblers (Makarchuk et al., 2002).

To date, there have been a limited number of studies utilizing the CRAFT approach. A computer literature search was conducted on several databases including PsycINFO, PsycARTICLES, PsycBooks, and MEDLINE. Key search terms included: CRAFT, treatment, treatment resistant, CSO, family, substance use, alcohol, drug, problem gambling, and pathological gambling. There have been six studies which used CRAFT with CSOs of substance abusers all of which delivered CRAFT in an individual face-to-face format. In the studies that enlisted CSOs of problem gamblers, the CRAFT techniques were revised into a self-help workbook (Makarchuk & Hodgins, 2001). These studies will be described in turn.

CRAFT and CSOs of substance abusers.

The first empirical study using the CRAFT approach was conducted by Sisson and Azrin (1986) who randomly assigned 12 CSOs of male alcohol abusers to receive the CRAFT intervention or a Traditional intervention (individual educational sessions and referral to Al-Anon). Overall, CSOs who received the CRAFT intervention fared better than CSOs in the Traditional treatment approach: alcohol abusers whose CSO was in the CRAFT condition were more likely to initiate treatment (6 of 7 alcohol abusers initiated treatment compared to none in the traditional treatment) and reduce their drinking both prior to and during treatment. The fact that individuals in the CRAFT condition averaged 7.2 sessions while those in Traditional treatment averaged 3.5 sessions is a concern to the internal validity of this study. In addition, the small sample size and lack of information on CSO functioning limit the results. However, this initial trial demonstrated promising results for the CRAFT approach.

To further investigate the efficacy of the CRAFT approach, and to counter some of the above noted limitations, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) funded a large clinical trial (Miller et al., 1999) which randomized 130 CSOs to one of three approaches: CRAFT Intervention, Al-Anon Facilitation, or Johnson Institute Intervention. A primary outcome measure was treatment engagement of the substance abuser, defined as completion of intake assessment and one session of therapy. CSOs who received the CRAFT intervention were more likely to successfully engage their alcohol abuser into treatment (64%) than the other two conditions (30% Johnson Institute Intervention and 13% Al-Anon intervention). In terms of CSO functioning and relationship with the alcohol abuser, all groups showed an equally significant improvement in

depression, anger, family cohesion and family conflict, as well as relationship happiness. Finally, this study found that CSOs completed only 53% of Johnson Institute Intervention sessions compared to 89% and 95% of CRAFT and Al-Anon sessions, respectively. They also found that 70% of those who received the Johnson Institute Intervention condition did not carry out the intervention which reflected many individuals apprehension with the Johnson Institute's confrontational approach. However, of those who did complete the planned intervention, most drinkers (75%) entered treatment.

The efficacy of the CRAFT approach was examined with CSOs of drug abusers (mostly cocaine and heroine) where CSO's were randomly assigned to receive the CRAFT intervention or a 12-step group intervention (Kirby, Marlowe, Festinger, Garvey, & LaMonaca, 1999). Following the 10-week treatment intervention, treatment engagement rates were higher for substance abusers whose CSO was in the CRAFT condition (64%), compared to the 12-step condition (17%). Problematic to drawing any conclusion regarding the above finding is the fact that most CSOs (89%) in the CRAFT condition completed all the sessions while only 39% of CSOs in the 12-step group condition completed the required sessions. In terms of CSO personal functioning, CSOs in both conditions reported improvement over the course of treatment.

Two uncontrolled trials have been conducted to date. The first was completed by Meyers, Miller, Hill, and Tonigan (1999) with a reasonable sample size (62 CSOs of treatment-resistant drug abusers) but because it was an effectiveness study with no randomization or control group, the conclusions that can be made are limited. Nevertheless, the results indicate promise for the CRAFT approach with CSOs of treatment resistant drug abusers. All CSOs who participated in the CRAFT intervention

demonstrated significant improvements in personal functioning and most had success with engaging the abuser into treatment (74%). Treatment engagement was also mediated by CSO role as parents had higher engagement rates than non-parents (spouses, siblings, and children).

The second uncontrolled study examined the effectiveness of CRAFT with drug abusing adolescents who refused treatment (Waldron et al., 2003 as cited in Smith & Meyers, 2004). Of the 43 CSOs (all parents) who participated, 71% were successful at engaging the adolescent into treatment, a rate which is comparable to studies conducted with adult drug abusers. Notably, personal functioning improved only for the CSOs whose adolescent successfully engaged in treatment.

The final study (Meyers, Miller, Smith, & Tonigan, 2002) randomly assigned 90 CSOs of treatment resistant drug abusers to receive 1) the CRAFT intervention, 2) the CRAFT intervention + aftercare sessions, or 3) Al-Anon and Nar-Anon facilitation therapy (Al-Nar FT). Both CRAFT conditions proved more effective than Al-Nar FT in engaging the drug abuser into treatment, with the CRAFT + aftercare session condition being superior to CRAFT alone or Al-Nar FT conditions (77% vs. 59% vs. 29%, respectively). All CSO's reported improvements in family functioning, physical symptoms and depression, with no differences between groups.

The above six treatment studies represent the efforts to date that examine the CRAFT approach with CSOs of substance abusers. All demonstrate favorable results, although some suffer from poor methodology. Despite the empirical support for the CRA and CRAFT approaches, there remains a notable disparity between research and practice (Miller & Meyers, 2001; Smith & Meyers, 2004).

CRAFT and CSOs of problem gamblers.

Given the success of the CRAFT approach with CSOs of substance abusers, and the fact that Miller and Meyers (2001) advocate that the principles of CRAFT can and should be extended to other addictions, it was logical to extend this approach to use with CSOs of problem gamblers.

As mentioned earlier, two studies have examined the efficacy of a self-help workbook modeled after the CRAFT approach. In the original study (Makarchuk et al., 2002), the authors revised the CRAFT intervention for use with CSOs of problem gamblers into a self-help workbook (Makarchuk & Hodgins, 2001). Thirty-one CSOs were randomly assigned to either receive the self-help workbook or a standard treatment package, which consisted of information pamphlets on treatment for problem gambling. Although the 3-month follow-up revealed that CSOs report of global psychological distress improved in both groups, more individuals who received the CRAFT workbook reported decreased gambling behaviour as compared to the control group (70% versus 40%). Moreover, there was a non-significant trend toward improved relationship functioning for CSOs in the workbook condition. The decrease in number of gambling related consequences and proportion of gamblers who entered treatment were comparable for both groups. This study provided promising results, but raised several questions. Was the sample size too small to detect differences among the groups? Was the follow-up period too short to allow CSOs to implement procedures? More importantly, was the self-help format directive enough for CSOs to benefit from the CRAFT approach?

A larger study attempted to answer some of the above questions. Hodgins and colleagues (2007) recruited 186 CSOs of problem gamblers across Canada and randomly

assigned them to receive: 1) the CRAFT workbook, 2) the CRAFT workbook plus telephone support (i.e., two 30-40 minute phone calls from a therapist) or 3) a control package containing pamphlets and information on treatment resources. Three and 6 month follow-ups revealed that participants in all groups improved in personal and relationship functioning, gambling behaviour (frequency), and consequences related to gambling. Like the original study, CSOs in the intervention groups (workbook, workbook + telephone support) compared to the CSOs in the control group, reported fewer days gambled by the gambler, but not higher treatment engagement rates. As well, a higher proportion of individuals who received the CRAFT workbook compared to those who did not, were satisfied with, and had their needs met by the program. Telephone support by a therapist was rated as more helpful than the workbook itself by over half of the CSOs, with the majority expressing they would have liked more contact. Those who received telephone support rated their confidence in using the procedures and strategies higher than those without telephone support. The authors propose that CSOs require "much more guidance, motivation, and follow-up support" to use the CRAFT procedures and strategies most effectively (Hodgins et al., 2007).

Taken together, these studies indicate that the CRAFT approach has merit for use with CSOs of problem gamblers. However, it would appear that CSOs require more assistance in implementing the CRAFT procedures and strategies offered in the self-help workbook. The self-help approach attains one of the three main goals of CRAFT which is decreased gambling behaviour. CRAFT delivered in an individual face-to-face format may likely prove beneficial in recognizing the other two goals of CRAFT: to decrease CSO distress and increase treatment engagement.

Treatment Options for CSOs of Problem Gamblers

Currently, there are no empirically supported interventions for CSOs of problem gamblers. Most available treatments are only for those CSOs whose gambler is willing to seek treatment (e.g., couples group for alcoholics, gamblers and their spouses, Harrison & Donnelly, 1987; problem gambling education program for couples, Wesley Gaming Counseling Services, 2004; behavioral couples therapy for pathological gamblers, Rychartik & McGillicuddy, 2006; congruence couple therapy, Lee & Rovers, 2008). However, involvement of the family members and other supports can influence the problem gambler's motivation for change.

In considering treatment options for the CSO whose gambler is resistant to treatment, the alternatives are even more limited. The few individual therapies that exist for CSOs of problem gamblers do not include initiatives to engage the gambler into treatment. For example, Rychtarik and McGillicuddy's (2006) Coping Skills Training program assumes partner gambling may be affected by the CSOs behaviour, but no efforts are directed toward affecting change in the gambler's behaviour. Recent empirical evidence of the Coping Skills Training program suggests no improvement in partner gambling or help-seeking over a 10-week wait list control group, as both groups tended to improve (Rychtarik & McGillicuddy, 2006). They noted that the CST did assist CSOs of problem gamblers with their psychological distress in that they experienced decreased levels of depression and anxiety compared to those in the wait list group.

Another alternative is Gam-Anon. Modeled after the Al-Anon groups, Gam-Anon follows the 12-step paradigm, which adopts the fundamental premise that CSOs are powerless over the addiction and must detach themselves from the problem to focus on

their own lives. While it is recognized that changes in the CSOs behaviour may favourably impact the gambler's behaviour, direct efforts to influence the gambler are not encouraged. To date, no controlled studies have examined the effectiveness of Gam-Anon, and studies that have included Gam-Anon (GA) members have been poorly conducted. Two studies have been carried out with GA members whose spouses were in Gam-Anon. Zion et al. (1991) compared relapse rates in GA members whose spouse attended Gam-Anon and those whose spouse did not attend Gam-Anon. No differences were uncovered between the groups in terms of relapse rates. Johnson and Nora (1992) found similar results. Though GA members whose spouse participated in Gam-Anon reported higher rates of abstinence by the gambler than GA members whose spouse was not in Gam-Anon, this finding was not statistically significant. Neither study examined the psychological functioning of the CSO.

CRAFT is the only therapy that aims to help both the gambler and the CSO and has some empirical evidence to support its utility. Given that CRAFT has demonstrated some positive results in a self-help format, this approach was chosen to be modified for use with CSOs of problem gamblers. The original CRAFT protocol for CSOs of substance abusers was modified for use with CSOs of problem gamblers and tested in a randomized clinical trial. The primary hypotheses were: 1) participants who received the CRAFT individual intervention would report higher rates of gambler treatment entry than participants in the workbook group, 2) participants who received the CRAFT individual intervention would report less gambling by the gambler than participants in the workbook group, and 3a) participants who received the CRAFT individual intervention would report lower levels of

personal distress and 3b) better relationship functioning with the gambler than participants in the workbook group.

Method

Ethics and Collaborative Efforts

This study received ethics approval from the Department of Psychology Research Ethics Board (DPREB) in November 2005 and the Conjoint Faculties Research Ethics Board (CFREB) in January 2006. Several issues were raised, one of which was the concern for participants risk of abuse. As a result of the ethics review, a measure (The Revised Conflict Tactics Scale Short Form, Straus & Douglas, 2004) was included to ensure participants were not dealing with current abusive situations, and risk questions were asked to track the risk for abuse throughout the study.

This study received funding ($44,800) from the Alberta Gaming Research Institute (AGRI) to help with the costs of advertisements, therapist training and salary, and research equipment. Collaboration from Alberta Alcohol and Drug Abuse Commission (AADAC) was sought to aid in the recruitment of CSOs. AADAC agreed to offer information about the CRAFT study to callers of the problem gambling helpline who were concerned about another's gambling The AADAC office in Calgary also displayed pamphlets and posters in the main waiting area. Counsellors at AADAC Calgary attended a presentation on the study and the inclusion criteria and agreed to inform clients of the CRAFT intervention research study as an option for treatment.

Procedure

The initial step in this study involved the development of the therapist treatment manual and client handouts, which were designed specifically for use with CSOs of

problem gamblers. The CRAFT approach for CSOs of problem gamblers was developed by closely following the original CRAFT protocol for CSOs of substance users (Smith & Meyers, 2004) and also included information from the materials that were developed for the self-help workbook for CSOs of problem gamblers (Makarchuk & Hodgins, 2001). During the development of the CRAFT self-help workbook a focus group was conducted to determine 1) the negative consequences that result from a significant others gambling problem, 2) the strategies, coping mechanisms, and responses that have been effective and ineffective in dealing with a problem gambler, 3) the differences and similarities between substance abusers and problem gamblers, 4) and special considerations for CSO's of problem gamblers. Information gleaned from this focus group aided in modification of the CRAFT approach into the individual treatment approach (see Appendix A).

The contents of the therapist treatment manual were scrutinized by trained therapists (two family therapists and a clinical psychologist employed with the Addiction Centre, Alberta Health Services) and a research assistant and revised accordingly. Similarly, client handouts for each session were developed, reviewed, and revised. The main components of the treatment manual were outlined in eight modules, approximately eight to 12 sessions (see Table 1). Once the therapist treatment manual was developed, a treatment integrity checklist for evaluating therapist adherence to the CRAFT protocol was created. All components of the CRAFT treatment protocol (43 in total) comprised the checklist (Appendix B).

Table 1

Main modules of the CRAFT therapist manual

Components of CRAFT therapist manual
1) Introduction and assessment
2) Functional analysis of gambling patterns
3) Positive communication training
4) Positive reinforcements for not gambling
5) Negative reinforcements for gambling
6) Help the CSO improve his/her life
7) Suggest treatment to the problem gambler
8) Termination and additional resources

Participants

Thirty-one CSOs of pathological gamblers were recruited, over a 17-month period, through press releases, paid and unpaid media advertisements (including online sites), AADAC counseling services (including the AADAC gambling helpline, pamphlets and posters), other referral agencies (e.g., EAP therapists), and pamphlets/posters (posted in community centers, bars, supermarkets, legions, churches). Interested individuals contacted a research assistant[2] and individuals who agreed to participate and met criteria completed the initial assessment face-to-face. Inclusion criteria are presented in Table 2. Individuals who were ineligible for the study were referred to the toll free 24-hour Problem Gambling Helpline for alternative resources.

Pre-treatment Assessment

The initial assessment was conducted in person in a quiet interview room at the University of Calgary. Participants were asked to read and sign the consent form (Appendix C) and were provided a copy. A research assistant conducted the interview and administered questionnaires following informed consent. Prior to the assessment, participants completed the Revised Conflict Tactics Scales Short Form (CTS2S, Straus & Douglas, 2004) and answered two key questions regarding the potential for abuse: 1) Does

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[2] In addition to compilation of the therapist manual and client handouts, I completed research duties and trained research assistants and volunteers. As a research assistant, I screened for participant eligibility over the telephone, conducted initial face to face interviews, and completed follow-up interviews over the telephone. As well I was a CRAFT therapist for half of the individual intervention participants. I was blind to treatment condition during the interviews (the research assistant compiled a package whereby group assignment was revealed at the end) and only conducted follow-up interviews with participants that were not my clients.

Table 2

Inclusion and exclusion criteria

Inclusion Criteria

CSO and gambler be 18 years or older

CSO have minimum of three days a week of contact with the gambler

CSO be a close relative or partner of the gambler

Gambler be resistant to the suggestion for treatment

Gambler must meet criteria for problem gambling

    -as reported by the CSO on the DSM-IV diagnostic criteria

CSO read at a minimum of 6th grade reading level (self-reported)

CSO agree to have the sessions audio recorded

CSO complete initial interview face to face and follow-up interviews via the telephone

CSO provide the name of a collateral to help locate for post-assessment interviews

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Exclusion Criteria

Gambler and the CSO must not have attended treatment for gambling related problems
in the last 2 months

CSO not experiencing gambling problems themselves

    -identified by a score of zero on the CPGI

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this project add any risks for you in your relationship to the person with a gambling problem? and; 2) Is abuse a concern for you now? All questions regarding abuse were reviewed prior to random assignment, to ensure that participant's risk of abuse did not increase as a result of partaking in the study and to ensure that abuse was not a current concern. Of note, the risk for abuse was continually monitored throughout the study by the research assistant and therapists.

Areas of assessment included: demographic information (gender, age, race, marital status, number of children, education level, employment status, and nature of relationship to gambler.) Similar demographic information was collected from the CSO about the gambler. As well, descriptive information about the gambler's history (e.g., age of onset of gambling problem) was estimated by the CSO. Diagnostic assessment of gambling severity for gambler and CSO (CSOs of Gamblers DSM-IV Screening Questionnaire and the Canadian Problem Gambling Index), and motivation to change for gambler and CSO (University of Rhode Island Change Assessment Inventory – CSO's report of Gambler version and CSO version) were also collected. The researcher aided the CSO in reconstructing the gambling behaviour (number of days gambled, amount of money gambled) in the two months prior to the interview and past gambling treatment involvement of the gambler and themselves. Consequences for the gambler and CSO (Inventory of Consequences for the Gambler and CSO), relationship functioning (Relationship Happiness Scale and Relationship Assessment Scale), and personal functioning of the CSO (Brief Symptom Inventory, Depression Anxiety Stress Scales, and the State-trait Anger Expression Inventory-Second Edition) were also administered.

The research assistant used an urn randomization computer program (http://www.commed.uchc.edu/match/urn/instructions.htm) to ensure an equal number of participants were assigned to each group (individual intervention or the workbook) while stratifying on three variables: gender (male/female), relationship to gambler (spouse/non-spouse), and severity of gambling problem (categorized as "high" if number of DSM-IV criteria for pathological gambling met was seven or greater, and "low" if six or lower). The urn randomization procedure essentially forces a small sized sample to be balanced and approaches complete randomization as the sample size increases. This procedure reduces the risk of experimental bias (Aickin, 1982). The research assistant then followed protocol (see below) depending on the group to which the participant was randomly assigned.

Self-help Workbook Group

Participants in this group received the CRAFT self-help workbook (Makarchuk & Hodgins, 2001) following the initial interview. The research assistant provided a brief history on the success of the self-help workbook and participants were instructed to read through the workbook and complete the exercises on a weekly basis (see Appendix D for the self-help workbook discussion provided by the research assistant at the end of the initial interview.)

Individual Intervention Group

Participants in the individual intervention group were informed that they were assigned to the individual intervention (see Appendix E for discussion) and that a therapist would contact them within a few days to set up their first appointment. The therapist-client sessions were held at the University of Calgary where participants received a temporary

parking permit or were reimbursed for travel expenses. If participants missed a session, therapists were instructed to reschedule the missed session as soon as possible, and to attempt to finish all sessions (up to 12 maximum) within three months of the initial interview.

The CRAFT approach was delivered by four Masters level therapists over approximately 8-12 weekly, 60-minute sessions. In addition to the principal investigator, three other therapists were employed: a clinical psychology student at the University of Calgary, a community therapist, and the therapist/researcher who first applied the CRAFT approach to problem gambling. Such a diverse range of therapists was not considered problematic as the authors of the CRAFT approach assert that the protocol can be implemented by many different therapists (even those with minimal experience), and not necessarily by an expert in the field of substance use (Smith & Meyers, 2004). However, the importance of appropriate training and supervision were stressed; therefore, the principal investigator attended a two day workshop on the CRAFT approach for substance users with the developer of CRAFT and conducted similar training with the other therapists. Each therapist received and read the manual for CSOs of substance abusers (Smith & Meyers, 2004) and completed a six hour training session on the CRAFT approach for CSOs of problem gamblers, including a detailed review of the problem gambling therapist manual. Supervision for the CRAFT intervention was provided on a weekly basis by a cognitive-behavioural clinical psychologist, who reviewed tape recorded sessions and provided feedback. The supervisor was available for consultation and held monthly meetings to review and discuss cases. Therapists met biweekly to discuss client cases and brain storm ideas of how best to implement procedures.

To measure treatment integrity (adherence only) tape recorded treatment sessions were rated by volunteer researcher assistants as to whether or not the therapist reviewed the key components yielding a quantifiable measure of the proportion of CRAFT components included in treatment. The checklist was also used by the therapists throughout the study to improve therapist adherence to the treatment protocol.

Post-treatment Assessment

The 3-month follow-up interview was conducted over the telephone by a research assistant who was blind to treatment condition. A second researcher compiled the follow-up package, which was organized to ensure that the treatment condition was revealed at the end of the interview and the appropriate measures given. The researcher administered the Time Line Follow Back procedure, which involves aiding participants in reconstructing the gambler's gambling behaviour and gambling treatment involvement since the initial assessment. Measures (described later) captured motivation for change for the gambler and CSO, consequences for the gambler and CSO, and relationship and personal functioning of the CSO. Once the treatment condition the participant was assigned into was revealed to the research assistant, participants were asked to report on their reactions to the individual intervention and if in the individual intervention group, completed the Working Alliance Inventory Client version (WAI-C, Tracy & Kokotovic, 1989). Those participants in the self-help condition were asked a number of questions on workbook adherence. All participants answered questions about their satisfaction with the program.

Six Month Follow-up

The 6-month follow-up was administered over the telephone by a researcher blind to treatment condition. The same measures administered over the phone at the post assessment interview were administered at the 6-month follow-up interview, with the exception of the Working Alliance Inventory, workbook adherence, and satisfaction with the program questions. Participants were mailed a $50 gift certificate for a grocery store upon completion of the 6-month assessment. This incentive was offered to improve the low follow-up rates generally attained by researchers in the field of addictions (Ladouceur et al., 2001). Researchers attempted to contact participants for follow-up on at least 12 occasions. If the researcher was unable to locate the participant, they contacted the collateral source provided by the participant. If, after collateral contact, the participant was still unreachable, the researcher mailed a letter to the address the participant provided at the initial interview informing that the follow-up was due (see Appendix F). Upon completion of the interview, the research assistant read the debriefing protocol (Appendix G) to the participant and asked if there were any concerns.

Measures

Each measure was carefully chosen based on its psychometric characteristics, construct validity, and parallels with past research measures (Kazdin, 2003).

Screening measures.

Concerned Significant Others of Gamblers DSM-IV Screening Questionnaire (Makarchuk et al., 2002, Appendix H). Diagnostically, the number of DSM-IV symptoms exhibited by the gambler, as reported by the CSO, was calculated using the Concerned

Significant Others of Gamblers DSM-IV Screening Questionnaire. This questionnaire was used at screening to ensure that the gambler was experiencing gambling problems to a significant degree, as reported by the CSO. A significant degree of gambling problems was defined as 4 or more on this scale, indicating that "probable pathological gambling" is likely.

Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001, Appendix I). This brief 9-item scale is a subset of the Canadian Problem Gambling Severity Index. Studies indicate that the PGSI is closely linked to the DSM-IV criteria for pathological gambling and yields a diagnostic assessment of problem gambling. It boosts better measurement properties than other gambling measures (e.g., SOGS) and is adequate in detecting less severe problems (Wenzel, McMillen, Marshall, & Ahmed, 2004).

Revised Conflict Tactics Scales – Short Form research edition (CTS2S; Straus & Douglas, 2004). The CTS2S is a 20-item scale that measures how each partner in a relationship deals with conflict, through violence (both psychological and physical attacks) and positive means (the use of negotiation and reasoning), in the past year and prior to the past year. The CTS (Straus, 1979, 1990a) is widely used and has well-established reliability and validity. Although the revised version (CTS2) and short form (CTS2S) have only preliminary support for reliability and validity, it is recommended by the authors to use the newer versions for several reasons (e.g., simplified format, revised wording, addition of two scales). They also suggest that the strong evidence for reliability and validity of the CTS may be applied to the CTS2 because they are methodologically and conceptually similar.

Gambling behaviours and consequences.

Time Line Follow Back (TLFB; Sobell & Sobell, 1992).The TLFB method was first developed as an instrument to aid retrospective recall of alcohol consumption. The time-line follow-back method has been modified for use with problem gamblers (Hodgins & Makarchuk, 2003; Weinstock, Whelan, & Meyers, 2004). Examination between CSO and gambler reports of gambling information demonstrate agreement in the "fair" to "good" range (Hodgins & Makarchuk, 2003). Research assistants used the timeline follow-back method to aid the CSO in reconstructing the gambling behaviour (frequency in days gambled and dollar amount spent for each problem type of gambling) in the two months prior to the initial assessment. Participants provided a rating of how confident they were in the accuracy of gambling information they reported (not at all, slightly, moderately, extremely).

Treatment Involvement. Past and current treatment involvement of the gambler and the CSO was recorded, including both type (self-help, informal, and formal treatments) and frequency of treatment.

CSO psychological functioning.

Brief Symptom Inventory (BSI; Derogatis, 1993, Appendix J). The BSI is a 53-item self-report questionnaire that reflects psychological symptoms experienced in the past week. The items are rated on a 5-point Likert scale and yield a Global Severity Index (GSI) which reflects a general level of distress and has shown excellent test-retest reliability across time (alpha coefficient .9). This measure is sensitive to change and has good internal consistency (alpha coefficients ranging from .71 to .85).

Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995). The DASS, a 42-item questionnaire, measures symptoms of depression, anxiety and stress over the past week, on a 4-point severity/frequency scale. The scale has high internal consistency with reliability scores (Cronbach's alpha) rated at .91 for the Depression scale, .84 for the Anxiety scale, and .90 for the Stress scale in the normative sample. The DASS is a useful tool to measure changes in negative emotional states over time (Lovibond & Lovibond, 1995.)

State-trait Anger Expression Inventory-II (STAXI-II; Spielberger, 1999). This 57-item inventory yields an anger expression index as well as scales reflecting state anger and trait anger. Internal consistency measures are described as high, with alpha coefficients of .76 for anger expression index, .92 for state anger subscale, and .84 for trait anger subscale. High test-retest reliability has been found with this questionnaire (Spielberger, 1999.)

Relationship functioning.

Relationship Happiness Scale (RHS; Azrin, Naster, & Jones, 1973, Appendix K). RHS was used to assess current relationship happiness between the gambler and CSO. Areas of interaction are rated on a scale from 1 (completely unhappy) to 10 (completely happy). A study of CSOs of problem gamblers reported high retest reliability (ICC =.77). and demonstrated sensitivity to change (Hodgins, Shead, et al., 2007.) The global index measuring general happiness with the relationship is applicable to most types of relationships.

Relationship Assessment Scale (RAS; Hendrick, 1988, Appendix K). Four items from the 7-item RAS were used; the three items not included pertained to romantic

relationships only. Concurrent validity, predictive validity, and internal consistency are all well established for this instrument. The coefficient alpha for these four questions in a sample of CSOs of problem gamblers was found to be .85 and retest reliability ICC=.86 (Hodgins, Shead, et al., 2007).

Secondary outcome measures.

Inventory of Consequences for the Gambler and CSO (IC – G and IC - CSO; Makarchuk & Hodgins, 2003, Appendix L). Gambling consequences for the gambler and for the CSO were evaluated using the Inventory of Consequences for the Gambler and CSO, which was modified from the Drinker Inventory of Consequences (Miller et al., 1995). This scale contains three subscales: consequences for the gambler, negative emotional consequence for the CSO, and negative behavioral consequences for the CSO. For each subscale, retest reliability was ICC =.93, .93 and .93 and internal reliability was α=.89, .87 and .86 (Makarchuk & Hodgins, 2003). The IC was used as a secondary outcome measure.

University of Rhode Island Change Assessment Inventory - for CSO (URICA-CSO; McConnaughy, Prochaska, & Velicer, 1983). The URICA is a 32-item questionnaire that assesses motivation for making changes to problem behaviours on a 5-point scale (1=strongly disagree, 5=strongly agree). The URICA has shown adequate reliability and validity. This continuous measure yields a total score.

University of Rhode Island Change Assessment Inventory - for Gambler (URICA – Gambler). This modified version of the URICA was used to assess the CSO's perceptions of the gamblers motivation for change.

Reactions to treatment.

Workbook adherence: Use of the self-help workbook was evaluated by asking: if participants read the workbook (not at all, some sections, completely); 2) if they followed the procedures/strategies? (not at all, occasionally, regularly); 3) if they completed the exercises (not at all, some, completely).

Working Alliance Inventory – Client (WAI-C, Tracy & Kokotovic, 1989). The WAI client version was administered to participants in the individual intervention condition. This 36-item instrument is completed by the client and measures three components of the working alliance: tasks, goals, and bond. This measure was included as a measure of non-specific treatment factors.

Satisfaction Questions About the Program. All participants were questioned regarding: 1) satisfaction with the program (quite dissatisfied, indifferent or mildly satisfied, mostly satisfied, very satisfied), 2) the extent to which the program met their needs (none, only a few, most, almost all), and 3) whether they would recommend the program to a friend in need of similar help (definitely not, not really, generally, definitely).

Target Sample Size

A sample size calculation (confidence intervals 95%, $\alpha = 0.05$, one-sided, 80% power) was estimated based on the outcome variable "treatment entry". A number of studies have shown that CRAFT face-to-face intervention is successful at engaging substance abusers into treatment in the range of 64-86%, with comparison groups showing engagement in the range of 17-30% (Smith & Meyers, 2004). The CRAFT self-help workbook has previously shown gambler treatment engagement rates at around 20%

(Makarchuk et al., 2002). Sample size calculations using treatment engagement proportions (64% versus 20%) indicates that approximately 19 CSOs per group were required to detect clinically meaningful differences. The dependent variable "days gambled" was also examined. Information was taken from the only known controlled trial at the time (Makarchuk et al., 2002) and clinically meaningfully differences were calculated based on anticipated percent drop in days gambled. Differences were calculated for a 40-60% drop from 11.5 days gambled (SD=9.1). The proposed sample size needed to detect a 40-60% decrease in days gambled was approximately 40 per group.

Data Analyses

All data analyses were conducted using PASW Statistics 17 for Windows. Preliminary analysis included screening for accuracy of input, missing data, outliers and normal distributions, which included examination of profile plots and skewness and kurtosis (Tabachnick & Fidell, 2001). Missing data were calculated where possible as recommended in the STAXI and DASS manuals or by mean substitution. One participant was missing one item for STAXI AX index at 3 months, one participant was missing one item for DASS anxiety at 6 months, two participants were missing one item for Inventory of consequences gambler at 3 months, and one participant was missing four items for Inventory of consequences gambler at 6 months. Dollars gambled for one participant could not be estimated, resulting in lower sample size for that analysis. Outliers were identified by calculating the z scores for all continuous variables. Those cases with standardized scores in excess of 3.29 were potential outliers and recoded to one unit higher than the next highest observation as suggested by Tabachnick and Fidell (2001). There was one outlier for dollars gambled at initial and one outlier for DASS anxiety at initial.

The two groups were compared across all initial assessment variables using Chi-square analysis for categorical measures and t-tests for continuous measures. Since the expected sample size for this study was small, differences between groups were expected.

. *Major outcome variables*

Statistical approaches to the analysis of two-group repeated measures designs typically include 1) the use of end point analysis or summary statistics (such as a t-test or ANOVA between initial and end ratings), 2) univariate repeated measures ANCOVA (or MANOVAs) which take into account all time periods, or 3) mixed models analysis (Delucchi & Bostrom, 1999; Gueorguieva & Krystal, 2004). Each approach has advantages and disadvantages, with the mixed models approach offering several advantages over other, more conventional methods (Gueorguieva & Krystal, 2004; Snijders, 1996; Cnaan, Laird, & Slasor, 1997). The mixed model analysis reduces potential sample and estimation bias that can result from missing data or imputation of data (such as that of the intention to treat procedure). The mixed models procedure uses all information from each participant at each time point and is not affected by missing data thereby increasing statistical power. As well, the flexibility to choose a pattern of variability (using goodness of fit estimates such as Akaike information criterion) reduces type I error and provides more accurate estimates of treatment effects. The use of mixed models also allows for variability in within subject correlation patterns over time (Gueorguieva & Krystal, 2004).

There are obvious advantages to using the mixed models procedure to examine two-group repeated measures design over other statistical procedures; however, the sample size recommendations for mixed models analysis exceed that of the current study and several authors warn of the potential bias in parameter estimates and statistical testing when using

small samples with mixed models (i.e., typically cited as 20 or fewer) (Gueorguieva & Krystal, 2004; Delucchi & Bostrom, 1999).

For the interested reader, the mixed models analysis was conducted and is included in Appendix M. The linear mixed models analyses employed Type III Sum of squares with the repeated covariance type that fit the model best (as determined by the lowest Akaike information criterion) (Tabachnick & Fidell, 2001). The model included the main effects of Intervention (individual intervention, self-help workbook) and Time (initial, 3 month, 6 month), as well as the Time x Intervention Interaction term.

The main statistical procedure for all outcome variables compared group differences over the follow-up period using the General Linear Model (GLM) with a repeated measures Analysis of CoVariance (2 X 2 ANCOVA). The univariate repeated measures ANCOVA, a more familiar and commonly used statistic, was used in most CRAFT studies conducted to date, and is the preferred statistic when dealing with smaller sample sizes (Gueorguieva & Krystal, 2004) and randomized controlled trials (Oakes & Feldman, 2001; Fitzmaurice, Laird, & Ware, 2004).

The analyses were completed with both the intended sample (i.e., all participants regardless of whether they completed the follow-up) as well as the completer sample (i.e., those participants who completed both follow-up interviews, $n = 21$). The intention to treat (ITT) procedure is a conservative approach that assumes no change between pre and post scores for missing data (Lavori, 1992). Use of the ITT approach reduces statistical bias and the chance of a Type I error, resulting in more power (Delucchi & Bostrom, 1999). However, since the ITT procedure may lead to bias in observed treatment effects (Lachin, 2000), the completer analysis was chosen as the main analysis to present. The ITT analysis

is presented in Appendix N. Any differences between the completer analysis and ITT analysis are noted in the Results section. For the ITT analysis, scores obtained earlier (i.e., at initial interview or at the 3-month follow-up) were re-entered as follow-up data for those participants who did not complete interviews at 3 or 6 months.

It was noted by Delucchi and Bostrom (1999) that "No form of statistical analysis, no matter how sophisticated, rescues inadequate power levels if the sample size is too small for a given effect." (p. 167). Given the small sample size in this study and thus low power, effect sizes with confidence intervals were calculated as a gauge of clinical significance (Odgaard & Fowler, 2010; Steiger, 2004; APA, 2001; Baer & Ahern, 1993). It was suggested that "for primary analysis that yield negative results with a small number of subjects, authors report the effect size of the treatment and the power of the statistical test, in addition to p values..." (Baer & Ahern, 1993, p. 356). Determination of clinically meaningful effect sizes may also indicate the need for further research with larger sample sizes (Onken, Blaine, & Battjes, 1997). Many researchers have used effect sizes in treatment research to help interpret the magnitude of differences between groups (e.g., O'Farrell, Murphy, Alter, & Fals-Stewart, 2007).

Cohen (1988) suggests the following benchmarks for interpretation of effect sizes: a correlation coefficient where $d = .8$ or higher is considered a large effect size, $d = .5$ is a medium effect, and $d = .2$ a small, but significant, effect. A Bonferroni correction was utilized for each hypothesis (i.e., $p < .05$ for hypothesis 1; $p < .025$ for hypothesis 2; $p < .006$ for hypothesis 3.)

Results

Participants were recruited over a 17-month period. They reported hearing about the study through various sources including a paid advertisement on TV guide listings channel (39%), TV/news paper/radio story resulting from a public service announcement (29%), paid advertisement in a local newspaper (13%), AADAC (10%), community bulletin/small paper (6%), and other sources such as websites and posters/pamphlets (3%).

Figure 1 displays a CONSORT flow diagram that depicts enrollment, group allocation, follow-up rates, and total sample used in analysis. The research assistant screened 161 callers and accepted 31 participants into the study. Table 3 displays the breakdown of callers interested in the research study and their reason for exclusion. Sixty percent of individuals were excluded from the study because they did not meet criteria, with the majority of callers being the problem gambler themselves. Ten percent of callers were eligible but declined to participate upon hearing the requirements of the study. All individuals who were not eligible for the study were provided with information on how to access treatment. Eleven percent of callers were not able to be re-contacted for screening. Of the 31 eligible recruited participants (19% of total callers), 16 individuals were randomly assigned to the individual therapy group and 15 individuals to the workbook group.

Potential for Abuse

All participants answered "no" to both abuse screening questions. Each participant also completed the Revised Conflict Tactics Scales (CTS2) Short Form research edition,

Figure 1. CONSORT flow chart.
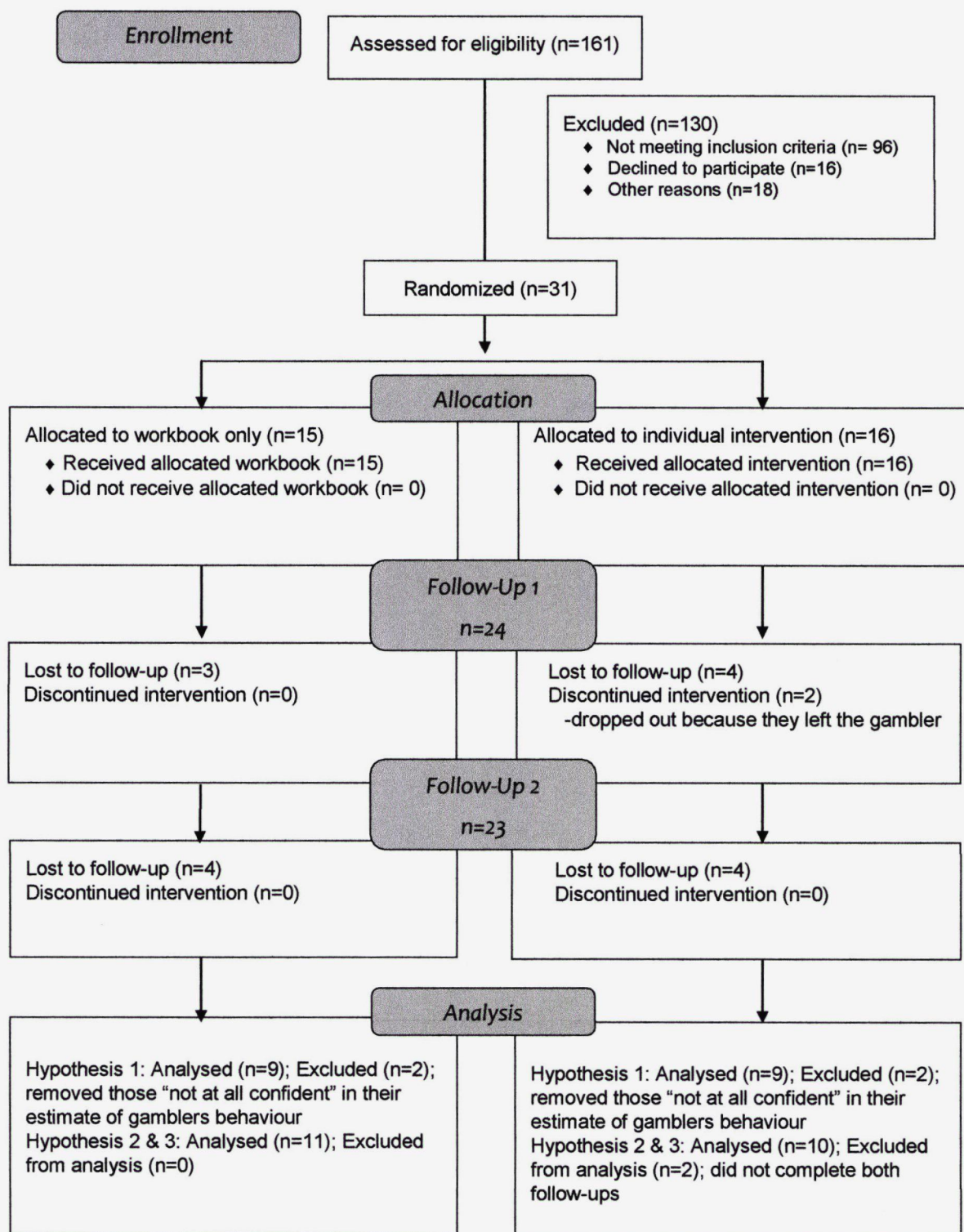
Table 3

Breakdown of callers interested in research study

Result of call	Percent of callers (N=161)
Eligible to participate and accepted	19% (31)
Researcher was unable to contact caller	11% (18)
Participant declined upon hearing requirements of study	10% (16)
Participant did not meet inclusion criteria for study	60% (96)

	Percent of those (N=96) who did not meet inclusion criteria
The caller was the gambler themselves	42%
CSO did not have regular contact with the gambler	23%
Gambler in treatment	13%
Gambler not resistant to treatment	6%
CSO in treatment	5%
Gambler did not meet criteria for problem gambling	3%
CSO may have problems with gambling themselves	3%
Increased risk of possible abuse if were to participate	2%
Gambler did not gamble in past two months	2%
The participant unwilling to read handouts/workbook	1%

which was reviewed by the research assistant and discussed with the participant prior to random assignment. Seventy-seven percent of participants identified incidents of psychological abuse in the past six months, both toward the gambler (CSO Mean number of incidents toward gambler = 8.2, S.D. = 9.2) and by the gambler (Gambler Mean number of incidents toward CSO = 6.3, S.D. = 13.2).

On the physical assault scale, five participants identified that they had assaulted the gambler in the last six months, but that the assaults did not result in injury. None of the CSOs identified that they had been assaulted or injured by the gambler in the last six months. All participants endorsed that both they and the gambler had tried numerous negotiation techniques within the last six months (CSO Mean = 15.5, S.D. = 11.8, Gambler Mean = 9.1, S.D. = 9.3).

Participants

The majority of participants (90%) were female (Mean age = 46 years, SD = 12.6, Range = 20 - 68 years), Canadian (84%), and employed (71% full-time, 26% part-time), with an average of two children (SD = 1.5). Ninety percent completed high school with 77% reporting some higher education (36% attended technical/trade school and 41% attended university/college). Sixty-one percent of participants were spouses of a gambler (married or common-law), 16% a child, 13% a parent, and 10% a girl/boyfriend of a gambler. Almost one quarter of CSOs (23%) reported that they had previously sought treatment for the gambling problem.

In terms of CSO functioning, the participants mean BSI GSI score was 47.6 (SD = 32.7) which is less than the mean score for mental health outpatient adults (Mean = 70.0,

SD = 38.2) but significantly more than the normative scores for non-patient adults (Mean = 15.9, SD = 16.4) (Derogatis, 1993). For the DASS, participants scored in the high end of the normal range for stress (Mean = 13.23, SD = 8.81) and anxiety (Mean = 7.06, SD = 8.44) and in the mild range for depression (Mean = 10.35, SD = 9.04) (Lovibond & Lovibond, 1995). Participant's mean score on the anger expression index of the STAXI was (Mean = 35.16, SD = 12.83), which is higher than the normative sample for normal adult females (Mean = 32.04, SD = 13.66) and approached the normative scores for female psychiatric patients (Mean = 36.80, SD = 39.58). On the state anger index participants scored Mean = 20.71 (SD = 7.21), which was higher than normal adult females (Mean = 17.90, SD = 5.26) but lower than female psychiatric patients (Mean = 24.05, SD = 10.64). The mean scores on the trait anger index (Mean = 15.4, SD = 3.81) were lower than normal adult females (Mean = 17.89, SD = 4.94) (Spielberger, 1999).

The majority of CSOs described the gambler as Canadian (71%) and French Canadian (6%), whereas 23% belonged to another cultural group such as German, Irish, Italian, Chinese, American, and Jamaican. Fifty-five percent of the gamblers were reported by the CSO to have completed high school, 13% completed some university and 23% completed technical or trade training. Forty-two percent of CSOs identified that the gambler had received prior treatment for the gambling problem and that they had the gambling problem for a mean of 10.7 years (SD = 9.4, Range 1 – 49 years). All CSO's indicated pathological gambling by the gambler according to the DSM-IV total score for pathological gambling (Mean = 8.06, SD = 1.53, Range 6-10). CSO's estimated that, in the two months prior to joining the study, the gambler had gambled a mean of 9.3 days (SD = 9.1, Range = 1 – 31) and spent $1671 (SD = 1553, Range = $15,500 - $280) per month.

Group comparison.

The two groups were compared across all initial assessment variables using Chi-square analysis for categorical measures and t-tests for continuous measures. Table 4 details that the groups did not significantly differ on any of the stratification variables used in the randomization procedure (gender, spouse/nonspouse, DSM-IV criteria high/low) or across any of the initial assessment variables. However, several differences seem of prognostic importance, as differences may not have been statistically significant due to the small sample size (Altman, 1985). Regarding CSO functioning, the BSI score and all three DASS scale scores were higher in the individual intervention group than the workbook group. According to scores on the anxiety DASS scale and depression DASS scale, participants in the workbook condition fell in the "normal" range and those in the individual intervention condition fell in the "mild" range. Participants in the individual intervention group also seemed to be dealing with the gambling problem for a longer period of time (12 versus 9 years), although not statistically significant.

Follow up rates.

As seen in Figure 1, 24 of the 31 participants (77%) were contacted by telephone and interviewed 3-months after the initial assessment. For the 6-month follow-up, 23 of the 31 participants (74%) were interviewed; however one participant did not complete all of the outcome measures. Two of the participants interviewed at 6-months were able to provide information for the 3-month time period on several outcome variables (gambling behaviour and treatment entry). In total, 21 participants (68%) completed all three assessment interviews. Follow-up rates did not differ significantly between the individual intervention

Table 4

Comparison of each group on demographics and initial assessment variables

CSO Characteristics	Individual intervention (N=16)	Workbook (N=15)	Statistical comparison χ^2 or t
Number (%) female	14 (93%)	14 (88%)	χ^2 (1) = .301, p = .58
Mean (SD) age	47 years (12.8)	46 years (12.9)	t (29) = -.34 , p = .73
Marital Status Number (%)			
Married	8 (50%)	8 (53%)	χ^2 (5) = 6.44, p = .27
Common law	2 (13%)	4 (27%)	
Separated	1 (6%)	0	
Divorced	0	2 (13%)	
Never married	4 (25%)	1 (6%)	
Widowed	1 (6%)	0	

Mean (SD) # of children	2.3 (1.6)	1.7 (1.4)	$t(29) = -.95, p = .35$
Number (%) Cultural group			
Canadian	14 (88%)	12 (80%)	$\chi^2(4) = 5.13, p = .28$
Italian	0	2 (13%)	
German	1 (6%)	0	
Hungarian	1 (6%)	0	
Chinese	0	1 (6%)	
Highest grade completed Mean (SD)	11.6 (1.0)	11.7 (1.0)	$t(29) = .112, p = .91$
Number (%) with higher education	4 (25%)	9 (60%)	$\chi^2(1) = 3.89, p = .07$
Number (%) employed (full or part-time)	14 (93%)	16 (100%)	$\chi^2(1) = 1.10, p = .29$
CSO relationship to gambler			
Married spouse	7 (44%)	7 (47%)	$\chi^2(5) = .70, p = .95$
Common-law partner	3 (18%)	2 (13%)	
Parent	2 (13%)	2 (13%)	

Child	2 (13%)	3 (20%)	
Boy/girlfriend	1 (6%)	1 (7%)	
Separated spouse	1 (6%)	0	
Number (%) history of treatment for their significant other's gambling problem	2 (13%)	5 (33%)	χ^2 (1) = 1.92, p = .22
CSO functioning Mean (SD)			
DASS – depression	11.8 (9.2)	8.8 (8.9)	t (29) = -.93, p = .36
DASS – anxiety	8.3 (9.9)	5.7 (6.5)	t (29) = -.85, p = .40
DASS – stress	14.9 (9.5)	11.5 (7.8)	t (29) = -1.1, p = .29
BSI (GSI score)	51.4 (39.1)	43.5 (24.7)	t (29) = -.65, p = .52
STAXI-II – AE index	33.0 (14.4)	37.5 (10.8)	t (29) = .97, p = .34
STAXI-II – State Anger scale STAXI-II –	20.3 (5.9)	21.2 (8.6)	t (29) = .36, p = .72
Trait Anger scale	15.6 (4.6)	15.1 (2.9)	t (29) = -.40, p = .69

CSO URICA	9.5 (2.1)	9.5 (1.2)	$t(29) = .02, p = .98$
CSO rating of gambler's URICA	5.5 (4.3)	5.4 (2.3)	$t(29) = -.04, p = .97$
Relationship Happiness Scale			
General Happiness Scale Mean (SD)	4.5 (2.8)	3.9 (1.6)	$t(29) = -.77, p = .45$
Relationship Assessment Scale	9.6 (4.5)	8.5 (2.8)	$t(29) = -.81, p = .42$
Inventory of Consequences			
Gambler Consequences	33.6 (11.1)	33.2 (10.0)	$t(29) = -.11, p = .91$
CSO Emotional Consequences	19.9 (8.4)	18.5 (5.2)	$t(29) = -.56, p = .58$
CSO Behavioral Consequences	8.9 (7.1)	6.5 (3.9)	$t(29) = -1.18, p = .25$
Gambler Characteristics			
(as reported by the CSO)			
DSM-IV-TR criteria Mean/10 (SD)	8.1 (1.2)	8.0 (1.9)	$t(29) = -.22, p = .82$

Length of gambling problem	12.3 (11.7)	9.0 (7.6)	$t\,(29) = -.94, p = .36$
Mean years (SD)			
Number (%) history of treatment for gambling problem	6 (38%)	7 (47%)	$\chi^2\,(1) = .27, p = .72$
Mean Number (SD) of days gambled in past two months	10 (10.3)	8 (7.8)	$t\,(29) = -.59, p = .55$
Mean Amount (SD) of money gambled in past two months	-$1794 (1731)	-$1539 (1387)	$t\,(29) = .45, p = .66$
Type of gambling problem			
VLTs/Slots	15 (94%)	10 (67%)	$\chi^2\,(1) = 3.64, p = .08$
Casino games	6 (38%)	7 (47%)	$\chi^2\,(1) = .27, p = .72$
Sports betting	7 (44%)	4 (27%)	$\chi^2\,(1) = .99, p = .46$

Card games with friends			
Bingo	4 (25%)	3 (20%)	$\chi^2(1) = .11, p = 1.0$
Lotto/raffle/Nevada/scratch tickets/keno	3 (18%)	0	$\chi^2(1) = 3.11, p = .23$
Online gambling	3 (18%)	5 (31%)	$\chi^2(1) = .51, p = .69$
	1 (6%)	2 (13%)	$\chi^2(1) = .44, p = .60$

and workbook groups for the 3-month follow-up, χ^2 (1) = .11, p = .54 (Mean 75% versus 80%, respectively) or the 6-month follow-up, χ^2 (1) = .011, p = .62 (Mean = 75% versus 73%, respectively). Overall, by the completion of the interview, the research assistants remained blind in 29% of cases at the 3-month follow-up and 60% of cases at the 6-month follow-up.

Participants who completed the 3 and 6-month follow-up interviews were compared to those who did not complete those follow-up interviews using Chi-square analysis for categorical measures and t-tests for continuous measures. Results are presented in Table 5. Of note, a significant group difference was found for the initial rating of Inventory of Consequences emotional scale, as participants who completed the 3-month interview had higher initial scores than those who did not.

Similar to 3-month completers, a group difference was found for initial ratings on the Inventory of Consequences – emotional scale. Participants who completed the 6-month follow-up interview provided higher initial ratings of emotional consequences than those who did not. Those participants who completed the follow-up interview at 6-months also had lower ratings of initial state anger, and were more likely to have some higher education.

Individual intervention group.

The 16 participants randomized to the individual intervention group were assigned a therapist, based on therapist availability. Treatment integrity was measured using the CRAFT adherence checklist developed for this study. For each therapist, a random group of participants was selected to assess treatment adherence to the CRAFT protocol using the

Table 5

Comparison of participants who completed follow-up interviews and those who did not complete follow-up interviews

	Completed follow-up interview (3 month, $N=24$) (6 month, N=23)	Did not complete follow-up interview (3 month, $N=7$) (6 month, N=8)	Statistical comparison χ^2 or t
CSO Characteristics			
% female			
3 months	88%	100%	$\chi^2 (1) = .97, p = .45$
6 months	91%	88%	$\chi^2 (1) = .10, \ p = .61$
Mean (SD) age			
3 months	47 years (10.6)	44 years (18.9)	$t (29) = .65, p = .52$
6 months	46 years(11.0)	47 years (17.5)	$t (29) = .16, p = .87$
Marital Status Number (% married/common law)			
3 months	75%	57%	$\chi^2 (5) = 5.42, p = .37$
6 months	70%	75%	$\chi^2 (5) = 4.19, p = .52$
Mean (SD) # of children			
3 months	2.2 (1.5)	1.2 (1.3)	$t (29) = 1.45, p = .16$
6 months	2.0 (1.6)	1.9 (1.4)	$t (29) = .41, p = .79$

Cultural group (% Canadian)			
3 months	83%	86%	$\chi^2 (4) = 4.59, p = .33$
6 months	83%	88%	$\chi^2 (4) = 4.28, p = .37$
Highest grade completed Mean (SD)			
3 months	10.6 (1.86)	11.7 (.76)	$t (29) = 1.49 , p = .15$
6 months	11.7 (1.02)	11.6 (1.06)	$t (29) = -.06 , p = .96$
% with higher education			
3 months	46%	29%	$\chi^2 (1) = .66, p = .67$
6 months	52%	13%	$\chi^2 (1) = 3.84, p = .06$
% employed (full or part-time)			
3 months	96%	100%	$\chi^2(1) = .30, p = 1.0$
6 months	96%	100%	$\chi^2 (1) = .36, p = .74$
CSO relationship to gambler (married/common law)			
3 months	58%	72%	$\chi^2(4) = 1.79, p = .78$
6 months	57%	75%	$\chi^2(4) = 7.19, p = .13$
% history of treatment for their significant other's gambling problem			
3 months	17%	43%	$\chi^2 (1) = 2.13, p = .17$
6 months	22%	25%	$\chi^2 (1) = .04, p = .60$

CSO functioning Mean (SD)			
DASS – depression			
3 months	9.92 (9.2)	11.86 (8.89)	$t(29) = .49, p = .63$
6 months	10.26 (7.64)	10.62 (12.89)	$t(29) = .10, p = .92$
DASS – anxiety			
3 months	6.96 (8.73)	7.43 (7.99)	$t(29) = .13, p = .89$
6 months	6.61 (7.34)	8.37 (11.53)	$t(29) = .50, p = .62$
DASS – stress			
3 months	13.1 (8.69)	13.57 (9.91)	$t(29) = .11, p = .91$
6 months	12.65 (6.83)	14.88 (13.48)	$t(29) = .61, p = .55$
BSI (GSI score)			
3 months	49.05 (33.57)	40.01 (28.08)	$t(29) = .65, p = .52$
6 months	49.19 (26.23)	40.76 (47.12)	$t(29) = .63, p = .53$
STAXI-II – Anger Expression index			
3 months	35.67 (11.09)	33.43 (18.61)	$t(29) = .40, p = .69$
6 months	35.69 (12.26)	33.63 (15.15)	$t(29) = .39, p = .70$
STAXI-II – State Anger scale			
3 months	19.96 (6.07)	23.29 (10.40)	$t(29) = 1.08, p = .29$
6 months	19.17 (5.05)	25.13 (10.60)	$t(29) = 2.13, p = .04†$
STAXI-II – Trait Anger scale			
3 months	15.25 (4.01)	15.70 (3.25)	$t(29) = .28, p = .78$
6 months	15.17 (3.36)	15.88 (5.11)	$t(29) = .44, p = .66$

CSO URICA			
3 months	9.69 (1.76)	8.86 (1.43)	$t(29) = -1.15, p = .26$
6 months	9.53 (1.56)	9.44 (2.19)	$t(29) = -.11, p = .91$
CSO rating of gambler's URICA			
3 months	5.17 (3.16)	6.26 (4.23)	$t(29) = .74, p = .47$
6 months	4.96 (2.73)	6.75 (4.81)	$t(29) = 1.30, p = .20$
Relationship Happiness Scale			
General Happiness Scale Mean (SD)			
3 months	4.00 (2.08)	4.86 (2.96)	$t(29) = .87, p = .39$
6 months	4.09 (2.02)	4.50 (3.07)	$t(29) = .43, p = .67$
Relationship Assessment Scale			
3 months	8.67 (3.26)	10.57 (4.99)	$t(29) = 1.20, p = .24$
6 months	8.74 (3.33)	10.13 (4.76)	$t(29) = .91, p = .37$
Inventory of Consequences			
Gambler Consequences			
3 months	34.13 (10.33)	31.00 (11.09)	$t(29) = .69, p = .49$
6 months	35.22 (9.51)	28.25 (11.78)	$t(29) = 1.68, p = .10$
CSO Emotional Consequences			
3 months	20.63 (5.45)	14.57 (9.73)	$t(29) = 2.15, p = .04$†
6 months	21.13 (5.43)	13.87 (8.33)	$t(29) = 2.82, p = .01$†

CSO Behavioral Consequences	8.00 (5.39)	6.71 (7.47)	$t(29) = .51, p = .62$
3 months	8.61 (5.47)	5.13 (6.38)	$t(29) = 1.49, p = .15$
6 months			
Gambler Characteristics (as reported by the CSO)			
DSM-IV-TR criteria Mean/10 (SD)			
3 months	8.2 (1.63)	7.7 (1.11)	$t(29) = .68, p = .49$
6 months	8.35 (1.03)	7.25 (2.37)	$t(29) = 1.82, p = .08$
Length of gambling problem Mean years (SD)			
3 months	9.42 (8.80)	15.24 (12.94)	$t(29) = 1.38, p = .18$
6 months	10.41 (9.62)	11.65 (11.50)	$t(29) = .30, p = .76$
% history of treatment for gambling problem			
3 months	42%	43%	$\chi^2(1) = .00, p = .64$
6 months	39%	50%	$\chi^2(1) = .29, p = .45$
Mean Number (SD) of days gambled in past two months			
3 months	9.85 (8.78)	7.78 (10.66)	$t(29) = -.59, p = .61$
6 months	9.72 (9.25)	8.44 (9.14)	$t(29) = -.34, p = .74$

Mean Amount (SD) of money gambled in past two months			
3 months	-$1556 (1420)	-$2066 (2025)	$t(29) = .76, p = .45$
6 months	-1717 (1683)	-1539 (1186)	$t(29) = .27, p = .79$
Type of gambling problem (VLT/slots)			
3 months	80%	86%	$\chi^2(1) = .15, p = .59$
6 months	83%	75%	$\chi^2(1) = .22, p = .49$

† significant $p < .05$

checklist. Two volunteer research assistants rated all of the conducted individual intervention sessions for seven out of the 16 participants in the individual intervention group (see Appendix B). The agreement between the raters was ranked as high, ICC = .737, p = .013, CI = .126 - .948). Therapist adherence to the CRAFT protocol was rated by both raters with an average of 89% (SDRater1 = 7.36; SDRater2 = 4.72; Range 84 - 98%).

Sixteen participants attended individual sessions with a therapist, and completed a mean of 10.4 sessions (SD = 2.4, Range 4 - 12). Despite encouragement from therapists to complete therapy, two individuals dropped out prior to completion (one participant completed 4 sessions and the other completed 6 sessions). In total, therapist A conducted the individual intervention with seven participants, therapist B with four, therapist C with three, and therapist D with two. The Working Alliance Inventory was completed for each participant at the 3-month interview (N=12). No significant differences were found between participant rankings of their relationship with the therapists on any of the WAI subscale scores, WAI task (Mean = 77.42, SD = 4.79, Range 66 - 84), WAI bond (Mean = 78.67, SD = 6.05, Range 65 - 84), WAI goal (Mean = 75.25, SD = 7.15, range 59 - 84). Appendix O contains the raw scores for each participant per therapist.

Hypothesis 1: Assessment of Treatment Entry

It was predicted that participants in the individual intervention group would have greater success in engaging the gambler into treatment than those in the workbook group. No gamblers entered treatment by the 3-month follow-up. By the 6-month follow-up, two gamblers from each group had entered treatment (13%). One participant attended GA, one attended the AADAC group, and two sought individual counseling.

Hypothesis 2: Assessment of Gambling Behaviour

It was hypothesized that participants who received the individual intervention would report decreased gambling behaviour by their significant other, reflected by fewer days gambled and dollars gambled over the follow-up period. The majority of participants were at least "somewhat" confident in their estimates of the gambler's gambling behaviour; however, 9-13% of participants (three participants at each time period) reported they were "not at all" confident in their estimate of the gambler's behaviour. The analysis of days gambled and dollars gambled excludes those participants who were "not at all" confident ($N = 7$) in their reports of gambling behaviour.

The variable days gambled was calculated as the monthly average of the two months prior to entering the study for the initial rating and the average of each month over the follow-up period. To determine differences between groups over time, a 2 X 2 ANCOVA was used, with one between group factor (group = workbook vs. individual intervention) and one repeated measures factor (time = 3 month, 6 month) with the initial measure of days gambled entered as a covariate. Means and standard deviations are displayed in Table 6. There was no significant time effect, $F(1, 14) = 1.53, p = .24$, power = .21; no significant group effect, $F(1, 14) = .14, p = .71$, power = .06; and no significant group X time interaction found, $F(1, 14) = .09, p = .91$, power = .05. As seen in Table 7, the magnitude of the difference of days gambled between initial and 6 months was

Table 6

Gambling outcomes by treatment group

	Initial Mean (SD)	3 month Mean (SD)	6 month Mean (SD)
Gambling Behaviour			
Days gambled			
Workbook (N=8)	8.25 (9.75)	7.69 (5.97)	5.18 (4.59)
Individual (N=9)	8.67 (8.90)	6.83 (5.60)	4.36 (4.32)
Dollars gambled			
Workbook (N=8)	-1568 (1548)	-1496 (1951)	-923 (1392)
Individual (N=8)	-1808 (1834)	-943 (1951)	-313 (1392)

Table 7

Mean difference of gambling outcomes (Initial to 6 months) by treatment group with effect size between groups

	Mean difference (SD) between initial – 6 month scores		Independent samples t-test Cohen's *d* (95% Confidence Interval)
	Workbook (N=9)	Individual intervention (N=8*)	
Gambling Behaviour			
Days gambled	3.25 (5.25)	4.15 (3.70)	$t(15) = -.41, p = .69$ $d = .19$ (CI < 000 - 1.03)
Dollars gambled	-638 (2267)	-1502 (1632)	$t(14) = .87, p = .39$ $d = .44$ (CI = -.559 - 1.42)

* For dollars gambled, N = 8 for the individual intervention group as one participant would not estimate an amount gambled.

considered small between the groups[3]. The effect sizes over the 6 month follow-up for each group (displayed in Table 8) were considered medium for the workbook group and large for the individual intervention group.

Similar to days gambled, the dollars gambled variable was averaged over the two months prior to entering the study and the three months of each follow-up period. A 2 X 2 ANCOVA was used, with one between group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial variable dollars gambled was entered as a covariate. The analysis revealed a significant time effect, F (1, 13) = 5.35, p = .04, power = .57. No group effect was found, F (1, 13) = 1.59 p = .23, power = .22, and no group X time interaction was found, F (1, 13) = .01, p = .91, power = .05. Table 6 displays the covariate adjusted means for each time period. There was a trend for participants in the individual intervention group to report fewer dollars gambled at the 3 and 6-month follow-ups than those in the workbook group. The magnitude of the difference favoring the individual intervention over the workbook group at 6-months approached a medium effect (Table 7). Examination of the effect sizes over time revealed that the magnitude of the difference between the initial estimate of dollars gambled and the 6-month follow-up report was small for the workbook group and large for the individual intervention group (Table 8).

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[3] The majority of post hoc comparisons were conducted on differences between the initial score and 6 month scores. Most of the data follow a linear trend, where scores increase (or decrease) from baseline to follow-up. Where trends differed from a linear pattern, results are reported.

Table 8

The effect size (Cohen's d) for gambling outcome variables over the 6 month follow-up

period

	Paired samples t-test Initial – 6 months	Effect size Cohen's d (95% Confidence Interval)
Gambling behaviour		
Days gambled		
Workbook (N=8)	$t(7) = 1.75, p = .12$	$d = .62$ (CI = -.16 – 1.36)
Individual (N=9)	$t(8) = 3.36, p = .01$†	$d = 1.12$ (CI = .25 – 1.95)
Dollars gambled		
Workbook (N=8)	$t(7)= -.79, p = .45$	$d = .28$ (CI = .00 - .96)
Individual (N=8)	$t(7) = -2.59, p = .04$†	$d = .92$ (CI = .00 – 1.72)

† significant $p < .05$.

Hypothesis 3a: Assessment of CSO Functioning (BSI, DASS, STAXI)

    BSI.

It was predicted that participants in the individual intervention group would show greater improvement in personal functioning (i.e., decreased scores on the BSI, DASS, and STAXI) compared to those in the workbook group. Differences between groups on BSI GSI scores were examined using a 2 X 2 ANCOVA, with one between group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial value of the BSI GSI score was included as a covariate. There was no significant time effect, F (1, 18) = .01, p = .91, power = .05, group effect, F (1, 18) = .03, p = .87, power = .05, or group X time interaction, F (1, 18) = 1.28, p = .27, power = .19. Means are presented in Table 9. The magnitude of the differences in BSI scores between groups over the 6 month follow-up period was medium (Table 10). In considering effect sizes over time (Table 11), both groups revealed medium to large effects.

    DASS.

Group differences on the DASS depression scale were examined using a 2 X 2 ANCOVA, with one between group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial rating of DASS depression was entered as a covariate. A significant group X time interaction was found, F (1, 18) = 7.82, p = .01, power = .75. There was no time effect F (1, 18) = .12, p = .74, power = .06, or group effect, F (1, 18) = .13, p = .72, power = .06 (Table 9 displays the means). As seen in Figure 2, participants in the workbook group decreased scores from initial to 3 months, and then increased scores from 3 to 6 months. Participants in the individual intervention group maintained their score from initial to 3 months, and

Table 9

Comparison of outcome measures by treatment group

	Initial	3 month	6 month
CSO Functioning			
Brief Symptom Inventory			
Workbook	44.64 (23.04)	41.16 (26.44)	35.73 (31.60)
Individual	54.78 (32.40)	45.63 (27.71)	28.69 (33.21)
Depression Anxiety Stress Scales			
DASS depression			
Workbook	8.45 (8.73)	5.72 (5.46)	6.91 (6.42)
Individual	10.60 (6.11)	10.01 (5.47)	4.30 (6.45)
DASS anxiety			
Workbook	4.82 (5.02)	5.92 (6.14)	5.16 (7.51)
Individual	8.30 (9.52)	8.19 (6.46)	3.93 (7.88)
DASS stress			
Workbook	10.64 (5.32)	11.57 (9.98)	12.13 (11.91)
Individual	14.60 (8.46)	11.28 (10.49)	7.96 (12.55)

State Trait Anger Expression Inventory

STAXI anger expression

	Workbook	36.36 (11.47)	33.51 (8.47)	31.79 (7.96)
	Individual	34.50 (11.74)	28.84 (9.36)	27.54 (8.76)

STAXI trait

	Workbook	14.45 (2.91)	15.96 (2.92)	16.26 (2.76)
	Individual	15.60 (3.98)	14.94 (2.94)	13.61 (2.75)

STAXI state

	Workbook	19.00 (6.02)	17.30 (4.08)	17.10 (4.28)
	Individual	19.30 (4.39)	20.47 (4.04)	15.99 (2.59)

Relationship Assessment

Relationship Happiness Scale

	Workbook	4.09 (1.58)	5.11 (1.89)	5.91 (2.49)
	Individual	4.20 (2.66)	5.58 (1.90)	7.00 (2.50)

Relationship Assessment Scale

	Workbook	8.09 (2.59)	10.41 (2.86)	10.38 (4.25)
	Individual	10.30 (3.53)	9.95 (2.88)	11.48 (4.27)

† significant $p < .05$

Table 10

Mean differences between initial and 6 month follow-up in outcome variables

| | Mean difference (SD) between initial – 6 month scores | | Independent samples t-test |
	Workbook (N=11)	Individual intervention (N=10)	Cohen's *d* (95% Confidence Interval)
CSO Functioning			
Brief Symptom Inventory	12.54 (17.50)	22.08 (28.08)	$t(19) = -.94, p = .36$
			$d = .41$ (CI < .00 - 1.25)
Depression Anxiety Stress Scales			
DASS depression	2.09 (3.91)	5.70 (9.56)	$t(19) = -1.15, p = .26$
			$d = .50$ (CI < .00 - 1.34)
DASS anxiety	.73 (4.19)	3.20 (7.25)	$t(19) = -.97, p = .34$
			$d = .42$ (CI < .00 - 1.26)

DASS stress	-.64 (10.40)	5.70 (7.29)	$t(19) = -1.60, p = .13$
			$d = .70$ (CI < .00 - 1.56)

State Trait Anger Expression Inventory

STAXI anger expression	3.53 (7.17)	8.10 (9.44)	$t(19) = -1.25, p = .23$
			$d = .55$ (CI < .00 - 1.39)
STAXI trait	-1.45 (3.36)	1.60 (2.36)	$t(19) = -2.39, p = .03$†
			$d = 1.04$ (CI = .12 - 1.94)
STAXI state	1.91 (6.11)	3.30 (5.17)	$t(19) = -.56, p = .58$
			$d = .25$ (CI < .00 - 1.06)

Relationship Assessment

Relationship Happiness Scale	-1.82 (3.03)	2.80 (3.22)	$t(19) = .72, p = .48$
			$d = .32$ (CI = -.55 - 1.17)
Relationship Assessment Scale	-1.55 (4.39)	2.00 (3.77)	$t(19) = .25, p = .80$
			$d = .11$ (CI = -.75 - .97)

† significant $p < .05$

Table 11

The effect size (Cohen's d) for initial to 6 months by group, for CSO functioning and relationship outcome variables

	Paired samples t-test	Effect size Cohen's *d*
	Initial – 6 months	(95% Confidence Interval)
CSO Functioning		
Brief Symptom Inventory		
Workbook	*t*(10)= 2.38 , *p* =.04†	*d* = .72 (CI = .034- 1.37)
Individual	*t*(9) = 2.49 , *p* =.04†	*d* = .79 (CI = .06 – 1.48)
Depression Anxiety Stress Scales		
DASS depression		
Workbook	*t*(10)= 1.77 , *p* =.11	*d* = .53 (CI = -.11 – 1.16)
Individual	*t*(9) = 1.89, *p* =.09	*d* = .59 (CI = -.09 – 1.26)
DASS anxiety		
Workbook	*t*(10)= .58 , *p* =.58	*d* = .17 (CI = -.43 - .76)
Individual	*t*(9) = 1.39 , *p* =.20	*d* = .44 (CI = -.22 – 1.08)

DASS stress

Workbook	$t(10)= -.20 , p = .84$	$d = .06$ (CI = .00 - .40)
Individual	$t(9) = 2.47 , p = .04$†	$d = .78$ (CI = .05 – 1.48)

State Trait Anger Expression Inventory

STAXI-AX

Workbook	$t(10)= 1.63 , p = .13$	$d = .49$ (CI = -.14 – 1.11)
Individual	$t(9) = 2.71 , p = .02$†	$d = .86$ (CI = .11 – 1.57)

STAXI trait

Workbook	$t(10)= -1.44, p = .18$	$d = .43$ (CI = .00 – 1.03)
Individual	$t(9) = 2.14, p = .06$	$d = .68$ (CI = -.03 – 1.35)

STAXI state

Workbook	$t(10)= 1.04 , p = .32$	$d = .31$ (CI = -.30 - .91)
Individual	$t(9) = 2.02 , p = .07$	$d = .64$ (CI = -.06 – 1.31)

Relationship Assessment		
Relationship Happiness Scale		
Workbook	$t(10)= -1.99, p =.07$	$d = .60 \, (CI = .00 - 1.22)$
Individual	$t(9) = -2.74 \, p =.02$†	$d = .87 \, (CI = .09 - 1.57)$
Relationship Assessment Scale		
Workbook	$t(10)= -1.17, p =.27$	$d = .35 \, (CI = .00 - .94)$
Individual	$t(9) = -1.68, p =.13$	$d = .53 \, (CI = .00 - .1.17)$

† significant $p < .05$

Figure 2. DASS depression scores at initial, 3-month and 6-month follow-up for workbook group and individual intervention group.
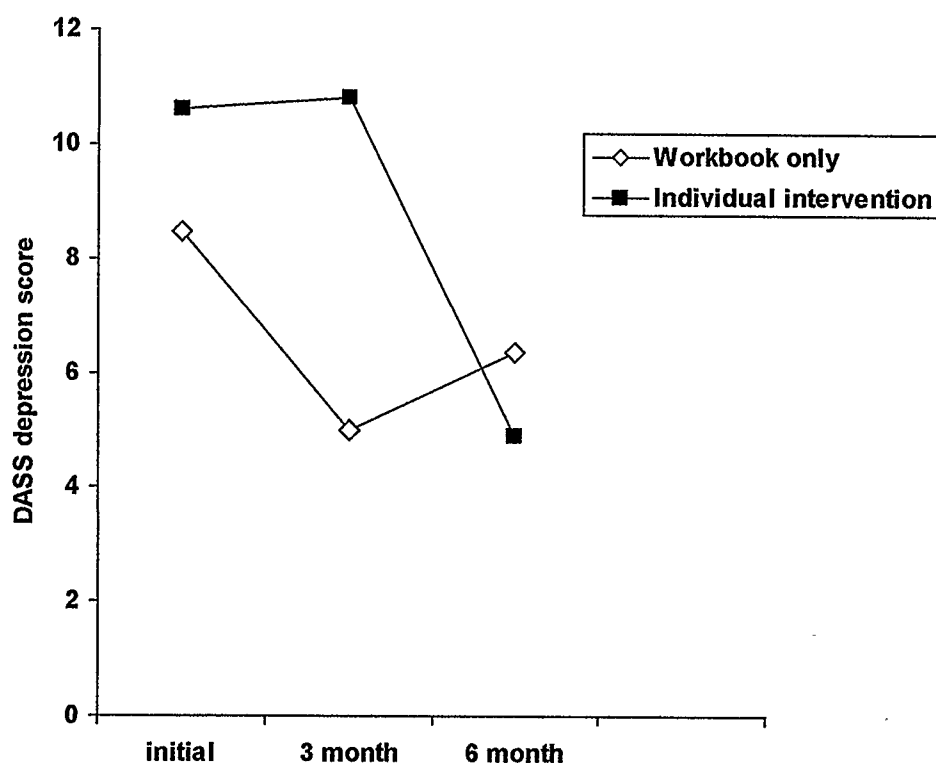
decreased their scores considerably from 3 to 6 months. The effect sizes indicate medium effects between groups (Table 10), with both groups showing medium effects over time (Table 11).

For DASS anxiety and DASS stress, differences were examined using a 2 X 2 ANCOVA, with the initial DASS score entered as a covariate. The analysis of DASS anxiety failed to show a significant time effect, F (1, 18) = .31, p = .58, power = .08, group effect, F (1, 18) = .09, p = .77, power = .06, or group X time interaction, F (1, 18) = 1.77, p = .20, power = .24. The magnitude of the difference between groups over 6 months approached medium. Examination of the DASS anxiety covariate adjusted means in Table 9 reveals that participants in the workbook group demonstrated a slight increase in anxiety scores at 3 months (less than small effect) and while those in the individual intervention group showed a decrease in anxiety scores (small effect size). At 6 months, participants in both groups decreased anxiety scores with the workbook group demonstrating less than a small effect and those in the individual intervention group showing a near medium effect size (Table 11).

For DASS stress, no significant effects were uncovered: time effect, F (1, 18) = .07, p = .80, power = .06; group effect, F (1, 18) = .50, p = .49, power = .10; group X time interaction, F (1, 18) = 1.41, p = .25, power = .20. Examination of the means in Table 9 reveal a trend where participants in the workbook group displayed an increase in stress scores over both follow-up periods and those in the individual intervention group displayed decreased stress scores. The effect sizes over time were negative for the workbook group and approached large for the individual intervention group (Table 11).

STAXI.

For the three STAXI scales, separate 2 X 2 ANCOVA's were used to examine differences between groups over time with one between group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial rating was entered as a covariate. For the STAXI – AX scale, a significant time effect was uncovered, $F(1, 18) = 7.28, p = .01$, power = .72, with a non-significant group effect, $F(1, 18) = 1.79$, $p = .20$, power = .25 and group X time interaction $F(1, 18) = .01, p = .91$, power = .05 (see Table 9 for means). There was no time effect with the ITT analysis. Table 10 indicates that there was a medium effect size between groups at 6 months, favoring the individual intervention. Participants in the individual intervention group demonstrated a greater decrease in STAXI-AX scores at each time period than those in the workbook group. The effect sizes for the workbook group were considered medium, and medium to large for the individual intervention group (Table 11).

For the STAXI trait scale, the ANCOVA did not reveal a time effect, $F(1, 18) = .21, p = .65$, power = .07, or group effect, $F(1, 18) = 2.83, p = .11$, power = .36. The group X time interaction was also not significant, $F(1, 18) = 1.76, p = .20$, power = .24. (Table 9 displays means). The magnitude of the difference between groups at 6 months, favoring the individual intervention, was small (Table 10). The workbook group displayed an increase in scores over each follow-up period while the individual intervention group decreased scores over each follow-up period. As seen in Table 11, the magnitude of the differences over time was negative for the workbook group and medium for the individual intervention group.

Finally, with respect to the STAXI state scale, there was a non-significant time effect, $F(1, 18) = .08$, $p = .79$, power $= .06$, and a non-significant group effect, $F(1, 18) = .82$, $p = .38$, power $= .14$, with a significant group X time interaction, $F(1, 18) = 4.90$, $p = .04$, power $= .55$ (Table 9 displays means). The ITT analysis revealed similar trends with an interaction term that approached significance (Appendix N). The magnitude of the difference favoring the individual intervention over the workbook group was small (Table 10). Participants in the workbook group decreased scores over time, with a small effect size, while participants in the individual intervention group initially increased scores slightly and by the 6 month follow-up decreased scores, reaching a medium effect size (Table 11).

Hypothesis 3b: Assessment of CSO-Gambler Relationship (RHS, RAS)

It was predicted that participants in the individual intervention group would report greater improvement in relationship functioning with the gambler than those in the workbook group. Group differences over time on the RHS and RAS were examined using a 2 X 2 ANCOVA with one group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial rating was entered as a covariate. For RHS, no significant time effect was found, $F(1, 18) = 2.04$, $p = .17$, power $= .27$. The group effect was non-significant, $F(1, 18) = 1.12$, $p = .30$, power $= .17$, as well as the group X time interaction, $F(1, 18) = .23$, $p = .64$, power $= .07$. The means in Table 9 demonstrate that participants in both groups increased scores on the RHS. The ITT analysis revealed a significant time effect. The effect size between the groups was small at 6 months (Table 10). The individual intervention group demonstrated large effect sizes by 6 months and the workbook group showed medium effects (Table 11).

For the RAS, no significant effects were found: time effect, F (1, 18) = .45, p = .51, power = .10; group effect, F (1, 18) = .05, p = .82, power = .06; and group X time interaction, F (1, 18) = .78, p = .39, power = .13 (Table 9 displays means). Participants in both groups increased scores with small effect sizes attained by the workbook group and medium effects by the individual intervention group, with negligible differences between the groups (Tables 11 and 10, respectively).

Secondary Outcome Measures

Consequences of gambling behaviour (ISCG).

Group differences for the three scales of the ISCG were compared using separate 2 X 2 ANCOVAs. For the Gambler consequences scale, the time effect was not significant, F (1, 18) = 1.34, p = .26, power = .20. There was no significant group effect, F (1, 18) = .45, p = .51, power = .10 or group X time interaction, F (1, 18) = .45, p = .51, power = .10 (see Table 12 for means).

For the CSO-behavioural consequences scale, the time effect approached significance, F (1, 18) = 4.16, p = .06, power = .48. There was no significant group effect, F (1, 18) = .55, p = .47, power = .11, or group X time interaction, F (1, 18) = .46, p = .51, power = .10. For the CSO-emotional consequences scale, there was no significant time effect, F (1, 18) = .25, p = .63, power = .08, group effect, F (1, 18) = 1.41, p = .25, power = .20, or group X time interaction, F (1, 18) = 3.07, p = .10, power = .383. Effect sizes between groups at 6-months ranged from medium to large, and favored the individual intervention over the workbook group (Table 13). Examination of group means, displayed in Table 12, indicate that all participants decreased scores on each of the scales. The effect

Table 12

Comparison of gambling consequences by treatment group

	Initial	3 month	6 month
	Mean (SD)	Mean (SD)	Mean (SD)
Gambling Consequences			
Inventory of Consequences			
Gambler			
Workbook	35.64 (8.95)	31.07 (14.34)	26.17 (14.04)
Individual	33.20 (10.63)	26.02 (14.31)	13.11 (14.03)
CSO emotional			
Workbook	20.45 (4.25)	15.64 (6.04)	13.69 (7.24)
Individual	20.70 (6.46)	15.00 (6.04)	8.24 (7.20)
CSO behavioural			
Workbook	7.18 (4.28)	5.54 (4.27)	4.88 (4.55)
Individual	9.00 (5.12)	4.91 (4.48)	2.93 (5.01)

† significant $p < .05$

Table 13

Mean differences between initial and 6 month follow-up in gambling consequences

| | Mean difference (SD) between initial – 6 month scores | | Independent samples t-test of differences |
	Workbook	Individual Intervention	Cohen's *d* (95% Confidence Interval)
	(N=11)	(N=10)	
Gambling Consequences			
Inventory of			
Consequences			
Gambler	10.0 (21.29)	19.50 (17.82)	*t*(19) = -1.10, *p* = .28
			d = .48 (CI < 00 - 1.32)
CSO emotional	6.82 (7.66)	12.40 (7.63)	*t*(19) = -1.67, *p* = .11
			d = .73 (CI < 00 - 1.59)
CSO behavioural	2.27 (6.79)	6.10 (6.57)	*t*(19) = -1.31, *p* = .21
			d = .57 (CI < 00 - 1.42)

sizes over time (Table 14) indicate that at 6 months, participants in the individual intervention group demonstrated very large effects in comparison to those in the workbook group.

Motivation to change (URICA).

The URICA was used as a secondary outcome measure to track CSO and gambler motivation to change over the follow-up periods. Group differences over time were examined using a 2 X 2 ANCOVA with one group factor (workbook, individual intervention) and one repeated measures factor (3 month, 6 month). The initial URICA rating was entered as a covariate. Table 15 displays the mean scores for CSO URICA and the CSOs' estimation of mean scores for the gamblers URICA at initial and each follow-up period. There was no significant time effect, $F(1, 19) = .54$ $p = .47$, power = .11, or group effect found, $F(1, 19) = .24$ $p = .66$, power = .07. No group X time interaction effect was uncovered for CSOs URICA, $F(1, 18) = 2.54$, $p = .13$, power = .33.

For the CSOs estimate of the gamblers motivation to change, URICA mean scores (Table 15) increased for participants in the individual intervention group and slightly decreased for those in the workbook group; the group effect approached significance in the ANOVA analysis, $F(1, 18) = 3.48$, $p = .08$, power = .42. There was no significant time effect $[F(1, 18) = 1.43, p = .25$, power = .21$]$, and the interaction term was not significant, $F(1, 18) = .90, p = .35$, power = .15.

Table 14

The effect size (Cohen's d) calculated by group, over time for gambling consequences

	Paired samples t-test	Cohen's d
	Initial – 6 months	(95% Confidence Interval)
Inventory of Consequences		
Gambler consequences		
Workbook	$t(10) = 1.56, p = .15$	$d = .47$ (CI -.17 – 1.08)
Individual	$t(9) = 3.46, p = .007$†	$d = 1.09$ (CI .28 – 1.87)
CSO emotional consequences		
Workbook	$t(10) = 2.95, p = .015$ †	$d = .89$ (CI -.17 – 1.58)
Individual	$t(9) = 5.14, p = .001$†	$d = 1.62$ (CI .64 – 2.57)
CSO behavioural consequences		
Workbook	$t(10) = 1.11, p = .293$	$d = .33$ (CI -.28 – .94)
Individual	$t(9) = 2.93, p = .017$†	$d = .93$ (CI .16 – 1.66)

† significant $p < .05$

Table 15

Means and standard deviations of URICA scores for the CSO and the gambler (estimated by CSO)

	Initial	3 month	6 month
URICA CSO			
Workbook	9.69 (1.32)	8.45 (.59)	8.22 (.58)
Individual	9.46 (1.98)	8.97 (.63)	7.10 (.61)
URICA Gambler			
Workbook	5.48 (2.29)	5.19 (.58)	5.16 (.96)
Individual	5.07 (3.06)	6.49 (.60)	7.56 (1.0)

CSO treatment involvement.

In terms of CSO treatment, three participants (25%) in the workbook group sought additional treatment compared to none in the individual intervention group. One participant sought individual counseling by 3-months, and two individuals attended Gam-anon by the 6-month follow-up interview.

Workbook Adherence

Participants in the workbook group were asked to rate if they read the workbook, if they followed the procedures/strategies, and if they completed the exercises. By the 3-month follow-up interview, 75% of participants endorsed that they read the workbook completely and 25% had read some sections. In terms of following the procedures/strategies, 18% of participants endorsed that they "regularly" followed the procedures/strategies, 55% noted that they "occasionally" did, and 27% noted "not at all". Regarding whether or not participants completed exercises in the workbook, 17% reported "completely", 66% reported "some" and 17% reported that they did not complete any of the exercises.

Participant Evaluation of the Program

Each participant rated the extent to which the program met their needs, how satisfied they were with the program, and whether they would recommend the program to a friend in need of similar help. As displayed in Table 16, at the 3-month follow-up interview, participants in the individual intervention group were more likely to rate that

Table 16

Comparison of groups on satisfaction questions regarding the program at 3 and 6 month follow-ups

	3 month				6 month			
	How satisfied are you with the program?							
	Quite dissatisfied	Mildly dissatisfied/ Indifferent	Mostly satisfied	Very satisfied	Quite dissatisfied	Mildly dissatisfied/ Indifferent	Mostly satisfied	Very satisfied
Workbook	2 (16.7%)	5 (41.7%)	3 (25%)	2 (16.7%)	2 (18.2%)	5 (45.5%)	4 (36.4%)	0
Individual intervention	1 (9.1%)	0	4 (36.4%)	6 (54.5%)	0	0	1 (11.1%)	8 (88.9%)
	Did the program meet your needs?							
	None	Only a few	Most	Almost all	None	Only a few	Most	Almost all
Workbook	2 (16.7%)	7 (58.3%)	2 (16.7%)	1 (8.3%)	4 (36.4%)	4 (36.4%)	3 (27.3%)	0
Individual intervention	0	1 (9.1%)	3 (27.3)	7 (63.6%)	0	0	2 (22.2%)	7 (77.8%)

	Would you recommend the program?							
	Definitely Not	Not really	Generally	Definitely	Definitely Not	Not really	Generally	Definitely
Workbook	1 (8.3%)	2 (16.7%)	5 (41.7%)	4 (33.3%)	2 (18.2%)	1 (9.1%)	6 (54.5%)	2 (18.2%)
Individual intervention	1(8.3%)	1 (8.3%)	0	10 (83.3%)	0	0	0	10 (100%)

their needs were met, $\chi^2(3, N = 23) = 11.2, p = .011$, and that they would recommend the program, $\chi^2(3, N = 23) = 7.9, p = .048$; that they were more satisfied with the program approached significance, $\chi^2(3, N = 23) = 7.5, p = .059$. At the 6-month interview, there was a significant difference between the groups on all three of the measures. Participants in the individual intervention group were more likely to rate that their needs were met, $\chi^2(3, N = 20) = 15.2, p = .002$, that they were satisfied with the program $\chi^2(3, N = 20) = 16.77, p = .001$, and that they would recommend the program, $\chi^2(3, N = 21) = 14.3, p = .003$.

Discussion

A new intervention for CSOs of problem gamblers was developed and tested in this randomized clinical trial. The CRAFT intervention is a face-to-face approach that was delivered by trained therapists over approximately ten sessions. The current study revealed that, statistically, participants who received the individual intervention seemed to benefit to about the same degree as those who received the workbook (Makarchuk & Hodgins, 2001). Several areas of CSO functioning (anger, general functioning), consequences of gambling, and dollars gambled over the follow-up period yielded stronger effect sizes in favour of the individual intervention compared to the workbook, but were not statistically significant. These results should be interpreted cautiously as the small sample size indicates low statistical power and thus problems with data analysis and determining significance (Baer & Ahern, 1993; Delucchi & Bostrom, 1999; Streiner, 2006). Even reliance on confidence intervals is complicated as a confidence interval with a large width (as often seen in this study) may indicate an inadequate sample size (Algina & Keselman, 2003; Streiner, 2006).

Concerned significant others of problem gamblers were recruited largely via media advertisements, with a small percent recruited through treatment centers and notices at local venues (e.g., poster at a pub). It proved difficult to recruit enough participants to attain the desired sample size (N=40) to observe clinically significant differences between groups. Thirty-five percent of callers were not eligible for the study, the majority for not having regular contact with the gambler, defined as three or more days per week. This was an unfortunate inclusion criteria, but necessary, as many CSOs likely had sufficient contact with the gambler to implement important CRAFT strategies such as allowing natural consequences (e.g., not providing financial bailouts) or rewarding non-gambling behaviour (invite for dinner when gambler would typically be gambling.) It is unknown whether having frequent contact with the gambler is important for the successful provision of CRAFT as this issue has not been tested (Smith & Meyers, 2004). Hodgins, Toneatto, et al., (2007) found that CSOs who lived with a problem gambler demonstrated greater impairments in functioning and relationship satisfaction. CSOs who do not live with a problem gambler, but are in close contact, may be in a better position to help as they are less impacted by the problem. It may be that CSOs who are largely impacted by the gambling problem may need to attend to their own distress first, and then the gambler.

Almost twenty percent of CSOs (or the gamblers) who called about the study were already attending treatment. The fact that they sought additional treatment may be an indication that they felt their current treatment (or the gamblers' current treatment) was ineffective and speaks to the need for more treatment options for CSOs of problem gamblers.

An important exclusion criterion was that participation in the study not pose any increased risk of possible abuse. Two percent of individuals who met the other inclusion

criteria acknowledged they may be at increased risk of abuse and were provided information on appropriate treatment venues. Of people accepted into the study, sixteen percent admitted to perpetrating violence toward the gambler in the last six months but none reported abuse by the gambler. Seventy-seven percent of participants identified incidents of psychological abuse, both toward the gambler (by the CSO) and by the gambler (toward the CSO). These high rates of abuse are consistent with past research, which has shown that gamblers perpetrate violence toward CSOs (Korman et al., 2008). However, a literature review conducted in PSYCinfo and MEDLINE revealed no reports on violence toward the gambler by the CSO. Future studies should monitor the incidents of abuse over the course of the study to gauge whether or not the CRAFT approach impacts reports of psychological abuse as well as negotiation techniques.

The majority of participants recruited were female, which is a typical finding in research studies of CSO's of problem gamblers (e.g., Hodgins, Toneatto, et al., 2007; Rychartik & McGillicuddy, 2006; Makarchuk et al., 2002). It is estimated that approximately two thirds of problem gamblers are males (DSM-IV-TR, 2000); therefore it is reasonable that most CSOs in this study were female as the majority of participants were the spouse or common-law partner of a gambler. It is uncertain if the results of this study generalize to the male CSO population. It has been suggested that males are less likely to seek treatment and may be less impacted by another's gambling problem (Hodgins et al., 2007; Dowling, Smith, & Thomas, 2007). They may also respond differently to treatments, such as the CRAFT approach.

Overall, participants presented as distressed, as indicated by their BSI score. They scored in the mild range for depression, had low levels of anxiety and stress, but tended to experience and express high levels of anger. Participants also experienced a high number

of consequences as a result of the gambling, which is not surprising given that all CSOs indicated pathological gambling by the gambler according to the DSM-IV criteria, suggesting that participants were dealing with moderate to severe gambling problems.

Tests of Hypothesis

Hypothesis 1. Assessment of treatment entry rates.

It was predicted that participants who received the individual intervention would have greater success in engaging the gambler into treatment than those who received the workbook. No differences were found between groups for gambler treatment entry rates, with 17.4% of gamblers attending treatment by the 6-month follow-up. These treatment engagement results are similar to previous studies which found approximately 20% of the gamblers had entered into treatment by the 6-month post-assessment, even in the control group (Hodgins, Toneatto, et al., 2007; Makarchuk et al., 2002). The rates found in this study are much lower than those achieved in the substance abuse field, which range from 64%-86% (Sisson & Azrin, 1986; Miller et al., 1999; Meyers et al., 1999; Meyers et al., 2002). It is unclear why, in the current study and both CRAFT studies conducted to date, CSOs of problem gamblers were not as successful as CSOs of substance abusers at engaging their significant other into treatment. Hodgins and colleagues (2007) postulated that CSOs of problem gamblers needed more guidance to implement strategies, such as that offered through individual therapy, as the original CRAFT approach intended. This study did not support the hypothesis that CSOs who received the CRAFT individual intervention would be more successful than those who received the workbook at engaging the gambler into treatment.

One explanation for the differences in treatment engagement between studies of substance abuse and gambling may be that in all the studies by Meyers and colleagues treatment for the substance abuser was readily available, which is not the case for problem gambling locally. Their standard study procedure included a 24-hour access pager for weekends and after hours so the substance abuser could contact someone to schedule an intake appointment, usually within 24-48 hours. If the substance abuser was not interested in their research treatment study, they were informed of other available treatments. In the current study, CSOs provided information to gamblers to attend AADAC on Tuesdays at 1pm for an intake interview, and then attend a group or be put on a wait list for individual treatment. If the gambler was not interested in attending AADAC, they were encouraged to attend GA. It is possible that the difference in accessibility and availability of treatments for CSOs of problem gamblers versus substance abusers may account for the differences in treatment entry rates. Future CRAFT studies with CSOs of problem gamblers may offer an empirically supported treatment to the problem gambler that is readily available, and thus be more similar to prior CRAFT studies with CSOs of substance abusers. Also, providing the gambler with treatment that is consistent with a cognitive-behavioural perspective may bolster the approach, as CRAFT utilizes cognitive-behavioural principals.

Hypothesis 2: Assessment of gambling behaviour.

It was hypothesized that participants who received the individual intervention would report lower levels of gambling behaviour by the gambler than those who received only the workbook. All participants reported a statistically significant decrease in dollars gambled by the gambler over the follow-up periods. The magnitude of the difference favoring the individual intervention over the workbook group at 6 months approached a

medium effect. Overall, the magnitude of the decrease in dollars gambled reported by participants in the workbook group was classified as a small effect while those in the individual intervention group achieved a large effect size. For days gambled, there was a small effect between the groups at 6 months, with participants in the workbook group achieving medium effects and those in the individual intervention group showing large effects over time.

To gauge clinical significance of the individual intervention, Odgaard and Fowler (2010) suggest comparing the effect size of the newly tested intervention with past research to gauge whether or not it is a significantly larger effect size than what was attained in past research. They argue that if the prior effect size falls within the confidence interval of the effect size for the new intervention, then the clinical significance of the new intervention is about equal to the prior report. A significantly larger effect size would be seen when the prior effect size falls outside the confidence interval of the effect size for the new intervention.

In the study conducted by Hodgins and colleagues (2007), participants who received the workbook displayed a decrease in days gambled with a medium effect size which is comparable to the effect seen in this study for the individual intervention and within the confidence intervals calculated. Participants in the prior study who received a workbook displayed a decrease in dollars gambled with a large effect size, which is again, comparable to that seen in the current study and thus, not statistically different from the new intervention. However, it would appear that the effect size displayed by the workbook group in the current study is significantly different from the effect size achieved by the workbook group in prior studies, and fell outside of the confidence intervals. Why did

participants who received the workbook in the current study not do as well as those who received the workbook in prior studies? It is possible that participants in the current study were disappointed when they received the workbook, as they were aware that there was an individual intervention being tested; while those who received the workbook in the Hodgins study were grateful they were received the main intervention and were not part of the control group. Such differences in treatment expectation may account for the differences observed between studies. Indeed, comparison of participant ratings of satisfaction with the workbook between the studies yields noteworthy differences. Of participants who received the workbook, 42% in the current study rated that they were mostly or very satisfied with the program, compared to almost 70% in the Hodgins study.

Hypothesis 3: Assessment of CSO functioning and CSO-Gambler relationship.

It was predicted that participants in the individual intervention group would show greater improvement in personal and relationship functioning compared to those in the workbook group. Overall, there was no statistical difference between groups on any of the measures. However, effect sizes indicate that participants in both groups displayed improved functioning on all measures of personal functioning, with a trend for participants in the individual intervention group to show greater improvements than those in the workbook group. Nonetheless, since differences between groups do not reach statistical significance, conclusions are limited, and further research, with larger samples, are needed to clarify actual treatment effects.

Both groups displayed decreased scores on the BSI over the follow-up periods, although not significant, with greater reductions reported by participants in the individual intervention group than those in the workbook group. The magnitude of the difference

between groups approached a medium effect size. Comparison of the effect sizes between initial ratings and 6 month ratings revealed medium to large effect sizes for both groups. In comparison to past research (Hodgins, Toneatto, et al., 2007) the BSI effect sizes do not differ significantly from each other, or between the groups (i.e., the effect size from prior research falls within the confidence intervals for both groups in the current research). Therefore, there appears to be no clinical advantage of the individual intervention group over the workbook group in terms of decreasing general distress. However, as noted earlier, such large confidence intervals may reflect the small sample size in the current study and is not conclusive.

The participants in the individual intervention seemed to fare better than those in the workbook group in terms of reported levels of depression, anxiety, stress, and anger with the magnitude of the difference favoring the individual intervention over the workbook group ranging from medium to large. Although not significantly different from the workbook group, effect sizes indicate medium to large effects by the 6 month follow-up for participants in the individual intervention group and small to medium effects for those in the workbook group. It would appear that participants in the workbook group experienced small increases in both anxiety and stress over the follow-up periods. Participants in the workbook group demonstrated a resurgence of depressive symptoms after an initial decrease with a medium effect size. A significant interaction was also uncovered as participants in the workbook group displayed an increase in state anger and those in the individual intervention group reported decreased state anger. The fact that participants in the workbook group showed increases in anxiety, stress, depression, and anger, albeit

small, and those in the individual intervention did not, implies that participants may have felt more psychologically distressed while learning the CRAFT approach on their own.

Participants in both groups reported increased happiness in their relationship with the gambler. Slightly greater improvements were seen in the individual intervention group than the workbook group (large versus medium effect size, respectively) with a small effect size between groups observed at 6 months. Participants in both groups also rated their relationship with the gambler as improved, with small effect sizes between the groups attained by 6 months. In comparison to past research, those in the workbook group reported similar effect sizes to prior research with the workbook. The effect sizes for those in the individual intervention group were not statistically different from those who received the workbook in the previous study

All CSOs reported a decrease in motivation to change over the follow-up periods, with participants in the individual intervention group demonstrating greater reductions. This is an important, and perhaps somewhat surprising, finding, as one might expect the CSOs motivation to change to increase over the course of the CRAFT intervention. Smith and Meyers (2004) acknowledge that the CSOs motivation for treatment is difficult to gauge at intake, and that a CSO may often be more interested in getting help for themselves, and not the substance abuser. However, that the CSOs in this study experienced a decrease in motivation to change may reflect the CRAFT notion that although the CSO may be in a position to help the gambler and should make every effort to help, they are not responsible for the gambler's behaviour and need to care for and financially protect themselves.

Participants in the individual intervention group reported an increase in gamblers motivation to change while those in the workbook group reported a slight decrease. The finding that the CSOs estimate of the gamblers motivation to change increased over the follow-up period is promising that further changes may be seen in the gambler over time (e.g., reach treatment entry rates similar to substance abusers). That CSOs estimate of gamblers motivation increased over the course of the CSOs treatment, also provides further support for the individual intervention approach over the workbook, which seemed to slightly decrease gambler motivation. Future research on this approach should include a longer follow-up period to determine if long term changes are made by the gamblers and maintained by the CSO.

All participants reported experiencing fewer consequences of gambling, emotionally and behaviourally, with participants in the individual intervention group showing a trend toward greater reductions than those in the workbook group over the 6 month follow-up period. Participants also reported that the gambler experienced fewer consequences. The effect sizes at the 6 month follow-up indicate medium effects between the groups, in favour of the individual intervention. Effect sizes over time for the individual intervention group were very large, and smaller for the workbook group. According to Odgaard and Fowler (2010) however, since prior effect sizes overlap the confidence intervals for effect sizes of the individual intervention, these differences are not statistically significant.

Participant Evaluation of the Program

The majority of participants reported favourable evaluations of the program. However, participants in the individual intervention group were more likely to indicate that

their needs were met, that they were satisfied with the program, and that they would recommend the program to a friend. For example, all participants who received the individual intervention reported they were mostly or very satisfied with the program and had most or almost all of their needs met compared to approximately one third of those in the workbook group (36% and 27% respectively). One quarter of participants in the workbook group sought additional treatment compared to none in the individual intervention group, which bolsters the finding that CSOs who received the workbook had fewer of their needs met than those who received the individual intervention.

All participants who received the workbook reported that they read at least some sections by the 3 month follow-up interview (the majority read all sections) and most participants indicated that they completed exercises in the workbook and were following the procedures and strategies. However, approximately one quarter of participants who received the workbook indicated that they did not follow the procedures and strategies. Unfortunately, participants in the individual intervention group were not asked comparable questions. It is assumed that the majority of participants in the individual intervention group implemented procedures and strategies as informally reported by the therapists. Further studies of this intervention should include comparative questions about the extent to which both groups are using the CRAFT approach.

All participants were asked their opinion regarding likes and dislikes about the program. Many of the participants cited the helpfulness of CRAFT strategies, whether taught by a therapist or in the workbook (e.g., coping strategies for CSO, information about gambling, communication skills). The participants in the individual intervention group often cited contact with the therapist as helpful (e.g., therapist provided validation, reassurance in using techniques, was non-judgmental); while participants in the workbook

group reported there was not enough guidance to implement the techniques. Participants in both groups noted they did not like the long follow-up interviews.

Other Considerations

The urn randomization procedure was statistically successful in stratifying groups with no significant differences across initial assessment variables. Although no statistically significant differences were found, several differences seemed of prognostic importance, as statistical significance may not have been reached due to the small sample size. Regarding CSO functioning, the BSI score and all three DASS scale scores were higher in the individual intervention group than the workbook group. For example, participants in the workbook group fell in the "normal" range for anxiety and depression and those in the individual intervention group fell in the "mild" range. These differences suggest that participants in the individual intervention group may have experienced more psychological distress than those in the workbook group. Participants in the individual intervention group had dealt with the gambling problem for a longer period of time as indicated by the fact that individuals in this group reported the gambler had the gambling problem for more years (12 versus 9 years). The results also indicated that more participants in the individual intervention group reported gambling with VLT and slot machines, spent slightly more money, and gambled a few more days on average than those in the workbook group, although not statistically significant. These initial differences are significant in that any lack of outcome differences between the groups may be confounded by the fact that the participants in the individual intervention group presented as more distressed than those in the self-help workbook group. To help counter possible confounds, the initial rating of each outcome variable was entered as a covariate in the analysis.

Overall, the research assistants remained blind in only 29% of cases at 3 months and 60% of cases at 6 months. The researchers reported that participants often referred to either the workbook or the therapist, and thus revealed which group they were assigned. More experienced researchers collected information at the 3-month follow-up, and thus may have been more perceptive to indications of group assignment, whereas less experienced researchers tended to collect the information at the 6-month follow-up and may have missed references to group assignment. The fact that many researchers were not blind to the group participants were assigned into when collecting follow-up information introduces potential bias and may have impacted the internal reliability of this study.

Modest follow-up rates were achieved and are similar to those found in other gambling treatment follow-up studies (e.g., Hodgins, Toneatto, et al., 2007 attained a 78% 6 month follow-up rate). There were slight differences found between those individuals who completed the follow-up interviews and those who did not. The participant's who did not complete the follow-up interviews experienced fewer emotional consequences but reported more anger at the initial interview. They were dealing with the gambling problem for a longer period of time, and were more likely to have previously attended treatment for the gambling problem. Given these factors, and the fact that as a group, participants who did not complete the follow-up interview were less likely to have some form of higher education, they may have been less inclined to view a research follow-up interview as important and therefore did not return calls or respond to the follow-up reminder letter.

Therapist adherence to the CRAFT protocol was rated as 89% with agreement between two raters ranked as high. Although adherence is a basic measure of treatment integrity, it provides an indication of how closely the CRAFT protocol was followed.

Therapists reviewed almost all of the CRAFT components which indicate that participants received training on the majority of the CRAFT protocol. Unfortunately it was not feasible to measure treatment competence (i.e., how skillfully the intervention was delivered) an equally important component of treatment integrity (Dobson & Singer, 2005). There were no differences among therapists in participant's perception of the therapeutic alliance.

Strengths and Limitations

A major strength of this project lies in its unique contribution to addiction research. Successful application of the CRAFT approach to the clinical difficulties of problem gambling will broaden the generalizability of this approach from CSOs of drug and alcohol abusers to CSOs of problem gamblers. CRAFT for CSOs of problem gamblers has empirical support for both the self-help workbook (Hodgins, Toneatto, et al., 2007) and now, the individual intervention.

Methodological strengths of this study include therapist use of a treatment manual, and the inclusion of a measure of adherence to treatment protocol through random review of 40% of audio-taped sessions. Additional strengths of this design are that the participants were randomly assigned to treatment condition and follow-up interviews were collected by a research assistant intended to be blind to treatment condition, thereby eliminating interviewer bias. Together, these strengths bolster the internal validity of this study design. However, as mentioned earlier, one-third to two-thirds of research assistants determined group assignment prior to the end of the follow-up interview, which threatened internal validity.

A number of limitations are worth noting. One major limitation is the measurement used for this study. Research in the field of problem gambling is in its infancy, and research with CSOs of problem gamblers is even more limited. Consistent with this lack of research is a lack of assessment and outcome measures. Prior studies that have failed to find differences between groups could not determine if the lack of differences was due to an actual lack of differences or poor measurement of the construct. Therefore, this study administered several measures of CSO functioning, including general distress, depression, anxiety, stress and anger.

Although the use of less experienced clinicians may be a potential threat to validity, CRAFT studies to date have utilized less practiced clinicians with experience ranging from zero to three years (Smith & Meyers, 2004). All therapists for this project had Master's degrees and most have practiced and received supervision in Motivational Enhancement with problem gamblers, which the CRAFT approach incorporates. There were no differences found between therapists in terms of an alliance measure, as perceived by the CSOs.

Another limitation is that all information regarding the gambler's behaviour was obtained through reports of CSOs. However, in a study examining precipitants of gambling relapses, overall kappa agreement between gamblers reports and collateral reports was rated as fair to good (Hodgins & Makarchuk, 2003). As well, prior research has demonstrated differences between treatment conditions based on CSO reports of gambling behaviour (Hodgins, Toneatto, et al., 2007).

Finally, the small sample size poses a major limitation. The final sample size was smaller than initially proposed due to recruitment problems and did not provide sufficient

statistical power to detect small group differences. Unfortunately, smaller sample sizes are typical of treatment studies examining new interventions (e.g., Rychartik & McGillicuddy, 2006; O'Farrell, Murphy, Alter, & Fals-Stewart, 2007). A related limitation is the moderate follow-up rates which further limited the sample size used in analysis. Follow-up rates did not improve, despite monetary incentive to complete the telephone interviews. Due to these limitations in sample size, most analysis focused on effect sizes between groups and over time to determine clinical significance. The intention to treat analysis did not considerably differ from the analysis with those who completed the follow-up evaluations, which further strengthens the findings that participants who received the CRAFT individual intervention seemed to benefit more than those who received the CRAFT self-help workbook.

Conclusions and Implications

Overall, the results of this study provide limited support for the provision of the CRAFT intervention in an individual format. Although participants who received the individual intervention did not have statistically better outcomes than those who received the workbook, effect sizes indicate potential benefits for the individual intervention group. The lack of statistical differences between the CRAFT individual intervention and CRAFT workbook needs to be further clarified given the major limitation of the small sample size. The current study needs to be replicated with a larger sample to determine clinical and practical significance. It is likely that certain individuals would benefit more from the CRAFT individual intervention and others from the workbook. For example, CSOs with significant others who have dealt with a gambling problem for a longer period of time, may need more assistance in implementing CRAFT strategies. Future studies should explore

such a treatment matching approach and focus on dismantling the important components of the CRAFT intervention.

The successful service provision of the CRAFT approach with CSOs of problem gamblers represents one of the first individualized treatments intended to affect both the gambler and their concerned others. Given the limited availability of treatment strategies for CSOs of problem gamblers, the CRAFT individual intervention offers an alternative, and at least equally effective, approach to the workbook.

References

Abbott, D. A., Cramer, S. L., & Sherrets, S. D. (1995). Pathological gambling and the family: Practical implications. *Families in Society, 76*, 213-219.

Aickin, M. (1982). A program for balancing the allocation of subjects to treatment in a clinical trial. *Computers and Biomedical Research, 15*, 519-524.

Al-Anon Family Groups. (1984). *Al-Anon faces alcoholism.* New York: Author.

Alberta Alcohol and Drug Abuse Commission. (2001). *Adult gambling and problem gambling in Alberta.* Edmonton, AB: Author.

Algina, J., & Keselman, H. J. (2003). Approximate confidence intervals for effect sizes. *Educational and Psychological Measurement, 63*, 537-553.

Altman, D. G. (1985). Comparability of randomized groups. *The Statistician, 34*, 125-136.

Azrin, N. H. (1976). Improvements in the community-reinforcement approach to alcoholism. *Behavior Research and Therapy, 14*, 339-348.

Azrin, N. H., Naster, B. J., & Jones, R. (1973). Reciprocity counseling: A rapid learning-based procedure for marital counseling. *Behavior Research and Therapy, 11*, 365-382.

Barber, J. G., & Crisp, B. R. (1994). The effects of alcohol abuse on children and the partner's capacity to initiate change. *Drug and Alcohol Review, 13*, 409-416.

Cheek, F. E., Franks, C., Laucius, J., & Burtle, V. (1971). Behavior-modification training for wives of alcoholics. *Quarterly Journal of Studies on Alcohol, 32*, 456-461.

Cnaan, A., Laird, N., & Slasor, P. (1997). Using the general linear mixed model to analyze unbalanced repeated measures and longitudinal data. *Statistics in Medicine, 16,* 2349-2380.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Academic Press.

Copello, A. G., & Orford, J. F. (2002). Addiction and the family: Is it time for services to take notice of the evidence? *Addiction, 97*(11), 1361-1363.

Crisp, B. R., Thomas, S. A., Jackson, A. C., & Thomason, N. (2001). Partners of problem gamblers who present for counselling: Demographic profile and presenting problems. *Journal of Family Studies, 7*(2), 208-216.

Cuadrado, M. (1999). A comparison of Hispanic and Anglo calls to a gambling help hotline. *Journal of Gambling Studies, 15*(1), 71-81.

Cunningham, J. A. (2005). Little use of treatment among problem gamblers. *Psychiatric Services, 56,* 1024-1025.

Delucchi, K., & Bostrom, A. (1999). Small sample longitudinal clinical trials with missing data: A comparison of analytic methods. *Psychological Methods, 4*(2), 158-172.

Derogatis, L. R. (1993). *Brief Symptom Inventory – Administration, scoring, and procedure manual.* Minneapolis: National Computer Systems, Inc.

Distress Centre Summary Report (April 1, 1998 to March 31, 1999). *Service Monitoring & Research.* April 2001.

Dittrick, J. E., & Trapold, M. A. (1984). A treatment program for the wives of alcoholics: An evaluation. *Bulletin of the Society of Psychologists in Addictive Behaviors, 3,* 91-102.

Dobson, K.S., & Singer, A.R. (2005). Definitional and practical issues in the assessment of treatment integrity. *Clinical Psychology: Science and Practice, 12,* 384-387.

Dowling, N., Smith, D., & Thomas, T. (2007). The family functioning of female pathological gamblers. *International Journal of Mental Health and Addiction, 7* (1), 29-44.

Ferris, J., & Wynne, H. (2001). The Canadian Problem Gambling Index: Final report. Ottawa: Canadian Centre on Substance Abuse

Finney, J. W., & Monahan, S. C. (1996). The cost-effectiveness of treatment for alcoholism: A second approximation. *Journal of Studies on Alcohol, 56,* 229-243.

Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2004). *Applied Longitudinal Analysis.* Hoboken, NJ: Wily.

Garret, J., Stanton, M. D., Landau, J., Baciewicz, G., Brinkman-Sull, D., & Shea, R. (1999). The "concerned other" call: Using family links and networks to overcome resistance to addiction treatment. *Substance Use and Misuse, 34,* 363-382.

GamCare Services Report (2008). Web access: http://www.gamcare.org.uk/data/files/publications/2008/Care Services Report Summary.pdf

Gerstein, D., Murphy, S., Toce, M., Hoffmann, J., Palmer, A., Johnson, R., Larison, C., Chuchro, L., Bard, A., Engelman, L., Hill, M.A., Buie, T., Volberg, R., Harwood, H., Tucker, A., Christiansen, E., Cummings, W., & Sinclair, S. (1999). Gambling Impact and

Behavior Study: Report to the National Gambling Impact Study Commission. Chicago: National Opinion Research Center. Accessed online http://cloud9.norc.uchicago.edu/dlib/ngis/6.pdf

Griffiths, M., Scarfe, A., & Bellringer, P. (1999). The UK national telephone gambling helpline: Results of the first year of operation. *Journal of Gambling Studies, 15*(1), 83-90.

Gueorguieva, R., & Krystal, J. (2004). Move over ANOVA: Progress in analyzing repeated-measures data and its reflection in papers published in the archives of general psychiatry. *Archives of General Psychiatry, 61*, 310-317.

Harrison, C., & Donnelly, D. (1987). A couples group for alcoholics, gamblers and their spouses in recovery: A pilot study. *Sexual and Relationship Therapy, 2*(2), 139 – 143.

Hedeker, D., & Mermelstein, R.J. (2000). Analysis of longitudinal substance use outcomes using ordinal random-effects regression models. *Addiction, 95, (supplement 3)*, S381-S394.

Hendrick, S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage & the Family, 50*, 93-98.

Hodgins, D. C., Makarchuk, K., el-Guebaly, N. & Peden, N. (2002). Why problem gamblers quit gambling: A comparison of methods and samples. *Addiction Research and Theory, 10*, 203-218.

Hodgins, D. C., & Makarchuk, K. (2003). Trusting problem gamblers: Reliability and validity of self-reported gambling behavior. *Psychology of Addictive Behaviors, 17*(3), 244-248.

Hodgins, D. C., & el-Guebaly, N. (2004). Retrospective and prospective reports of precipitants to relapse in pathological gambling. *Journal of Consulting and Clinical Psychology, 72,* 72-80.

Hodgins, D. C., Toneatto, T., Makarchuk, K., Skinner, W., & Vincent, S. (2007). Minimal Treatment Approaches for Concerned Significant Others of Problem Gamblers: A Randomized Controlled Trial. *Journal of Gambling Studies, 23,* 215-230.

Hodgins, D. C., Shead, N. W., & Makarchuk, K. (2007). Relationship satisfaction and psychological distress among concerned significant others of pathological gamblers. *Journal of Nervous and Mental Disease, 195*(1), 65-71.

Holder, H., Longabaugh, R., Miller, W. R., & Rubonis, A. V. (1991). The cost effectiveness of treatment for alcoholism: A first approximation. *Journal of Studies on Alcohol, 52,* 517-540.

Jacobson, N. S. & Truax, P. (1991). Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12-19.

Johnson, V. E. (1986). *Intervention: How to help those who don't want help.* Minneapolis: Johnson Institute.

Johnson, E. E., & Nora, R. M. (1992). Does spousal participation in Gamblers Anonymous benefit compulsive gamblers? *Psychological Reports, 71,* 914.

Kirby, K. C., Marlowe, D. B., Festinger, D. S., Garvey, K. A., & LaMonaca, V. (1999). Community reinforcement training for family and significant others of drug abusers: A unilateral intervention to increase treatment entry of drug users. *Drug and Alcohol Dependence, 56,* 85-96.

Korman, L. M., Collins J., Dutton, D., Dhayananthan, B., Littman-Sharp, N., & Skinner, W. (2008). Problem gambling and intimate partner violence. *Journal of Gambling Studies, 24,* 13-23.

Korn, D. A. & Skinner, H. (2000). Gambling expansion in Canada: An emerging public health issue. Canadian Public Health Association 2000 position paper.

Lachin, J. M. (1981). Introduction to sample size determination and power analysis for clinical trials. *Controlled Clinical Trials, 2,* 93-113.

Lachin, J. M. (2000). Statistical considerations in the intent-to-treat principle. *Controlled Clinical Trials, 21,* 167–189.

Ladouceur, R., Sylvain, C., Boutin, C., Lachance, S., Doucet, C., Leblond, J., et al., (2001). Cognitive treatment of pathological gambling. *Journal of Nervous and Mental Disease, 189*(11), 774-780.

Lavori, P. W. (1992). Clinical trials in psychiatry: Should protocol deviation censor patient data? *Neuropsychopharmacology, 6*(1), 39-48.

Lee, B. K., & Rovers, M. (2008). Bringing torn lives together again: Effects of the first congruence couple training application to clients in pathological gambling. *International Gambling Studies, 8,* 113-29.

Leiseur, H. R., & Custer, R. L. (1984). Pathological gambling: Roots, phases and treatment. *The Annals of the American Academy of Political and Social Science, 474,* 146-156.

Leiseur, H.R. (1984). The Chase: Career of the Compulsive Gambler. Schenkman Books, Cambridge cited in Kalischuk, R. G., Nowatzki, N., Cardwell, K., Klein, K., & Solowoniuk, J. (2006). Problem gambling and its impact on families: A literature review. *International Gambling Studies, 6*(1), 31-60.

Liepman, M. R., Nirenberg, T. D., & Begin, A. M. (1989). Evaluation of a program designed to help family and significant others to motivate resistant alcoholics into recovery. *American Journal of Drug and Alcohol Abuse, 15*(2), 209-221.

Liao, M. (2008). Intimate partner violence within the Chinese Community in San Francisco: Problem gambling as a risk factor. *Journal of Family Violence, 23,* 671-678.

Lobsinger, C., & Beckett, L. (1996). *Odds on the break even: A practical approach to gambling awareness.* Canberra: Relationships Australia, Inc.

Loneck, B., Garrett, J. A., & Banks, S. M. (1996a). The Johnson Intervention relapse during outpatient treatment. *American Journal of Drug and Alcohol Abuse, 22,* 363-375.

Lorenz, V. C., & Shuttlesworth, D. E. (1983). The impact of pathologic gambling on the spouse of the gambler. *Journal of Community Psychiatry, 11,* 67-75.

Lorenz, V. C., & Yaffee, R. A. (1988). Pathological gambling and psychosomatic, emotional and mental difficulties as reported by the spouse. *Journal of Gambling Behavior, 4,* 13-26.

Lorenz, V. C., & Yaffee, R. A. (1989). Pathological gamblers and their spouses: Problems in interaction. *Journal of Gambling Behavior, 5,* 113-126.

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety and Stress Scales (DASS).* Psychology Foundation Monograph (Available from the Psychology Foundation, Room 1005 Mathews Building, University of New South Wales, NSW 1052, Australia).

McComb, J. L., Lee, B. K., & Sprenkle, D. H. (2009). Conceptualizing and treating problem gambling as a family issue. *Journal of Marital and Family Therapy, 35* (4), 415-430.

Makarchuk, K. & Hodgins, D.C. (2001). *Minimal treatment for concerned significant others of problem gambling. A self-help manual for CSOs of problem gamblers.* University of Calgary, AB.

Makarchuk, K., Hodgins, D. C., & Peden, N. (2002). Development of a brief intervention for concerned significant others of problem gamblers. *Addictive Disorders & Their Treatment, 1*(4), 126-134.

McConnaughy, E. A., Prochaska, J. O., & Velicer, W. F. (1983). Stages of change in psychotherapy: Measurement and sample profiles. *Psychotherapy: Theory, Research, and Practice, 20,* 368-375.

Meyers, R. J., Miller, W. R., Hill, D. E., & Tonigan, J. S. (1999). Community reinforcement and family training (CRAFT): Engaging unmotivated drug users in treatment. *Journal of Substance Abuse, 10*(3), 291-308.

Meyers, R. J., Miller, W. R., Smith, J. E., & Tonigan, J. S. (2002). A randomized trail of two methods for engaging treatment refusing drug users through concerned significant others. *Journal of Consulting and Clinical Psychology, 70*(5), 1182-1185.

Meyers, R. J., Apodaca, T. R., Flicker, S. M., & Slesnick, N. (2002). Evidence-based approaches for the treatment of substance abusers by involving family members. *Family Journal: Counseling & Therapy for Couples & Families, 10*(3), 281-288.

Miller, W. R., Tonigan, J. S., & Longabaugh, R. (1995). The Drinker Inventory of Consequences (DrInC): An instrument for assessing adverse consequences of alcohol abuse. *Project MATCH Monograph Series, 4.* Rockville, MD:NIAAA.

Miller, W. R., Meyers, R. J., & Tonigan, J. S. (1999). Engaging the unmotivated for treatment for alcohol problems: A comparison of three strategies for intervention through family members. *Journal of Consulting and Clinical Psychology, 67,* 688-697.

Miller, W. R., & Meyers, R. J. (2001). Summary and reflections. In R. J. Meyers & W. R. Miller (Eds.), *A Community Reinforcement Approach to Addiction Treatment* (pp. 161-170). Cambridge, UK: Cambridge University Press.

Miller, W. R., & Wilbourne, P. L. (2002). Mesa Grande: A methodological analysis of clinical trials of treatments for alcohol use disorders. *Addiction, 97,* 265-277.

Muelleman, R. L., DenOtter, T., Wadman, M. C., Tran, T. P., & Anderson, J. (2002). Problem gambling in the partner of the emergency department patient as a risk factor for intimate partner violence. *The Journal of Emergency Medicine, 23*(3), 307-312.

Narcotics Anonymous. (1993). *Narcotics Anonymous: It works – how and why.* Van Nuys, CA: N.A. World Services.

National Gambling Impact Study Commission (1999). National gambling impact study commission final report. Retrieved online from http://govinfo.library.unt.edu/ngisc/reports

Oakes, J. M., & Feldman, H. A. (2001). Statistical power for non-equivalent pretest-posttest designs: The impact of change score versus ANCOVA models. *Evaluation Review*, *25*, 3-28.

Odgaard, E. C., & Fowler, R. L. (2010). Confidence intervals for effect sizes: Compliance and clinical significance in the *Journal of Consulting and Clinical Psychology*, *78*(3), 287-297.

O'Farrell, T.J., Murphy, M., Alter, J., & Fals-Stewart, W. (2007). Brief family treatment intervention to promote aftercare among male substance abusing patients in inpatient detoxification: A quasi-experimental pilot study. *Addictive Behaviors, 32*, 1681-1691.

Onken, L.S., Blaine, J.D., & Battjes, R. (1997). Behavioural therapy research: A conceptualization of a process. In S.W. Henggeler & R. Amentos (Eds.), *Innovative approaches for difficult to treat populations* (pp. 477-485). Washington, DC: American Psychiatric Press.

Petry, N. M. (2005). *Pathological gambling: Etiology, comorbidity, and treatment.* Washington, DC: American Psychological Association.

Rush, B., Moxam, R. S., & Urbanoski, K. A. (2002). Characteristics of people seeking help from special programs for the treatment of problem gambling in Ontario. *The Electronic Journal of Gambling Issues, 6*, 32-54.

Rychtarik, R. G., & McGillicuddy, N. B. (2006). Preliminary evaluation of a

Coping Skills Training Program for those with a pathological gambling partner. *Journal of*

Gambling Studies, 22, 165-178.

Shaw, M. C., Forbush, K. T., Schlinder, J., Rosenman, E., & Black, D. W. (2007).

The effect of pathological gambling on families, marriages, and children. *CNS Spectrum,*

12(8), 615-622.

Sisson, R. W., & Azrin, N. H. (1986). Family member involvement to initiate and

promote treatment of problem drinkers. *Behavior Therapy and Experimental Psychiatry,*

17, 15-21.

Smith, J. E., Meyers, R. J., & Milford, J. L. (2003). Community reinforcement

approach and community reinforcement and family training. In R. K. Hester & W. R.

Miller (Eds.), *Handbook of Alcoholism Treatment Approaches: Effective Alternatives* (3rd

ed., pp. 237-258). Boston: Allyn & Bacon.

Smith, J. E., & Meyers, R. J. (2004). *Motivating substance abusers to enter*

treatment: Working with family members (pp. 258-273). Guilford: New York.

Snijders, T. (1996). Analysis of longitudinal data using the hierarchical linear

model. *Quality and Quantity, 30,* 405-426.

Sobell, L. C., & Sobell, M. B. (1992). Time-line follow-back: A technique for

assessing self-reported alcohol consumption. In R. Z. Litten & J. P. Allen (Eds.)

Measuring Alcohol Consumption: Psychological and Biochemical Methods (pp. 41-72).

NJ: Humana Press.

Spielberger, C. D. (1999). *State-trait Anger Expression Inventory-II (STAXI-II)*. Odessa, FL: PAR/Psychological Assessment Resources.

Steiger, J. H. (2004). Beyond the *F* test: Effect size confidence intervals and tests of close fit in the analysis of variance and contrast analysis. *Psychological Methods, 9*(2), 164-182.

Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics Scales. *Journal of Marriage and Family, 41*, 75-88.

Straus, M. A. (1990a). The Conflict Tactics Scales and its critics: An evaluation and new data on validity and reliability. In M. A. Straus & R. J. Gelles, *Physical Violence in American Families: Risk Factors and Adaptations to Violence in 8, 145 families* (pp. 49-73). New Brunswick, NJ: Transaction Publishing.

Straus, M. A., & Douglas, E. M. (2004). A short form of the Revised Conflict Tactics Scales, and typologies for severity and mutuality. *Violence and Victims, 19*(5), 507-521.

Streiner, D.L. (2006). Sample size in clinical research: When is enough enough? *Journal of Personality Assessment, 87*(3), 259-260.

Szapocznik, J., Kurtines, W. M., Foote, F., Perez-Vidal, A., & Hervis, O. E. (1986). Conjoint versus one person family therapy: Further evidence for the effectiveness of conducting family therapy through one person. *Journal of Consulting and Clinical Psychology, 54*, 395- 397.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using Multivariate Statistics* (4th ed.). Boston: Allyn and Bacon.

Thomas, E.J., & Ager, R. D. (1993). Unilateral family therapy with the spouses of uncooperative alcohol abusers. In T.J. O'Farrell (Ed.), *Treating alcohol problems: Marital and family interventions* (pp. 3-33). New York: Guilford Press.

Thomas, E. J., & Santa, C. A. (1982). Unilateral family therapy for alcohol abuse: A working conception. *American Journal of Family Therapy, 10,* 49-58.

Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment, 1,* 207-210.

Volberg, R. A. (1998). *Gambling and problem gambling among adolescents in New York.* Albany: New York Council on Problem Gambling.

Weinstock, J., Whelan, J., & Meyers, A. (2004). Behavioral assessment of gambling: An application of the Timeline Follow Back Method. *Psychological Assessment, 16*(1), 72-80.

Wenzel, M., McMillen, J., Marshall, D., & Ahmed, E. (2004). *Validation of the Victorian Gambling Screen.* Melbourne, Victoria, Australia: Gambling Research Panel.

Zion, M. M., Tracy, E., & Abell, N. (1991). Examining the relationship between spousal involvement in Gam-Anon and relapse behaviors in pathological gamblers. *Journal of Gambling Studies, 7*(2), 117-131.

APPENDIX A: Focus group results

Results of the Focus Group

Focus Group Question	Major Themes
Negative consequences that result from significant other's gambling problem.	Financial problems, emotional and health issues, family relationships, social isolation, loss of trust.
Strategies, coping mechanisms, and responses that have been ineffective and effective.	Ineffective: Nagging, screaming, expressing disapproval, threats/ultimatums, punishing, rationalizing, emotional pleading, enabling behaviour, minimizing danger, simply providing names of referrals.
	Effective: Setting boundaries/limits, taking one day at a time, going to church or finding spirituality, discovering new interests/activities, working on releasing guilt and responsibility, recognizing and understanding that gambling is an addiction, gaining support from family and friends, taking financial control, seeking credit counseling/legal advice/counseling. Giving respect to gambler when warranted, showing support to gambler, making a conscious effort to stop enabling, not forcing the gambler to react, supporting the gambler with regards to attending treatment.
Differences between substance abusers and problem gamblers.	More of a concern to substance abusers: violence.
	More of a concern to problem gamblers: emotional abuse, anger, loneliness, isolation, shortage of help for CSOs, fact that gambling can occur without others awareness.
Signs of gambling.	Immediate signs: Gambler being upset when questioned, lying, using stronger language, unable to make eye contact, uncommunicative, flying off the handle, acting defensive, nervous, meek, overly nice, guilty, cranky, high or excited, unaccounted for time.
	Delayed signs: Personality changes, increased stress, health deterioration, depression, neglect of personal hygiene and appearance, catching gambler in lies.
Special needs of this population.	Legal protection, education, public government awareness, stress management, communication training, group meetings, guidance on how to handle problem.

APPENDIX B: Adherence checklist

CRAFT TREATMENT INTEGRITY CHECKLIST

Rate whether each point was covered at some point during the therapy. In other words, did the therapist cover this topic in any of the sessions? You can use the treatment manual to help you further define each point below.

Module 1

- ☐ Review problem and repercussions
- ☐ Review past attempts to influence IP's behaviour
- ☐ Set positive expectations
- ☐ Identify CSO's reinforcers
- ☐ Explain CRAFT's basic premise
- ☐ Review CSO responsibilities

Module 2

- ☐ Description of Functional Analysis (referred to as "record of gambling behaviour")
- ☐ Problem behaviour overview
- ☐ Identify triggers of IP's gambling
- ☐ Outline the gambling behaviour
- ☐ Identify the short-term positive consequences
- ☐ Identify the long-term negative consequences

Module 3

- ☐ Rationale for learning communication skills
- ☐ Description of positive communication skills
- ☐ Making a request

Module 4

- ☐ The concept of positive reinforcement
- ☐ Generate a list of positive reinforcers
- ☐ Identify ongoing non-gambling activities to reward
- ☐ Functional analysis of IPs healthy, enjoyable behaviour
- ☐ Recognize signs of gambling
- ☐ Verbally link rewards with non-gambling behaviour

Module 5

- ☐ Natural consequences procedure: Rationale for letting it happen
- ☐ Find a suitable natural consequence
- ☐ Guidelines for allowing the natural consequences
- ☐ Time out from positive reinforcement: Rationale for withdrawing rewards
- ☐ Occasions and reinforcers for the time-out procedure
- ☐ Use positive communication to explain removal of rewards

☐   Withdraw reinforcers linked with more serious negative consequences

Module 6

☐   Psychological functioning issues of the CSO
☐   Assess the CSO's overall degree of happiness
☐   Establish goals and a strategy for attaining them
☐   Broaden the CSOs support system
☐   Importance of developing social activities independent of the IP
☐   Generate a list of enjoyable, independent social activities

Module 7

☐   Choosing a time of higher IP motivation
☐   Using positive communication skills when inviting IP to treatment
☐   Other formats for inviting an IP to enter treatment
☐   Handling refusal by an IP to enter treatment
☐   Preparing for possibility of premature dropout
☐   CSO's support of IP's therapy

AS WELL...Keep an ear out for:

☐   Role plays
☐   Use of the positive communications guidelines
☐   Use of problem solving skills

43 CRAFT procedures in total

APPENDIX C: Consent form

UNIVERSITY OF
CALGARY

Consent Form

Title of Project: An Investigation of Two Treatments for Concerned Significant Others of
Problem Gamblers. Sponsor: Alberta Gaming Research Institute.

Name of Researcher, Faculty, Department, Telephone & Email: Nicole Peden, M.Sc.
Department of Psychology, Faculty of Social Sciences, University of Calgary, 403-210-
9500, npeden@ucalgary.ca

Supervisor: David C. Hodgins, Ph.D., C. Psych., Associate Professor, Department of
Psychology, Faculty of Social Sciences, University of Calgary, 403-220-3371,
dhodgins@ucalgary.ca

This consent form, a copy of which has been given to you, is only part of the process of
informed consent. If you want more details about something mentioned here, or
information not included here, you should feel free to ask. Please take the time to read this
carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this
research study.

Purpose of the Study: Treatment options for concerned significant others (CSOs) of
problem gamblers are limited and available treatments focus exclusively on the CSOs
distress. Community Reinforcement and Family Training (CRAFT) is one approach that
has been shown to reduce CSO distress in addition to the addict's behaviour. The present
study will modify the CRAFT approach into an individual treatment format and compare it
to the CRAFT self-help workbook.

What Will I Be Asked To Do?
You will be asked to participate in an interview about your significant other's gambling at
the University of Calgary and will be randomly assigned to participate in one of two
different interventions, a self-help intervention or an 8-week face-to-face intervention. The
face-to-face sessions will be tape recorded for supervision. Tapes will be destroyed upon
completion of the study. Prior to group assignment, you will be contacted and interviewed
about your personal functioning (e.g. feelings of anger, anxiety, depression), your

relationship with the gambler, and the gamblers activities (gambling days, amount spent, treatment sought, etc.) since the last interview. You will also be asked to complete a similar telephone interview at 2 months and 6 months. These interviews will take about an hour.

Your participation in this study is voluntary and you can refuse to participate altogether at any time. You are free to withdraw from the study at any time, and will still receive the $50 gift certificate. You may refuse to answer specific items or questions in interviews or questionnaires at any time. Withdrawing from the research portion of the study will not influence the treatment you will receive; the therapist will remain unaware of whether you are participating in the research portion or not.

Information regarding additional treatment services will be provided to you at the beginning of the study. If at any time you feel you are not receiving enough treatment, you will be encouraged to seek additional help.

What Type of Personal Information Will Be Collected?

The results of this study will be completely confidential and your name will not be used on any questionnaires or tapes. Information from this study will not be made public in any form in which you personally can be identified as a participant. Should you agree to participate we will ask you to supply the name and telephone number of someone who is familiar with you for location purposes for the follow-up interviews. You will be asked to provide information regarding your gender, age, education level, ethnicity, marital status, # of children, occupation, and relationship to the gambler. You will also be asked personal information about the gambler (gender, age, education level, ethnicity, marital status, # of children, and occupation).

Please put a check mark on the corresponding line(s) that grants me your permission to:

I grant permission to be audio taped: *Yes:* ___ *No:* ___

I grant permission to be videotaped: *Yes:* ___ *No:* ___

Are there Risks or Benefits if I Participate?
Risks
It is known that spousal violence can occur with problem gambling. When this is an issue the perpetrators are often quite concerned about confidentiality of family business. If violence is an issue, steps will be taken to safely address them. However, I would like you to think for a moment about your own situation and about how your significant other might react to the news that you are participating in a research project related to concerned significant others of problem gamblers.

Does the research component of this project add any additional issues or risks for you in your relationship to the problem gambler?

Yes____ No____

Does the treatment component of this project add any additional issues or risks for you in your relationship to the problem gambler?

Yes____ No____

If you answered YES to either of the above questions, or if you decide NOT to continue in the research at this point or even later in the study, you will still receive the workbook, a list of local resources, and a $50 gift certificate.

The information you provide throughout this study is confidential with the exception of information that reveals the intent to harm yourself or someone else.

Benefits
The benefits of participating in this treatment study include the potential to: 1) experience improved functioning and decreased distress (i.e., less anger, decreased depression and anxiety, increased happiness in your relationship with your loved one), 2) decrease the amount and frequency of gambling by your loved one, and 3) engage your loved one into treatment for their gambling problem.

At the end of the study, you will be mailed a $50.00 grocery gift certificate. You will also be reimbursed for travel/parking expenses or receive a parking pass for each visit.

What Happens to the Information I Provide?
Participation is completely voluntary, anonymous and confidential. You are free to discontinue participation at any time during the study. No one except the researcher, the therapists, the research assistant and the supervisor will be allowed to see or hear any of the answers to the questionnaire or the video tape. There are no names on the questionnaire. Only group information will be summarized for any presentation or publication of results. The questionnaires are kept in a locked cabinet only accessible by the researcher, her supervisor, and the research assistant. The anonymous data will be stored for three years on a computer disk, at which time, it will be permanently erased along with the original forms and tapes. If you decide to withdraw from the study your information may still be used and all data will be kept in a locked cabinet in a secured room at the University of Calgary and destroyed upon completion of the study.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to not answer specific items or questions in interviews or questionnaires. You are free to withdraw from the study at any time, and will still receive the $50 gift certificate. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature _____

Date: _____

Researcher's Name: (please print) _____

Researcher's Signature: _____

Date: _____

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Ms. Nicole Peden

Psychology/Faculty of Social Sciences
403-210-9500, npeden@ucalgary.ca
And
Dr. David C. Hodgins, Psychology/Faculty of Social Sciences
403-220-3371, dhodgins@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact Bonnie Scherrer in the Research Services Office, University of Calgary at (403) 220-3782; email bonnie.scherrer@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

APPENDIX D: Table of Contents of CRAFT Workbook

TABLE OF CONTENTS

APPENDIX E: Script for group assignment

Script for Group Assignment

As you know, you will be assigned to receive either a self-help workbook or 8-12 sessions of a program designed to help family members/friends of individuals with gambling problems. I have to go use a computer program that will tell me which group you have been assigned to. Whether you are assigned to one group or the other is random, determined by the computer.

SELF HELP WORKBOOK

You have been assigned to receive the self-help workbook. This workbook was designed to help family members/friends of individuals with gambling problems. You'll have a chance to learn different techniques that will help you better deal with the gambling problem. It has a number of components (open to table of contents) including getting motivated to help, helping yourself, increasing your awareness of the gambling problem, and helping the individual with the gambling problem. Remember, you do not have to do anything in the manual that you do not want to do. There is also a resource sheet at the end of this manual (flip to resource page) that you are encouraged to use if you feel you need more help. This self-help workbook has been used in two past research studies and has been found to be helpful for those affected by problem gambling. Those who have been most successful have put in a lot of hard work, reading the manual, completing exercises, and practicing the procedures suggested.

8-12 SESSIONS OF THE CRAFT PROGRAM

You have been assigned to receive 8-12 sessions of a program that was designed to help family members/friends of individuals with gambling problems. This program is called the Community Reinforcement and Family Training approach, or CRAFT. You will have a chance to learn different techniques that will help you better deal with the gambling problem. You will have a CRAFT therapist: this person will guide you through the program (8-12 sessions), which will be held on a weekly basis. You'll meet either at AADAC offices or here in our lab. Remember, you do not have to do anything that you do not want to do. Here is a list of resources (give resource page) that you are encouraged to use if you feel you need more help. The therapist is supportive of you contacting as many of these agencies as you wish while participating in the program. Your therapist will be either: Nicole, Karyn, or Dawn. I need to see who is available so you will need to be contacted by her. We need to get a # where the therapist can call you to schedule the first session. Is it okay to leave a message? Get conditions of calling: (for example, can we say we are from a research study?)

I will be calling in 3 months and again at 6 months to see how things are going. Will you be moving in the next few months? Will you be out of town? Will your number change?

Do you have any questions?

APPENDIX F: Letter to participant

March 19, 2009

Dear PARTICIPANT:

Thank you for participating in the research study regarding helping family members of problem gamblers. We have included a summary of preliminary results but are hoping to reach you to get your follow-up information and hear about your experience. The final report is being generated and it is important that we include your information.

Also, we would like to mail you a $50 gift certificate for participating but would need confirmation of your address. Please call us at 403-210-9580 and speak to Cayla. Or you can leave a message with your name, phone number, and a time that you can be reached.

Again, thank you for participating in this important research study and we look forward to your hearing from you soon.

Sincerely,

Nicole Peden
PhD Candidate, Clinical Psychology
University of Calgary

APPENDIX G: Debriefing script

Debriefing Protocol

Participants will be debriefed over the phone following completion of the interview. The debriefing protocol outlines aspects of how pathological gambling can affect individuals other than the gambler. Participants will be given ample opportunity to ask any questions regarding procedures, use of information and other relevant issues. Part of the debriefing process includes an information sheet on available resources for the treatment of pathological gambling and additional resources for family members and friends which will be sent to them with the gift certificate or provided over the phone as needed.

Post Project Discussion

"Not only can problem gambling have a devastating impact on the gambler, the negative consequences resulting from gambling may affect eight to ten other individuals in the gambler's life. Concerned significant others (CSOs) of individuals with gambling problems can be emotionally, socially, and financially affected by their loved ones' behaviour and endure significant psychological distress. Family influence is often cited by problem gamblers as an important factor in the ultimate decision to change their behaviour. Further, engaging CSOs is an excellent way to reach those problem gamblers who are resistant to treatment.

Treatment options for concerned significant others (CSOs) of problem gamblers are limited and available treatments focus only on the CSOs distress. Community Reinforcement and Family Training (CRAFT) is one approach that has been shown to reduce CSO distress in addition to the addict's behaviour. The CRAFT approach was modified into a self-help format for CSOs of problem gamblers and showed success in reducing gambling behaviour, but did not reduce CSO distress or improve treatment entry rates for gamblers. Many CSOs reported the need for more guidance in implementing the strategies and procedures.

The present study modified the CRAFT approach into an individual treatment format and examined it's success in comparison to the self-help workbook. Over the three interviews, we collected information on a number of areas including: the extent of the gambler's involvement in gambling activities, rates of which gambler's enter treatment, CSO functioning (such as depression, anxiety and anger), and relationship happiness. The information collected from these interviews will be used to examine differences between the two treatments (i.e. the self-help workbook versus the individual intervention).

We realize that, for some people, thinking about certain aspects of their loved one's gambling behaviour may be upsetting or cause some concerns. Our goal is to make sure that you complete this study feeling as good as you did when you entered it. If, for any reason, you are feeling distressed as a result of your participation in this study, please feel free to let me know. Dr. Hodgins has made arrangements to see distressed participants and I would be happy to refer you if you feel you would like to talk to someone about your feelings or concerns. Otherwise, if you have questions that you think I can answer or concerns you'd like to talk to me about, I'd be happy to discuss these with you now.

We would appreciate your feedback about your experience in this study. Please feel free to offer your comments and criticisms to either to Dr. Hodgins (dhodgins@ucalgary.ca or myself (npeden@ucalgary.ca). Thank you again for participating and you can expect the results of this study in the mail when it is completed."

APPENDIX H: CSO DSM-IV screening

Concerned Significant Others of Gamblers DSM-IV Screening Questionnaire

1) Has he/she ever spent a lot of time over a period of weeks preoccupied with gambling or preoccupied with getting money to gamble?

        Definitely true   Probably true   Not true   Unsure

2) Has he/she ever tried to stop, cut down, or control his/her gambling?

        Definitely true   Probably true   Not true   Unsure

3) Has he/she ever gambled as a way to escape personal problems or as an attempt to deal with negative feelings?

        Definitely true   Probably true   Not true   Unsure

4) Has there ever been a period of time when if he/she lost money gambling, he/she would return another day to get even?

        Definitely true   Probably true   Not true   Unsure

5) Has he/she ever lied to family members, friends, or others about how much he/she gambles or about how much money he/she lost on gambling?

        Definitely true   Probably true   Not true   Unsure

6) Has he/she ever written a bad cheque or taken something that didn't belong to him/her in order to pay for gambling?

        Definitely true   Probably true   Not true   Unsure

7) Has his/her gambling ever caused serious problems in his/her relationships with family or friends?

        Definitely true   Probably true   Not true   Unsure

8) Has he/she ever needed to ask anyone to loan him/her money or otherwise bail him/her out of a desperate money situation caused by gambling?

        Definitely true   Probably true   Not true   Unsure

APPENDIX I: Problem Gambling Severity Index

Problem Gambling Severity Index

Thinking about the last 12 months...

Have you bet more than you could really afford to lose?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Still thinking about the last 12 months, have you needed to gamble with larger amounts of money to get the same feeling of excitement?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

When you gambled, did you go back another day to try to win back the money you lost?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Have you borrowed money or sold anything to get money to gamble?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Have you felt that you might have a problem with gambling?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Has gambling caused you any health problems, including stress or anxiety?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Has your gambling caused any financial problems for you or your household?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

Have you felt guilty about the way you gamble or what happens when you gamble?
    0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

APPENDIX J: Brief Symptom Inventory

Brief Symptom Inventory

Instructions:
Here is a list of problems people sometimes have. Please describe how much that problem has distressed or bothered you during the past 7 days including today.

Not at all	A little bit	Moderately	Quite a bit	Extremely
0	1	2	3	4

1. Nervousness or shakiness inside _____
2. Faintness or dizziness _____
3. The idea that someone else can control your thoughts _____
4. Feeling others are to blame for most of your troubles _____
5. Trouble remembering things _____
6. Feeling easily annoyed or irritated _____
7. Pains in heart or chest _____
8. Feeling afraid in open spaces or on the streets _____
9. Thoughts of ending your life _____
10. Feeling that most people cannot be trusted _____
11. Poor appetite ___
12. Suddenly scared for no reason _____
13. Temper outbursts that you could not control ___
14. Feeling blocked in getting things done _____
15. Feeling lonely _____
16. Feeling blue _____
17. Feeling no interest in things _____
18. Feeling fearful _____
19. Your feelings being easily hurt _____
20. Feeling that people are unfriendly or dislike you _____
21. Nausea or upset stomach _____
22. Feeling inferior to others _____
23. Feeling that you are watched or talked about by others _____
24. Trouble falling asleep _____
25. Having to check and double-check what you do _____
26. Difficulty making decisions _____
27. Feeling afraid to travel on buses, subways, or trains _____
28. Trouble getting your breath _____
29. Hot or cold spells _____
30. Having to avoid certain things, places, or activities because they frighten you _____
31. Your mind going blank _____
32. Numbness or tingling in parts of your body _____
33. Feeling hopeless about the future _____
34. Trouble concentrating _____
35. Feeling weak in parts of your body _____

36. Feeling tense or keyed up _____
37. Thoughts of death or dying _____
38. Having urges to beat, injure, or harm someone _____
39. Having urges to break or smash things _____
40. Feeling very self-conscious with others _____
41. Feeling uneasy in crowds, such as shopping or at a movie _____
42. Spells of terror or panic _____
43. Getting into frequent arguments _____
44. Feeling nervous when you are left alone _____
45. Others not giving you credit for your proper achievements _____
46. Feeling lonely even when you are with people _____
47. Feeling so restless you couldn't sit still _____
48. Feelings of worthlessness _____
49. Feeling that people will take advantage of you if you let them _____
50. The idea that you should be punished for your sins _____
51. Never feeling close to another person _____
52. Feelings of guilt _____
53. The idea that something is wrong with your mind _____

APPENDIX K: Relationship Happiness Scale, Relationship Assessment Scale

Relationship Happiness Scale

Rate your current happiness with your relationship on each of the ten dimensions listed from 1-10 with 1 being completely unhappy and 10 being completely happy.
Ask yourself this question as you rate each area: "If _____ continues to act in the future as he/she is acting *today* with respect to this area, how happy will I be *with this area of our relationship?*" In other words, state according to the numerical scale (1-10) exactly how you feel today. Try to exclude all feelings of yesterday and concentrate only on the feelings of today in each of the relationship areas. Also try not to allow one category to influence the results of the other categories.

Romantic relationships

1) Household responsibilities
1   2   3   4   5   6   7   8   9   10   N/A

2) Rearing of children
1   2   3   4   5   6   7   8   9   10   N/A

3) Social activities
1   2   3   4   5   6   7   8   9   10   N/A

4) Money
1   2   3   4   5   6   7   8   9   10   N/A

5) Communication
1   2   3   4   5   6   7   8   9   10   N/A

6) Sex
1   2   3   4   5   6   7   8   9   10   N/A

7) Academic (or occupational) progress
1   2   3   4   5   6   7   8   9   10   N/A

8) Personal independence
1   2   3   4   5   6   7   8   9   10   N/A

9) Spouse (or partner - gambler) independence
1   2   3   4   5   6   7   8   9   10   N/A

10) General Happiness
1   2   3   4   5   6   7   8   9   10   N/A

Relationship Assessment Scale

On these next four questions, please select the best answer about your relationship with the gambler.

1) In general, how satisfied are you with your relationship?

1	2	3	4	5
Unsatisfied		Average		Extremely Satisfied

2) How good is your relationship compared to most?

1	2	3	4	5
Poor		Average		Excellent

3) To what extent has your relationship met your original expectations?

1	2	3	4	5
Hardly at all		Average		Completely

4) How many problems are there in your relationship?

1	2	3	4	5
Very few		Average		Very many

Non-Romantic Relationships
Relationship Happiness Scale

1) Household responsibilities

1	2	3	4	5	6	7	8	9	10	N/A

3) Social activities

1	2	3	4	5	6	7	8	9	10	N/A

4) Money

1	2	3	4	5	6	7	8	9	10	N/A

5) Communication

1	2	3	4	5	6	7	8	9	10	N/A

7) Academic (or occupational) progress

1	2	3	4	5	6	7	8	9	10	N/A

8) Personal independence

1	2	3	4	5	6	7	8	9	10	N/A

9) Significant other (gambler) independence

1	2	3	4	5	6	7	8	9	10	N/A

10) General Happiness
1   2   3   4   5   6   7   8   9   10   N/A

Relationship Assessment Scale

On these next four questions, please select the best answer about your relationship with the gambler.

1) In general, how satisfied are you with your relationship?

1   2   3   4   5
Unsatisfied   Average   Extremely Satisfied

2) How good is your relationship compared to most?
1   2   3   4   5
  Poor   Average   Excellent

3) To what extent has your relationship met your original expectations?
1   2   3   4   5
Hardly at all   Average   Completely

4) How many problems are there in your relationship?
1   2   3   4   5
Very few   Average   Very many

APPENDIX L: Inventory of Consequences

Inventory of Consequences for the Gambler and the CSO

Before we start, you will want to get some paper and a pen to write down the scales. Here are a number of events that gamblers and their families sometimes experience. We will start with some questions about the gambler first. Over the past month, about how often has this happened to him/her? If you don't know the answer to some of these questions, that is understandable.

Never	Once or a few times	Once or twice a week	Daily or almost daily
0	1	2	3

1. He/she has felt bad after gambling.
2. He/she has missed days of work or school because of his/her gambling.
3. His/her family and friends have worried or complained about his/her gambling.
4. The quality of his/her work has suffered because of his/her gambling.
5. His/her ability to be a good parent has been harmed by his/her gambling.
6. He/she has not eaten properly because of his/her gambling.
7. He/she has failed to do what is expected of him/her because of his/her gambling.
8. His/her personality has changed for the worse because of gambling.
9. He/she has taken foolish or impulsive financial risks when gambling.
10. He/she has said harsh or cruel things to someone because of his/her gambling.
11. He/she has not had money for social or personal things because of his/her gambling.

Over the past month, how often have <u>you</u> felt:

Never	Once or a few times	Once or twice a week	Daily or almost daily
0	1	2	3

12. Resentful towards the gambler
13. Extreme anger towards the gambler
14. Anxious
15. Isolated from the gambler
16. Depressed
17. Suicidal
18. Worthless
19. Distrustful of the gambler
20. Guilty or responsible for causing or contributing to the gambling
21. Confused about what to do about the gambling problem
22. Helpless or hopeless about the gambling problem
23. Ineffective as a parent
24. Experienced physical health problems due to the stress of the situation

Over the past month, how much has this happened to <u>him/her</u>?

Not at all	A little	Somewhat	Very much
0	1	2	3

25. His/her marriage or love relationship has been harmed because of his/her gambling
26. His/her physical appearance or personal hygiene has been harmed by his/her gambling.
27. His/her family has been hurt by his/her gambling.
28. A friendship or close relationship of his/hers has been damaged by his/her gambling.
29. He/she has lost interest in activities and hobbies because of his/her gambling.
30. His/her gambling has damaged his/her social life, popularity, or reputation.

31. He/she has had money problems because of his/her gambling.
32. His/her physical health has been harmed by his/her gambling due to stress.

Over the past month, how much has this happened to <u>you</u>?
Not at all	A little	Somewhat	Very much
0	1	2	3

33. Social life has suffered
34. Job or school performance suffered
35. Taken over parental or other family duties
36. Deserted by other family members

Has this happened to <u>him/her</u> during the past month?
No	Almost	Yes, once	Yes, more than once
0	1	2	3

37. He/she has been in trouble with the law because of gambling.
38. He/she has been suspended/fired from or left a job or school because of his/her gambling.
39. He/she has taken out loans or has relied on others in order to finance gambling.

Has this happened to <u>you</u> over the past month?
No	Almost	Yes, once	Yes, more than once
0	1	2	3

41. Been confronted by creditors, banks, or loan sharks
42. Taken another job or have taken other actions to obtain money
43. Lost home, car or other possessions
Used your own savings to pay for debts

APPENDIX M: Mixed Models analysis

Gambling outcomes by treatment group (Mixed models analysis with completer sample and those not confident removed)

	Initial	3 month	6 month	Time Effect	Group Effect	Interaction
	Mean (SE)	Mean (SE)	Mean (SE)	(df) F [p]	(df) F [p]	(df) F [p]
Gambling Behaviour						
Days gambled						
Workbook	7.21 (2.54)	6.79 (2.78)	4.10 (2.69)	(2,29) 6.01 [.00] †	(1,23) .29 [.67]	(2,29) .67 [.52]
Individual	10.33 (2.54)	6.37 (2.61)	5.68 (2.64)			
Dollars gambled						
Workbook	-1671 (439)	-1628 (373)	-972 (283)	(2,21) 7.45 [.00] †	(1,22) 2.48 [.13]	(2,21) .63 [.54]
Individual	-1809 (439)	-810 (339)	-263 (276)			

Gambling outcomes by treatment group (Mixed Models Analysis with completer sample)

	Initial	3 month	6 month	Time Effect	Group Effect	Interaction
	Mean (SE)	Mean (SD)	Mean (SD)	(df) F [p]	(df) F [p]	(df) F [p]
	N=31	N=24	N=22			
CSO Functioning						
Brief Symptom Inventory						
Workbook	43.53 (8.53)	35.48 (8.91)	31.13 (9.05)	(2,43) 7.06 [.00]	(1,29) .32 [.57]	(2,43) .94 [.40]
Individual	51.42 (8.26)	47.35 (8.72)	30.81 (8.86)			
Depression Anxiety Stress Scales						
DASS depression						
Workbook	8.80 (2.35)	5.74 (2.47)	6.94 (2.58)	(2,43) 1.55 [.22]	(1,29) .98 [.33]	(2,43) 3.64 [.04]
Individual	11.06 (2.28)	12.09 (2.39)	7.35 (2.46)			
DASS anxiety						
Workbook	5.73 (2.12)	5.13 (2.22)	4.80 (2.25)	(2,43) 2.59 [.09]	(1,28) .64 [.43]	(2,43) 1.65 [.20]
Individual	8.00 (2.06)	9.39 (2.17)	5.00 (2.17)			

DASS stress

Workbook	11.47 (2.38)	10.76 (2.53)	11.54 (2.66)	(2,43) .66 [.52]	(1,28) .06 [.81]	(2,43) .95 [.39]
Individual	13.81 (2.30)	12.66 (2.46)	9.41 (2.54)			

State Trait Anger Expression Inventory

STAXI anger expression

Workbook	37.47 (3.65)	34.69 (3.66)	33.77 (4.33)	(2,21) 2.63 [.09]	(1,27) 1.92 [.18]	(2,21) .15 [.86]
Individual	30.94 (3.54)	28.75 (3.57)	26.04 (4.22)			

STAXI trait

Workbook	15.07 (1.14)	16.04 (1.21)	16.37 (1.23)	(2,44) 1.35 [.27]	(1,29) .23 [.63]	(2,44) .82 [.44]
Individual	14.75 (1.10)	16.02 (1.19)	14.59 (1.21)			

STAXI state

Workbook	21.20 (2.10)	18.27 (1.32)	17.21 (.75)	(2,27) 4.49 [.02]	(1,27) .03 [.87]	(2,27) 3.32 [.05]
Individual	18.81 (2.04)	20.87 (1.31)	16.23 (.75)			

Relationship Assessment

Relationship Happiness Scale

Workbook	3.87 (.61)	4.96 (.68)	5.87 (.71)	(2,45) 6.41 [.00]	(1,26) .53 [.48]	(2,45) .29 [.75]
Individual	4.31 (.59)	4.98 (.67)	6.79 (.68)			

Relationship Assessment Scale

Workbook	8.53 (1.11)	10.01 (1.18)	9.96 (1.24)	(2,43) 2.99 [.06]	(1,28) .25 [.62]	(2,43) .56 [.57]
Individual	8.93 (1.08)	10.11 (1.15)	11.56 (1.18)			

Comparison of gambling consequences by treatment group (Mixed Models analysis with completer sample)

	Initial Mean (SD) N=31	3 month Mean (SD) N=24	6 month Mean (SD) N=22	Time Effect (df) F [p]	Group Effect (df) F [p]	Interaction (df) F [p]
Gambling Consequences						
Inventory of Consequences						
Gambler						
Workbook	33.20 (3.54)	29.41 (3.94)	24.89 (4.10)	(2,47) 4.63 [.02]	(1,26) 1.37 [.25]	(2,47) .19 [.83]
Individual	30.50 (3.42)	26.02 (3.92)	18.15 (3.92)			
CSO emotional						
Workbook	18.53 (2.07)	14.09 (2.23)	12.35 (2.89)	(2,43) 14.92 [.00]	(1,26) .02 [.90]	(2,43) 1.29 [.28]
Individual	18.75 (2.01)	15.84 (2.19)	9.41 (2.19)			
CSO behavioural						
Workbook	6.47 (1.42)	4.46 (1.53)	4.60 (1.62)	(2,45) 3.48 [.04]	(2,38) .11 [.75]	(2,45) .84 [.44]
Individual	7.94 (1.37)	5.87 (1.50)	3.35 (1.54)			

APPENDIX N: Intention to treat analysis

Intention to treat analyses: replication of ANCOVA statistical analysis comparing groups over time

	Mean (SD) at initial and follow-up periods			Statistical comparison
	Initial (N=24)	3 month (N=24)	6 month (N=24)	2 X 2 ANCOVA
Gambling Behaviour				
Days gambled				Time = $F(1,21) = 1.51, p = .23$
Workbook	7.21 (8.28)	7.50 (1.96)	5.78 (1.61)	Time X group = $F(1,21) = .00, p = .96$
Individual	10.33 (9.60)	5.71 (1.96)	3.90 (1.61)	Group = $F(1,21) = .58, p = .46$
Dollars gambled				Time = $F(1,21) = 5.27, p = .03$
Workbook	-1671 (1505)	-1739 (1483)	-1353 (314)	Time X group = $F(1,21) = .01, p = .93$
Individual	-1809 (1542)	-913 (861)	-496 (314)	Group = $F(1,21) = .11, p = .74$
CSO Functioning	(N=31)	(N=31)	(N=31)	
Brief Symptom Inventory				
Workbook	43.53 (24.72)	41.06 (4.13)	37.34 (5.07)	Time = $F(1,28) = .11, p = .75$

Individual	51.42 (39.12)	43.56 (se4.0)	32.43(se4.91)	Time X group = $F(1,28) = 1.08, p = 31$
				Group = $F(1, 28) = .05, p = 83$

Depression Anxiety Stress Scales

DASS depression

Workbook	8.80 (8.87)	7.72 (1.27)	8.69 (1.65))	Time = $F(1, 28) = .32, p = .58$
Individual	11.81 (9.23)	10.01 (1.23)	6.98 (1.60)	Time X group = $F(1, 28) = 3.97, p = .06$
				Group = $F(1, 28) = .03, p = .87$

DASS anxiety

Workbook	4.82 (5.02)	6.65 (.96)	6.22 (1.17)	Time = $F(1,28) = .55, p = .47$
Individual	8.30 (9.52)	7.76 (.93)	4.61 (1.13)	Time X group = $F(1,28) = 2.18, p = .15$
				Group = $F(1, 28) = .05, p = .83$

DASS stress

Workbook	10.64 (se5.32)	12.67 (1.60)	13.23 (1.95)	Time = $F(1,28) = .01, p = .98$
Individual	14.60 (se8.46)	11.18 (1.55)	8.85 (1.89)	Time X group = $F(1,28) = 1.69, p = .63$
				Group = $F(1, 28) = 1.71, p = .20$

State Trait Anger Expression Inventory

STAXI anger expression

Workbook	37.47 (10.82)	33.81 (2.13)	32.57(2.25)	Time = $F(1, 28) = 1.34, p = .26$
Individual	33.00 (14.48)	31.43 (2.06)	29.15 (2.18)	Time X group = $F(1, 28) = .11, p = .74$
				Group = $F(1, 28) = 1.19, p = .29$

STAXI trait

Workbook	15.07 (2.86)	16.26 (.64)	16.51 (.65)	Time = $F(1, 28) = .18, p = .67$
Individual	15.62 (4.60)	15.38 (.62)	14.52 (.63)	Time X group = $F(1, 28) = 1.79, p = .19$
				Group = $F(1, 28) = 3.27, p = .08$

STAXI state

Workbook	21.20 (8.58)	19.74 (1.17)	19.62 (1.10)	Time = $F(1, 28) = .09, p = .77$
Individual	20.25 (5.89)	20.50 (1.14)	17.79 (1.06)	Time X group = $F(1, 28) = 3.18, p = .09$
				Group = $F(1, 28) = .15, p = .71$

Relationship Assessment				
Relationship Happiness Scale				
Workbook	3.86 (1.64)	4.48 (.47)	5.40 (.69)	Time = $F(1, 28) = 4.76, p = .04$
Individual	4.50 (2.78)	4.93 (.45)	6.25 (.67)	Time X group = $F(1, 28) = .19, p=.67$
				Group = $F(1, 28) = .94, p = .34$
Relationship Assessment Scale				
Workbook	8.53 (2.77)	10.36 (.62)	10.38 (.94)	Time = $F(1, 28) = .72, p = .40$
Individual	9.63 (4.45)	9.54 (.60)	10.77 (.92)	Time X group = $F(1, 28) = 1.0, p=.33$
				Group = $F(1,28) = .06, p=.82$

Gambling Consequences

Inventory of Consequences

Gambler

Workbook	33.20 (10.04)	31.07 (4.32)	26.17 (4.23)	Time = $F(1,28) = 1.34, p = .26$
Individual	33.63 (11.07)	26.02 (4.53)	13.11 (4.44)	Time X group = $F(1,28) = 1.84, p = .19$

CSO emotional

Workbook	18.53 (5.22)	15.64 (1.82)	13.69 (2.18)	Time = $F(1,28) = .25, p = .63$
Individual	19.94 (8.38)	14.99 (1.91)	8.24 (2.28)	Time X group = $F(1,28) = 3.07, p = .10$

CSO behavioural

Workbook	6.47 (3.87)	5.54 (1.29)	4.88 (1.44)	Time = $F(1,28) = 4.16, p = .06$
Individual	8.88 (7.12)	4.91 (1.35)	2.93 (1.51)	Time X group = $F(1,28) = .46, p = .51$

*participants who were "not at all" confident in their estimates of the gambler's gambling behaviour (N=7) were removed from the analysis.

APPENDIX O: Raw scores for Working Alliance Inventory per therapist

Comparison, by therapist, for each subscale score of the Working Alliance Inventory for each participant.

Therapist	WAI task	WAI bond	WAI goal
A	78	76	78
	73	79	75
	80	75	78
	75	82	75
	80	84	76
B	79	84	74
	79	84	80
	79	84	75
C	82	78	84
	74	71	59
D	66	65	65
	84	82	84