

7 THE EFFECTIVENESS OF COGNITIVE BEHAVIOURAL TREATMENT TECHNIQUES IN THE MANAGEMENT OF PATHOLOGICAL GAMBLING (PERFORMANCE INDICATOR 2)

7.1 Introduction

Over recent years there has been a large increase in the level of public funding provided for counselling and treatment of problem gamblers. However, significant questions remain as to the effectiveness of treatments in the absence of adequate numbers of well-conducted randomised controlled long-term outcome studies. Problem gambling is regarded to be a treatable condition but there is minimal robust evidence describing the effectiveness of specific interventions, the core program requirements contributing to change and the mechanism, process or mode by which therapeutic outcomes are achieved. Consequently, there is no recommended evidence based 'best-practice' model for the provision of services for problem gamblers and their families.

A perusal of recent reviews including the National Research Council (1999), Productivity Commission (1999) and Jackson, Thomas and Thomason (2000) reports highlights the varied approaches derived from a broad range of theoretical orientations used by counselling services. These reports have uniformly called for the need to undertake systematic long-term evaluation of treatment interventions and services.

The primary objective of this component of the project was to carry out a comparative evaluation of the long-term effectiveness of cognitive therapy and imaginal desensitisation in the management of problem gambling.

Historically, excessive gambling was considered to be a sign of moral weakness or indicative of a flaw in character. Reflecting this view, early attempts to "treat" excessive gambling were largely legislative and punitive in nature (Blaszczynski, 1988; France, 1902; Wykes, 1964). As theories of the nature of gambling evolved so too did the recommended treatment approaches. Gambler's Anonymous is perhaps the most well known and popular intervention, particularly in the United States of America. Gamblers Anonymous is a self-help peer counselling approach based on the disease model of addictive behaviour. Its philosophy and principles are derived from the "12 step" program developed by its parent organisation, Alcoholics Anonymous.

However, there are now a wide variety of psychodynamic, pharmacological, familial, behavioural, cognitive and multi-modal programs being advocated for use in the treatment of problem gambling. Each has its own theoretical foundation

dictating the types of treatment interventions or techniques that are employed within each program.

Empirical outcome data has provided an encouraging picture that gambling is a treatable condition. However, it would be fair to say that to date we cannot offer conclusive statements about the necessary and sufficient components of treatment or its long-term effectiveness. This is because with a few recent exceptions, there are methodological difficulties associated with the research in this area. These include:

- Except for a few recent studies, virtually all studies from 1914 to the present have reported on single case studies or case series involving very small numbers.
- Samples are heterogeneous and inclusion criteria are generally poorly specified. Many cases have had co-morbid Axis I disorders and the studies fail to report the primary reason for referral. For example, is it gambling, alcohol dependence or a psychiatric disorder?
- Generalisation of findings is further hindered because variable diagnostic criteria are used. These have included DSM criteria (eg, Diagnostic and Statistical Manual of Mental disorders, Fourth Edition, American Psychiatric Association 1994), and cut off scores of either five or 10 on the South Oaks Gambling Scale (SOGS; Lesieur and Blume, 1987), a widely used questionnaire for assessing problem gambling behaviour.
- Treatments are rarely described in adequate detail to allow replication.
- Outcome measures are unclear.
- Dropout rates are rarely reported.
- Follow-up data is inadequate. Very little is known about the effectiveness of treatments beyond a six-month time frame.

Until the mid-1990's only one treatment approach had been evaluated using a randomised-controlled design. In a series of studies McConaghy and colleagues at Prince of Wales hospital in Sydney (McConaghy, Armstrong & Blaszczynski, 1983; McConaghy, Blaszczynski & Frankova, 1991) evaluated the effectiveness of a technique they had developed called "Imaginal desensitisation". In one study 20 inpatient pathological gamblers were randomly assigned to receive either electric shock aversion therapy or "imaginal desensitisation". Both treatments were based on a behaviourist perspective of gambling, which tends to view gambling as a learned behaviour that is initiated and maintained by positive and negative reinforcement (Anderson & Brown, 1984; Dickerson, Hinchy & Falve, 1987). In the aversion therapy condition personal gambling cues were paired with an unpleasant electric shock. The aim was to counter condition the arousal and excitement associated with gambling. In the imaginal desensitisation (ID) condition clients were taught a relaxation imagery based technique aimed at reducing cue-exposure arousal.

Participants received three ID sessions daily for a week. At the beginning of each session four minutes of progressive muscle relaxation instructions were given. This was followed by instructions for recalling three gambling related scenes, each

approximately five minutes in length. In each scene the individual is asked to recall specific images and feelings experienced prior to gambling, then specific images and feelings experienced after gambling, and is then asked to then see themselves walking away from the situation instead of gambling.

McConaghy, Armstrong, Blaszczynski and Allcock (1983) found that gamblers who received ID reported significantly less gambling and fewer urges to gamble at one year than gamblers in the aversion therapy group. In a series of further studies McConaghy, Blaszczynski and Frankova (1991) randomly assigned 120 inpatient gamblers to receive either ID or a behavioural procedure (aversion therapy, imaginal relaxation and prolonged exposure). At two to nine years after treatment (average of 5 years), 79% of clients followed up in the ID group showed cessation or control compared to 53% of the clients who received a different behavioural treatment, suggesting that ID had a specific effect additional to that of other behavioural therapies.

More recently, there has been an increased awareness of the presence of cognitive distortions in pathological gamblers, and this has led to the development of cognitive therapy programs (e.g., Toneatto & Sobell, 1990). The distortions that have been identified include illusions of control (Langer, 1975), biased outcome evaluations (Gilovich, 1983; Griffiths, 1990) and misunderstanding of probability (Sylvian, Ladouceur & Boisvert, 1997; Toneatto, 1999). Sylvian, Ladouceur and Boisvert (1997) randomly assigned 29 pathological gamblers to cognitive therapy or a waiting list control group. Clients who received cognitive therapy significantly reduced their gambling and reported increased perceived self-control over gambling compared to the waiting list control. There are several limitations to the conclusions that can be drawn from this study as clients in the cognitive therapy condition also received problem solving training and where necessary social skills training and no measure of cognitive change was reported. The independent contribution of cognitive restructuring is unknown. Nonetheless, these findings suggest cognitive therapy is a promising approach for the management of pathological gambling.

In the only other randomised controlled trial published to date, Echeburua, Baez and Fernandez-Montalvo (1996) directly compared the relative effectiveness of behavioural and cognitive approaches to treatment. In this Spanish study, 64 pathological gamblers were randomly assigned to either, individual stimulus control and exposure with response prevention, group cognitive restructuring, a combination of both or a wait-list control. All treatments were conducted over a six-week period. Results indicated that most clients improved following treatment, although surprisingly the highest success rate (defined as abstinence or one to two episodes in 12 months) was in the individual behavioural treatment involving stimulus control and exposure with response prevention.

These authors acknowledged that the treatment delivery format for the cognitive restructuring and combined programs may not have given clients sufficient time to adequately assimilate the skills learned, but concluded that it seems more reasonable

to design specific short treatments than engage clients in the multi-component treatments commonly recommended. Again however no measure of cognitive change was included to assess whether cognitive therapy had been implemented effectively.

7.2 The comparative treatment evaluation study

In the present project we extended on previous research conducted in the area to evaluate the comparative effectiveness of an audiocassette home use version of ID and a cognitive restructuring program.

Participants were randomly assigned to one of three conditions:

- a) Individual Imaginal Desensitisation (ID)
- b) Group cognitive therapy, (CT) or
- c) Group imaginal desensitisation and cognitive therapy (IDCT).

It was hypothesised that clients in all three conditions would improve following treatment, but that the different treatment approaches would have different modes of action. That is, cognitive therapy was expected to produce changes in the client's beliefs about gambling, whereas ID was expected to produce changes in urge and arousal levels associated with gambling.

We were also interested in systematically investigating a number of issues that have been largely ignored in the literature to date. These included:

1. Rejection and attrition rates
1. Long treatment outcome
2. Treatment outcome predictors

7.3 Method

• Participants

One hundred of the 187 clients attending the clinic were asked to participate in the treatment evaluation study. This equates to 53.5% of clients attending the service during the period September 1998 - August 2000.

7.3.1.1 Selection Criteria

To be invited to participate in the study a client needed to:

- Meet criteria for a DSM-IV diagnosis of Pathological Gambling.
- Score 10 or more on the South Oaks Gambling Screen.
- Have sufficient English skills to complete assessment measures and comprehend treatment instructions.
- Not be considered a serious risk for suicide.
- Show no evidence of current psychotic symptoms.
- Express a desire for treatment.

With the exception of current psychotic symptoms clients were not excluded from participation on the basis of co-morbid psychiatric, substance abuse or personality disorder diagnoses.

Note that a number of clients attending the clinic prior to the granting of ethics approval by the South Western Sydney Area Health Service Ethics Committee were not asked to participate in the research project.

Clients who were not invited to participate in the research project but presented with a primary gambling disorder were offered individual or group treatment at the clinic.

Clients who presented mainly with non-gambling issues were referred to a more appropriate service.

A small number of clients were unable to attend service regularly due to work and geographical distance. These clients were not asked to participate in the study and were referred to a more convenient service.

- **Client demographics**

Sixty-six male and 34 females were asked to participate in the study. Table 23 presents the mean age data of these clients.

Table 23: Client demographics

	Total n = 100 n (%)	Male n = 66 n (%)	Female n = 34 n (%)
Age	37.1 (10.8)	34.2 (9.4)	42.8 (11.2)

7.4 Procedure

Consecutive gamblers presenting for treatment at the clinic and meeting the study criteria as outlined above, were asked to participate in the project. Diagnostic assessment was based on an initial clinical interview during which each individual completed the South Oaks Gambling Screen (Lesieur & Blume, 1987) and was administered a semi-structured interview assessing past and present gambling behaviour. Probe questions for each of the DSM-IV criteria were included in this interview.

Individuals who met selection criteria for the study and agreed to participate read and signed a consent form, and were then randomly allocated to one of three treatment conditions.

Random allocation to treatment condition was operationalised through use of relevant randomization tables listed. Two random allocation tables were constructed. One table determined the client's allocation to group or individual treatment (individual imaginal desensitisation). The second table determined the next group condition, cognitive therapy alone or cognitive therapy and imaginal desensitisation combined.

A group treatment commenced when six to eight clients agreed to attend. Groups were held at a time convenient to the majority of clients.

Clients who did not wish to participate in the study, including individuals who declined involvement because they reported being unable to attend treatment at the allocated times, were coded as treatment refusers for the purpose of the research project. They were offered individual treatment at the clinic but not included in the research project proper.

7.5 Research Assessment

Clients attended two interviews prior to commencing treatment. During the first interview they completed the clinical interview outlined above. During the second interview they were administered the following structured interviews.

- Composite International Diagnostic Interview (CIDI-Auto12; World Health Organisation, 1997).
- The Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II; First, Spitzer, Gibbon & Williams, 1997).

In addition at the beginning of the first treatment session clients completed the following battery of psychometric measures:

- Beck Depression Inventory (BDI: Beck & Steer 1987).
- Beck Scale for Suicide Ideation (BSS: Beck & Steer 1993)
- State-Trait Anxiety Inventory (Form Y) (STAI-Y: Spielberger, 1983)
 - Gambling Beliefs Questionnaire (GBQ: Joukhador, Maccallum & Blaszczynski, 2000)
 - Self-Description Inventory (SDI: Dickman, 1990).
- Alcohol Use Disorders Identification Test (AUDIT: Saunders, et al 1993).

All measures are described in detail in Chapter 1.

7.6 Treatments

- **Individual Imaginal Desensitisation (IID)**

During the first therapy session clients were provided with an audiocassette that contained two IID sessions together with a set of accompanying printed instructions. The therapist explained the rationale and instructions for using the procedure and directed clients to listen to the tape and practice the technique three times a day for five consecutive days. Treatment was manualised to ensure integrity (see *Imaginal Desensitisation for Problem Gambling. Therapist Manual*: Blaszczynski & Maccallum, 2000).

Each client's use of the tape was reviewed in detail during a second appointment that took place two weeks after commencement of the therapy.

- **Cognitive group therapy (CGT)**

Participants attended a structured six-week cognitive therapy group program developed in our unit and based on the principles of Beck (1976, 1979). Groups of

four to six individuals met for one and a half hours weekly over a six-week period. Each group was lead by two therapists trained in cognitive therapy. Treatment was manualised to ensure integrity of treatment delivery (see *Cognitive Therapy for Problem Gambling: Group Program. Therapist Manual*; Blaszczynski & Maccallum, 2000).

The program targeted the following areas of cognitive distortions, irrational beliefs and erroneous perceptions.

- Loss of control.
 - Gambling is a way of earning money.
 - Winning at gambling.
 - Illusions of control and superstitious behaviour.
 - Probability.
- **Imaginal desensitisation and cognitive group therapy (IDCGT)**

The IDCTG program followed a similar structure to the CGT. The imaginal desensitisation procedure was incorporated into the first session of the program. Treatment was manualised to ensure integrity (see *Imaginal Desensitisation and Cognitive Therapy for Problem Gambling: Group Program. Therapist Manual*; Blaszczynski & Maccallum, 2000).

7.7 Treatment outcome evaluation - follow-up interviews

Follow-up assessment interviews were held one month, six months and 12-months after completion of treatment. During each interview clients completed a clinical interview and the following psychometric measures.

All follow-up assessments:

- Beck Depression Inventory (BDI; Beck & Steer, 1987)
- Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1993)
- State-Trait Anxiety Inventory (Form Y) (STAI-Y; Spielberger, 1983)
 - Gambling Beliefs Questionnaire (GBQ; Joukhador, Maccallum & Blaszczynski, 2000)

At six and 12-month follow-up assessments only:

- South Oaks Gambling Scale (Lesieur & Blume, 1987)

Follow-up assessments were conducted by the treating clinician and an independent researcher. An attempt was made to interview all clients in person. Where this was

not possible the interview was conducted via telephone. Independent corroborative information was obtained for a proportion of clients.

- **Data analysis**

Interview and questionnaire data were scored and entered into SPSS V10.0 for windows. Before statistical analyses were performed, all data were double-checked for accuracy and outliers.

7.7.1.1 Presentation of findings – An overview

The results of this component of the project are presented in three sections:

- Section 1 presents findings relating to treatment attrition rates and discusses differences between treatment drops-outs and treatment completers.
- Section 2 presents the treatment outcome data with one month, six-month and 12-month follow-up data presented. Six and 12-month assessments are currently in progress at time of writing, therefore results at these time frames must be considered to be preliminary. This section also discusses changes in psychosocial functioning at one-month post treatment.
- Section 3, examines the relationship between pre-treatment variables and treatment outcome and at one month.

7.8 Section 1: Treatment attrition

- **Introduction**

Treatment attrition may be defined as a failure to attend initial assessments, refusal to participate in a treatment program, dropping out during the course of a program and failure to attend follow-up interviews. The extent to which gamblers drop out or refuse treatment has been largely ignored in the research literature. Failure to take into account such cases in statistical analyses will invariably lead to inflated success rates or provide misleading impressions regarding the efficacy of specific interventions. For example, a particular treatment that is so aversive that all except a small percentage refuse to undertake it cannot claim to be an effective option even though it has a 90% success rate for those who are courageous enough to complete it.

The aim of this section of the report is to systematically examine refusal and dropout rates and to compare treatment dropouts with treatment completers with a view to

directing future evaluative studies. Prior to presenting data from the present study we review treatment outcome studies from 1970 to 1997 that included a follow up period and a minimum of four clients. The studies included in this review are presented in Table 24. This is not an exhaustive up-to-date review but includes most of the significant papers.

Table 24: Treatment refusal rates

Study	Treatment	N	Refusals	Dropout	No follow-up
Bergler (1958)	Psychotherapy	60/200	20	15	?
Seager (1970)	Aversive therapy	16	2	4	?
Koller (1972)	Aversive therapy	20	?	?	?
Greenburg & Rankin (1982)	<i>In-vivo</i> exposure & aversion	26	?	5	?
Russo, Taber, McCormick & Ramirez (1984)	Multi-modal	124	?	?	?
Taber, McCormick, Russo, Adkins & Ramirez (1987)	Multi-modal	66	?	?	?
Stewart & Brown (1988)	Gamblers Anonymous	20	?	11	?
Blackman, Simone & Thoms (1989)	Outpatient treatment program	128	?	?	?
Ladouceur, Boisvert & Dumont (1994)	Cognitive interventions	4	?	?	?
Sylvain, Ladouceur & Boisvert (1997)	Cognitive interventions & relapse prevention	58	18	11	?
Lesieur & Blume (1991)	Multi-modal approach	119	N/A	N/A	47
Zion et al (1991)	Gamblers Anonymous	43	N/A	N/A	N/A

As Table 24 highlights, few studies have included data on the number of clients who refuse, drop out or are not selected for inclusion for reasons other than not meeting criteria. In this table only three studies reported the number of refusals, and five included attrition rates.

Bergler (1957) selected 60 clients out of a total population pool of 200 referred for treatment. Twenty clients did not proceed and a further 15 dropped out in the course of sessions. Thus, dependant upon which client base population is considered, that is, the pool of 200 or 60 treated cases, the calculate outcome rate varies between 21% to 75%.

Seager (1970) applied aversive therapy and reported that 13% (2 of 16 gamblers) decided not to proceed when informed of the type of treatment and an additional 25% of clients terminated treatment prematurely after the first few sessions. In another study of aversive therapy, Koller (1972) reports that adequate assessment and follow-up information were absent for 20 (40%) clients. Greenburg and Rankin (1982) also found poor attendance and missed appointments were a feature characteristic of a sample of 26 gamblers. Half the sample ceased attending without informing the therapist and 19% (5 of 26) attended only once. Sylvain, Ladouceur and Boisvert (1997) reported a refusal rate of 31% (18 of 58) and a drop out rate of 27.5% (11 of 40) for a cognitive therapy versus wait-list control evaluation.

Russo, Taber, McCormick and Ramirez (1984) reported low rates of compliance with follow-up interviews. They found only 48% (60 of 124 clients) of treated clients participated in follow-up interviews. In a subsequent prospective six-month follow-up evaluation of the same program, Taber, McCormick, Russo, Adkins and Ramirez (1987) obtained a greater rate of follow-up success using telephone interviews. Data was obtained for 57 of the 66 clients (86%) who originally entered treatment.

These studies suggest that poor attendance may be a feature characteristic of gamblers in treatment. The findings from Brown (1986) suggest that these high attrition rates may be a consequence of the population under investigation. In this study of Gamblers Anonymous attendees, of 24 gamblers who were not contactable at follow-up, seven had left their previous address suddenly, three were in prison, five were "in deep trouble" (p.134), no further information was available on the remaining nine.

However, attrition rates can also be affected by data loss at admission. Blackman, Simone and Thoms (1989) report that full admission data were only available for 83% ($n = 128$) of 155 clients when evaluating an outpatient program. Data was available for only 88 of the 97 gamblers who had terminated treatment by August 1985 and complete pre and post treatment data was available for 45% of the total sample.

In an evaluation of a multi-modal addiction based inpatient, Lesieur and Blume (1991) reported significant data loss owing to refusals, dropouts and staff shortages. Initially, 2% ($n = 3$) of the 171 clients asked to participate in the project refused to give their consent. In the next stage of the study, only 124 of the 171 clients were assessed owing to staff shortages, one subject withdrew consent after interview and four more were excluded for a number of reasons, leaving a sample of 119. At the third stage between six and 14 months after the initial interview, there was a further loss of clients: 43 gamblers were uncontactable and four refused to be interviewed. Thus, at the third stage 72 of the 119 clients from the second stage of the study were followed up. Only 42% of the initial cohort remained through all stages of the project. Severity of alcohol abuse was the only variable that discriminated between followed-up and non followed-up subjects, with those who were not followed up reported more serious alcohol problems. Given that two-fifths of the original cohort dropped out of the study, and the reported success rate of 63.9% is based the subjects remaining at the third stage ($n = 72$), this figure appears to be artificially inflated. If one assumes as is often recommended that all those who were uncontactable/refused to co-operate had resumed their gambling behaviour, the actual rate of success for this program is considerable lower (38.5%) than the reported rate.

7.9 Comparisons of Refusals and Dropouts

Few studies have compared the characteristics of treatment refusals and drop outs with treatment completers. The aim of such a comparison would be to help identify individuals at risk for terminating treatment early in order to modify treatment interventions that could be tailored to reduce the possibility of drop out.

The results available from the limited research are inconclusive. In terms of clients contactable at follow-up, Blaszczyński et al (1991) found no differences between those followed up and those not followed-up on a range of pre-test measures including the EPQ, State Trait Anxiety Questionnaire and the Sensation Seeking Scale. Taber, McCormick and Ramirez (1987) found no differences between subjects located and not located at follow-up in terms of marital status, employment status, legal charges pending and co-existing diagnoses. Brown (1986) compared followed-up and non followed-up subjects on pre-treatment Eysenck Personality Questionnaire, State-Trait Anxiety and Sensation Seeking Scale scores and a number of demographic variables (including age, marital status and socio-economic status) revealed no difference between the two groups. On the other hand, Lesieur and Blume (1991) found that those not followed up tended to have more serious alcohol problems.

Blaszczyński, Steel and Drobny (1999) failed to find any primary demographic, psychometric or personality factor that was sufficiently capable of identifying characteristics that may be useful in differentiating clients at risk for dropping out of treatment. Stewart and Brown (1988) found that continuers in Gamblers Anonymous were significantly more likely to be married than those who attended only one

session. In another study of Gamblers Anonymous, Brown (1986) found that those who attended for only one meeting were more likely to have experienced elation at this first meeting while continuers were more likely to be in debt to money lenders. Ladouceur et al (1997), the only researchers who systematically compared refusers and dropouts with continuers found that those who refused treatment or terminated treatment prematurely had begun gambling at an earlier age and had started experiencing gambling related problems at an earlier age.

One major difficulty with comparing those followed-up with those who refuse treatment or drop out from treatment outcome studies is the implicit assumption that those not followed up represent non-responders. As Stark (1992) points out it is possible that some of those not followed up may be abstinent.

In the following section we present data relevant to these issues from the current project.

7.10 Results

• Treatment completion and attrition rates

For the purpose of examining treatment attrition, "dropouts" have been divided into three groups – individuals refusing to be involved in the study (refusers), individuals dropping out before attending any treatment session (non-attenders) and individuals commencing treatment but not completing the program (dropouts). The number of clients in each category for each treatment condition is presented in Table 25.

Of the 100 clients invited to participate in the study, 88 (88.0%) clients agreed to be involved. Percentages reported in the table are exclusive of the 12 clients who did not wish to participate.

Random allocation took place after clients agreed to participate and consequently these 12 clients were not allocated to a group condition.

Table 25: Treatment completion rates by group

	Total n = 100 n (%)	CTG n = 29 n (%)	IDCTG n = 30 n (%)	IID n = 29 n (%)
Treatment completion stage				
Refusers	12 (-)			
Non Attenders	20 (22.7)	3 (10.3)	9 (30.0)	8 (27.6)
Dropouts	22 (25.0)	6 (20.7)	7 (23.3)	9 (31.0)
Completers	46 (52.3)	20 (69.0)	14 (46.7)	12 (41.4)

Note: Figures appearing in parentheses are expressed as a percentage of individuals who agreed to participate (N = 88); Figures appearing in square brackets are expressed as percentage of treatment starters (N = 68).

Of the 88 clients who did agree to participate, 68 actually commenced treatment and 46 completed treatment. Chi-square analysis indicated no differences in overall attrition rates across treatment conditions.

These figures reveal a dropout rate of 47.7% of the total population pool approached to participate in the study, or 33.8% of those clients who actually commenced treatment. This rate is consistent with that are reported in the literature (e.g., Sylvian, Ladouceur & Boisvert, 1997).

It is necessary to investigate the reasons why clients failed to complete treatment.

- **Examination of treatment attrition**

As discussed above, it has generally been assumed that individuals who do not to complete treatment are failures or treatment non-responders. However, it is possible that individuals fail to complete treatment for a range of personal reasons unrelated to the treatment or are able to gain control over their gambling without formal assistance. To address these issues we undertook to contact all clients who failed to attend or who dropped out of treatment and establish reasons for attrition and evaluate gambling outcome.

Refusers provided reasons for non-involvement at the time of initial contact. An independent interviewer who had had no previous contact with the clients contacted non-completers by telephone. Interviews were conducted with 30 (71.4%) clients while of the remainder, 14.8% were unable to be contacted and 7.4% did not respond to messages to return phone-calls. Interviews were conducted between one to six months after dropping out of treatment.

Table 26 presents the main reasons reported for not completing treatment. Approximately equal numbers of clients failed to complete treatment because they either wanted to try to stop without assistance (33.3%) or were unable to attend because of work or family commitments (28.2%). Chi-square analysis indicated no significant difference in reasons for not completing treatment across groups of non-completers.

Table 26: Reported reasons for failing to complete treatment

	Total n = 30 n (%)	Dropouts n = 17 n (%)	Non Attenders n = 13 n (%)	Refusers n = 12 n (%)
Wanted to stop without treatment	14 (33.3)	4 (23.5)	7 (53.8)	3 (25.0)
Work/family commitments	12 (28.2)	5 (29.4)	3 (23.1)	4 (33.3)
Did not like treatment format	9 (21.4)	2 (11.8)	2 (15.4)	5 (41.7)
For ID conditions did not use tape	5 (11.9)	5 (29.4)	0 (0.0)	0 (0.0)
Health reasons	2 (4.8)	1 (5.9)	1 (7.7)	0 (0.0)
Missing	12 [22.2]	5 [22.7]	7 [35.0]	0 [0.0]
Total	42 [77.8]	22 [77.3]	20 [65.0]	12 [100.0]

Note: Figures in parentheses are percentages of clients interviewed. Figures in square brackets are percentages of all dropouts.

Non-completing clients were also asked whether they were still experiencing problems with gambling. Data was available for 27 (64.3%) of non-completers (dropouts and non-attenders). For ethical reasons clients who refused involvement were not contacted for systematic review.

The proportion of clients reporting problems either with ongoing gambling, problems with pre-occupation and urges to gamble, or both are presented in Table 27. Overall, 63.0% of clients for whom data was available reported an ongoing problem with gambling. Although it is tempting to extrapolate this percentage to the wider population of dropouts, no firm conclusions can be drawn from this data as it represents only half the sample of clients who did not complete treatment (including treatment refusers). The long-term outcome for these individuals is unknown. All clients were invited to re-contact the clinic or G-line if they required ongoing assistance, an invitation taken up by several clients.

Table 27: Non completing client's self-reported gambling problems at follow-up interview

	Total n = 27 n (%)	Dropouts n = 15 n (%)	Non Attenders n = 12 n (%)
Problems with ongoing gambling	15 (55.6)	9 (60.0)	6 (50.0)
Urges/preoccupation	16 (59.3)	9 (60.0)	7 (58.3)
Total number reporting a problem	17 (63.0)	10 (66.7)	7 (58.3)

7.11 Comparison of treatment dropouts and treatment completers

A series of one-way analysis of variance was conducted on demographic characteristics and gambling related variables to examine differences between treatment completers and non-completers. Client information data was not available for clients who refused to participate in the study. Refusal to participate in the study was accepted as non-permission to access key data on such clients.

- **Demographic characteristics**

The proportion of male and female clients in each treatment condition is presented in Table 28. Averaged across treatment conditions the percentages of males (20.3%) and females (29.2%) not attending for treatment were similar. However, a larger percentage of males (32.8%) than females (4.2%) dropped out of treatment. Chi-square analysis indicated that this difference in the pattern of completion between males and females was significant ($X^2(88) = 7.6, p < .023$).

Table 28 Proportion of males and females clients by treatment group

	Total n (%)		CTG n (%)		IDCTG n (%)		IID n (%)	
	Male n = 64	Female n = 24	Male n = 24	Female n = 5	Male n = 20	Female n = 10	Male n = 20	Female n = 9
Completed	N 30 (46.9)	16 (66.7)	16 (66.7)	4 (80.0)	8 (40.0)	6 (60.0)	6 (30.0)	6 (66.7)
Drop out	N 21 (32.8)	1 (4.2)	6 (25.0)	0 (0.0)	7 (35.0)	0 (0.0)	8 (40.0)	1 (11.1)
Non-Attender	N 13 (20.3)	7 (29.2)	2 (8.3)	1 (20.0)	5 (25.0)	4 (40.0)	6 (30)	2 (22.2)

The mean age of clients is presented in Table 29. A 2 x 3 (sex x treatment completion) analysis of variance conducted on this data indicated a significant main effect for treatment completion stage ($F(2,86) = 5.7, p < .006$). Post hoc comparisons indicated that completers were significantly older than non-attenders.

Table 29: Treatment completion and mean age of clients

Age	Total n = 88 m (SD)	CTG n = 29 m (SD)	IDCTG n = 30 m (SD)	IID n = 29 m (SD)
Completed	39.2 (10.9)	36.7 (11.4)	38.8 (10.4)	43.9 (9.8)
Drop out	34.8 (10.4)	32.5 (8.8)	37.4 (14.4)	34.2 (8.2)
Non attender	31.8 (9.2)	34.0 (13.1)	34.0 (13.1)	28.9 (5.3)
Total	36.4 (10.7)	35.5 (10.8)	36.9 (11.4)	36.8 (10.3)

- **Prompt for treatment**

Pathological gamblers are generally held to be a population with a low motivation to change their behaviour. Many gamblers who seek treatment do so at the insistence of their partner, families or legal institutions. As part of the clinical interview clients

were asked to indicate the main precipitant for attending the clinic. Answers were classified as self-recognition of problem, encouragement from family or friends, forced by family and friends, and other: which included health professional referrals. (For the purpose of the present project no client referred for legal assessment was asked to participate).

"Self-recognition" does not imply that clients received no encouragement to attend but rather that their decision to attend at that time was their own. To distinguish the main prompt for treatment, clients were asked to indicate whether they would have attended at this time if the family member/friend had not encouraged/insisted they come. Table 30 presents the proportion of clients in each category by stage of treatment completion. The majority of clients (64.8%) reported that self-recognition of a problem was their main reason for attending treatment. The proportion of clients in each category did not differ significantly across stages of treatment completion.

Table 30: Treatment completion and main prompt for attending for treatment

	Main prompt for attendance			
	Self recognised n (%)	Encouraged n (%)	Forced n (%)	Other* n (%)
Completed	28 (60.9)	5 (10.9)	8 (17.4)	5 (10.8)
Drop out	14 (63.6)	5 (22.7)	3 (13.6)	0 (0.0)
Non attender	15 (75.0)	4 (20.0)	1 (5.0)	0 (0.0)
Total	57 (64.8)	14 (15.9)	12 (13.6)	5 (5.7)

* Note: Other includes GP or health professional.

7.12 Motivation to cease gambling

Clients were asked to rate their motivation to stop their problem gambling on a 10 point Likert-type scale (1 = not at all motivate, 10 = extremely motivated). On average, clients expressed a moderately strong desire to change their gambling behaviour ($M = 8.0$, $SD = 2.3$). A two-way analysis of variance conducted on this data indicated no overall significant differences in mean reported motivation between treatment groups or between stage of treatment completion. However, there was a significant interaction between treatment condition and stage of completion ($F(4.84) = 2.7$, $p < .04$).

Compared to the IDCGT and IID conditions, non-attenders in the CGT reported significantly lower motivation than completers or dropouts. However, no firm conclusions should be drawn from this finding due to the small sample size ($n = 3$) and large variation ($SD = 4.5$) of the CGT non-attender group. This significant interaction is most likely to result of one client.

Table 31: Treatment completion and mean motivation to cease gambling

Age	Total n = 88 m (SD)	CTG n = 29 m (SD)	IDCTG n = 30 m (SD)	IID n = 29 m (SD)
Completed	8.3 (2.1)	8.7 (2.1)	7.4 (2.4)	8.7 (1.6)
Drop out	7.7 (2.4)	7.0 (1.9)	7.6 (3.4)	8.3 (1.6)
Non attender	7.8 (2.7)	4.7 (4.5)	8.8 (1.7)	7.9 (2.4)
Total	8.0 (2.7)	7.9 (2.6)	7.8 (2.5)	8.3 (1.8)

7.13 Problem gambling form

Poker-machine gambling was the main problem gambling form for the majority of clients who agreed to participate in the study (78.8% males, 100% females). Of the sample, 16.7% percent of males reported their main problem as TAB betting, and 1.5% ($n = 1$ for each form) of males reported casino table games, sports betting, and Keno, as their main problem. Main problem gambling form did not differ significantly across stages of treatment completion.

The majority of clients reported experiencing problems with only one form of gambling. The percentage of clients in each treatment group and stage of treatment reporting exclusive or non-exclusive problem gambling forms is presented in Table 32. The percentage of clients reporting exclusive or non-exclusive gambling problems did not differ significantly across stages of treatment completion.

Table 32: Treatment completion and percentages of clients reporting exclusive or non-exclusive problem gambling forms

	Total n = 88 n (%)	CTG n = 29 n (%)	IDCTG n = 30 n (%)	HD n = 29 n (%)
Completed				
Exclusive	42 (91.3)	18 (90.0)	14 (100.0)	10 (83.3)
Non Exclusive	4 (8.7)	2 (10.0)	0 (0.0)	2 (16.7)
Total	46	20	14	12
Drop out				
Exclusive	19 (86.4)	5 (83.3)	5 (71.4)	9 (100.0)
Non Exclusive	3 (13.6)	1 (16.7)	2 (28.6)	0 (0.0)
Total	22	6	7	9
No show				
Exclusive	16 (80.0)	3 (100.0)	7 (77.8)	6 (75.0)
Non Exclusive	4 (20.0)	0 (0.0)	2 (22.2)	2 (25.0)
Total	20	3	9	8
Total				
Exclusive	77 (87.5)	26 (89.7)	26 (86.7)	25 (86.2)
Non Exclusive	11 (12.5)	3 (10.3)	4 (13.3)	4 (13.8)

7.14 Severity of gambling behaviour

Severity of gambling behaviour was assessed on a range of self-report measures. These data are presented for each group and stage of treatment completion in Table 33. On average clients scored a mean of 12.6 ($SD = 2.2$) on the SOGS. There was a near significant trend ($F(2,87) = 3.0, p < .06$) for clients who completed treatment to have a lower mean SOGS score.

On average clients had recognised their gambling problems for an average of 3.9 years ($SD = 4.3$) prior to attending the clinic. They gambled on 2.9 days per week ($SD = 1.8$) and spent on average a surprising 98.7 % of their weekly income ($SD = 166.6$) on gambling in the six months prior to assessment. There were no significant differences between treatment groups or treatment stages on these variables. Interpretation of financial data is complicated by the large variation in the sample. However, overall these results suggest that gambling severity was not a major factor associated with treatment non-completion.

Table 33: Treatment completion, severity and pattern of gambling behaviour

	Total n = 88 m (SD)	CTG n = 29 m (SD)	IDCTG n = 30 m (SD)	IID n = 29 m (SD)
SOGS				
Completed	12.0 (2.1)	12.0 (2.2)	11.7 (1.5)	12.5 (2.6)
Drop out	13.0 (2.4)	13.5 (2.1)	14.1 (3.0)	11.9 (1.7)
No show	13.3 (2.0)	13.5 (2.1)	12.8 (2.0)	13.9 (2.0)
Total	12.6 (2.2)	12.4 (2.2)	12.6 (2.2)	12.7 (2.4)
Days per week gambling				
Completed	2.8 (1.8)	3.1 (2.0)	2.9 (1.8)	2.0 (1.3)
Drop out	2.7 (1.7)	2.8 (1.3)	2.5 (1.9)	2.9 (2.0)
No show	3.3 (1.8)	4.0 (1.0)	3.1 (2.0)	3.3 (1.7)
Total	2.9 (1.8)	3.1 (1.7)	2.9 (1.7)	2.7 (1.7)
% Weekly Expenditure				
Completed	\$113.4 (209.9) [58.6]	\$140.7 (229.3) [60.0]	\$135.1 (262.0)[71.4]	\$43.2 (38.4)[35.5]
Drop out	\$94.2 (134.0)[69.7]	\$158.6 (249.9)[68.2]	\$88.6 (27.9)[85.7]	\$55.62 (51.9)[55.4]
No show	\$69.8 (49.3)[51.3]	\$54.2 (16.3)[55.0]	\$69.8 (39.4)[51.3]	\$76.5 (69.5)[50.0]
Total	\$98.7 (166.6)[58.5]	\$135.0 (217.5)[60.0]	\$104.8 (178.8)[69.8]	\$56.0 (51.9)[46.4]
Gambling related debts				
Completed	\$18309 (60997)[1500]	\$12743 (24999)[1600]	\$33498 (106009)[1750]	\$9868 (20794)[430]
Drop out	\$13066 (37840)[3500]	\$4042 (3401)[3500]	\$6557 (9338)[1400]	\$24144 (58736)[5000]
No show	\$15486 (26746)[4250]	\$13333 (14572)[7000]	\$15856 (32959)[1500]	\$15876 (25242)[4750]
Total	\$16357 (49308)[2035]	\$11003 (21317)[3000]	\$21919 (74084)[1500]	\$15956 (36773)[3000]

Note: Figures appearing in square brackets are median values.

7.15 Self-perception of gambling severity

To provide a measure of subjective perception of severity of gambling behaviour, clients were asked to rate their level of pre-occupation with gambling, urge to gamble and self-control over gambling during the six months prior to assessment. Ratings were made on 10-point Likert type scales (1 = not at all, 10 = all the time/extremely strong). Table 34 presents ratings on each of these scales for the three treatment groups at each stage of treatment completion. Two-way analyses of variance indicated no significant differences between treatment groups or between stage of treatment completion on these self-report variables.

Table 34: Treatment completion and levels of pre-occupation, urge to gamble and self-control over gambling

	Total n = 88 m (SD)	CTG n = 29 m (SD)	IDCTG n = 30 m (SD)	IID n = 29 m (SD)
Pre-occupation				
Completed	7.5 (2.1)	7.9 (2.0)	7.4 (2.3)	6.8 (1.3)
Drop out	7.7 (1.8)	7.7 (2.1)	8.3 (1.9)	7.2 (1.7)
No show	7.5 (2.1)	7.7 (2.5)	7.1 (2.3)	7.8 (1.9)
Total	7.5 (1.9)	7.9 (1.9)	7.5 (2.2)	7.2 (1.6)
Urge				
Completed	7.8 (2.0)	8.2 (2.0)	7.2 (2.5)	7.8 (0.9)
Drop out	8.2 (2.0)	8.2 (1.0)	8.1 (2.7)	8.2 (2.1)
No show	8.1 (2.1)	7.3 (3.1)	8.2 (1.6)	8.3 (2.4)
Total	8.0 (2.0)	8.1 (1.9)	7.7 (2.3)	8.1 (1.8)
Self-control				
Completed	2.6 (1.6)	2.5 (1.7)	2.6 (1.5)	2.8 (1.6)
Drop out	2.3 (1.5)	2.3 (1.5)	1.7 (1.0)	2.8 (1.7)
No show	2.1 (1.3)	2.0 (1.0)	2.1 (1.1)	2.1 (1.7)
Total	2.4 (1.5)	2.4 (1.6)	2.3 (1.3)	2.6 (1.6)

7.16 Co-morbid symptomatology – depression and anxiety

Co-morbid symptomatology was assessed using the CIDI-auto, the BDI, STAI-Y and the AUDIT. These measures were described in detail in Chapter 1. Eighty five percent of clients completed the CIDI. As expected significantly fewer non-attenders completed the CIDI than in the other stages of treatment completion ($X^2(2) = 9.5, p < .01$). A proportion of non-attenders dropped out before completing the research assessment. As a result few conclusions can be drawn about the relationship between co-morbid symptomatology and treatment non-completion for this group of clients.

Table 35 presents the proportion of clients meeting DSM-IV criteria on the CIDI-auto for a depressive, anxiety or substance disorders in each treatment group for each stage of treatment completion. Overall there was little relationship between co-morbid diagnoses and stage of treatment completion. However, Fisher's Exact Test indicated a significant difference in the pattern of treatment completion for clients diagnosed with GAD on the CIDI. Compared to clients without a GAD diagnosis, clients with GAD were more likely to complete than drop out of treatment, (Fisher's Exact Test = $p < .05$).

Table 35: Treatment completion and CIDI Depression, anxiety and substance disorders

	Total n = 73 n (%)	CTG n = 26 n (%)	IDCTG n = 23 n (%)	IID n = 24 n (%)
Completed CIDI				
Completed	42 (93.3)	18 (90.0)	12 (85.7)	12 (100.0)
Drop out	19 (86.4)	6 (100.0)	4 (57.1)	9 (100.0)
Non Attenders	12 (63.2)	2 (66.7)	7 (77.8)	3 (37.5)
Total	73 (84.9)	26 (89.7)	23 (76.7)	24 (82.8)
Major Depression diagnosis				
Completed	17 (40.5)	8 (47.1)	4 (33.3)	5 (41.7)
Drop out	10 (52.6)	4 (66.7)	2 (50.0)	4 (44.4)
Non attenders	2 (16.7)	1 (50.0)	1 (14.3)	0 (0.0)
Total	29 (39.8)	13 (52.0)	7 (30.4)	9 (37.5)
Anxiety disorder diagnosis				
Completed	15 (35.7)	6 (33.3)	5 (41.7)	4 (33.3)
Drop out	6 (31.6)	3 (50.0)	0 (0.0)	3 (33.3)
Non attenders	2 (16.7)	2 (100.0)	0 (0.0)	0 (0.0)
Total	23 (31.5)	11 (42.3)	5 (21.7)	7 (29.2)
Substance disorder diagnosis				
Completed	7 (16.7)	1 (5.6)	2 (16.7)	4 (33.3)
Drop out	4 (21.1)	2 (33.3)	0 (0.0)	2 (22.2)
Non attenders	1 (8.3)	0 (0.0)	1 (14.3)	0 (0.0)
Total	12 (16.4)	3 (11.5)	3 (13.0)	6 (25.0)

Table 36 presents mean scores on the BDI, STAI-Y and AUDIT. There is no data for non-attenders on these measures as these measures were completed during the first treatment session.

Overall, clients reported moderate levels of depressive symptomatology ($M = 14.6$, $SD = 8.9$) and above average levels of state and trait anxiety as indicated by mean

percentile scores above 50. (State $M = 64.2$, $SD = 31.1$; Trait $M = 80.4$, $SD = 22.8$). The average level of alcohol use was within the non-harmful range on the AUDIT ($M = 5.7$, $SD = 4.6$). Analyses of variance indicated no significant differences on any of these variables between stages of treatment completion or treatment group. However, large standard deviations and small cell sizes prevent firm conclusions.

Table 36: Pre treatment mean scores on the BDI, STAI-Y and AUDIT

		Total n = 61 n (%)	CTG n = 24 n (%)	IDCTG n = 19 n (%)	HD n = 18 n (%)
BDI	Completed	14.6 (8.9)	12.7 (8.5)	16.3 (7.9)	15.8 (10.7)
	Drop out	14.3 (9.1)	14.0 (6.9)	19.4 (9.2)	10.3 (10.0)
	Total	14.6 (8.9)	13.0 (8.1)	17.1 (8.1)	14.0 (10.5)
STAI-Y State anxiety percentile	Completed	65.4 (31.0)	61.4 (32.5)	70.9 (31.3)	65.3 (29.9)
	Drop out	60.4 (32.0)	76.8 (24.1)	67.0 (30.0)	38.8 (33.3)
	Total	64.2 (31.1)	64.6 (31.1)	70.0 (30.2)	57.5 (32.3)
STAI-Y Trait anxiety percentile	Completed	80.8 (21.9)	79.2 (22.1)	82.0 (21.1)	81.8 (24.1)
	Drop out	79.2 (26.1)	86.4 (19.8)	79.5 (35.1)	71.8 (27.7)
	Total	80.4 (22.8)	80.7 (21.4)	81.4 (23.6)	78.8 (24.8)
AUDIT*	Completed	n = 57 5.3 (4.5)	n = 22 4.5 (4.0)	n = 17 5.4 (4.7)	n = 18 6.5 (5.0)
	Drop out	7.2 (4.9)	8.7 (2.5)	4.7 (5.0)	7.8 (6.1)
	Total	5.7 (4.6)	5.1 (4.1)	5.3 (4.6)	6.9 (5.2)

Note: 4 clients did not complete the AUDIT

7.17 Impulsivity and treatment completion

Impulsivity has been defined as the tendency to deliberate less than most people of equal ability before taking action (Dickman, 1990). A growing body of evidence has supported the hypothesis that pathological gambling is associated with high levels of

trait impulsivity (Joukhador, Blaszczynski, Maccallum & Beattie, 1999; Steel & Blaszczynski, 1998; Blaszczynski, Steel & McConaghy, 1997). In the current study we assessed impulsivity using the Self-Description Inventory (Dickman, 1990). This self-report measure was described in detail in Chapter 1.

The inventory provides a measure of two factors, functional and dysfunctional impulsivity. "Functional impulsivity" is defined as the tendency to engage in rapid, error-prone information processing when such a strategy is optimal for the situation. "Dysfunctional impulsivity" is defined as the tendency to engage in rapid, error-prone information processing because of an inability to use a slower, more methodical approach under circumstances where such an approach would be beneficial. As this measure was completed during the first treatment session no data is available for non-attenders.

Table 37 presents the mean functional and dysfunctional impulsivity scores for stage of treatment completion and each treatment condition. A multivariate analysis of variance indicated a near significant trend evident for clients who dropped out of treatment ($M = 6.7$, $SD = 3.0$) to have higher mean dysfunctional impulsivity score than clients who completed treatment ($M = 5.0$, $SD = 3.2$; $F(1, 59) = 3.7$, $p < .06$). There were no significant interaction effects.

Table 37: Treatment completion and mean impulsivity scores

Impulsivity	Total n = 60 m (SD)	CTG n = 24 m (SD)	IDCTG n = 18 m (SD)	IID n = 18 m (SD)
Functional				
Completed	6.0 (3.0)	6.6 (2.9)	5.8 (2.8)	5.4 (3.6)
Drop out	5.7 (2.5)	5.4 (2.5)	5.8 (3.5)	5.8 (2.3)
Total	6.0 (2.9)	6.4 (2.8)	5.8 (2.8)	5.6 (3.1)
Dysfunctional				
Completed	5.0 (3.1)	5.6 (3.0)	4.4 (3.2)	4.6 (3.3)
Drop out	6.7 (3.0)	7.8 (2.1)	6.0 (4.2)	6.3 (2.9)
Total	5.4 (3.2)	6.1 (3.0)	4.7 (3.5)	5.2 (3.2)

7.18 Discussion

This study found no differences in dropout rates across treatment modality. An examination of the relationship between demographic variables and non-completion found that age and sex were the only variables significantly related to treatment dropout. Overall, treatment completers tended to be older than treatment non-completers, and a greater percentage of males who started treatment dropped out compared to females. Gambling variables and co-morbid symptomatology was not related to treatment dropout. However there were near significant trends in the data suggesting that clients who dropped out of treatment may have had a higher level of dysfunctional impulsivity than clients who completed treatment.

Although there were no overall differences in dropout rates between treatment conditions, the specific reasons for dropout need more consideration. Factors associated with motivation and practical barriers to attending treatment (wanting stop without assistance, time commitments) were reported by clients as being the main reasons they did not complete treatment (61.5% of clients interviewed). However, it appears that of the remaining 39.5% of clients, individual ID non-completers were more likely to not have completed treatment because they did not use the tape (for a variety of reasons). Group treatment non-completers were more likely to not have completed treatment because they did not like the group treatment format.

The findings with respect to age and sex differ somewhat from previous reports that have found no differences between treatment completers and treatment dropouts (eg. Blaszczynski et al (1999) and those studies which have found other variables associated with treatment drop out (eg. Ladouceur et al, 1997).

A likely reason for the discrepancy between the current and previous studies is the heterogeneous nature of "drop out" samples. This study found that individuals dropped out of treatment for a range of reasons and although dropouts are often assumed to be treatment failures, not all clients reported continued gambling. This sample is most likely to have consisted of a group of individuals with varying levels of gambling severity and personality characteristics, and it is perhaps not surprising that few general predictors of treatment drop out were identified in the current study.

"Dropout" samples in the literature also are likely to have been heterogeneous in nature. In addition it is likely that the nature and extent of these individual differences will vary depending on the population from which the sample was selected. For example, a specialised outpatient gambling service and an inpatient drug and alcohol service are likely to cater for a different type of individual. Different factors are likely to be relevant to treatment drop out in each setting.

7.19 Section 2. Evaluation of Treatment outcome

- **Assessing treatment outcome**

The effectiveness of any treatment will depend on the criteria used to judge "success". Most programs, particularly those adopting an addiction model of gambling and/or incorporating Gamblers Anonymous as a core component of their overall treatment package, accept abstinence as the only viable objective or criteria of success.

However, determining the success or failure of a program based on dichotomous global ratings of abstinence or non-abstinence fails to take into account significant improvement in other areas of functioning including reduced frequency of gambling and the urge to gamble, or increased ability to control gambling once initiated. A program that is successful in producing abstinence yet fails to reduce the client's subjective distress (urge or pre-occupation with gambling) is of questionable efficacy.

Accordingly in the current project treatment outcome was evaluated using both behavioural and subjective reports of gambling behaviour.

Outcome was assessed one month, six months and twelve months after completion of treatment. At each follow-up assessment clients completed a semi-structured interview and a battery of psychometric measures. Treatment outcome was assessed on a range of variables including:

- **Gambling behaviour.** At each assessment, clients were coded as being abstinent, controlled or uncontrolled in their gambling behaviour during the month prior to assessment. "Abstinent" was defined as no gambling on the problem form during the one-month prior to assessment. "Controlled" was defined as spending no more than \$20 per week and spending no more than intended at any one session. "Uncontrolled" was defined as repeated failure to resist the urge to gamble, spending more than intended, and chasing losses. Clients who reported one to two uncontrolled gambling sessions were allocated to a fourth category (one to two sessions). This is because research has indicated that clients are able to maintain long periods of abstinence following the occasional slip-up and thus should not necessarily be considered a treatment failure (Blaszczynski, et al 1991). A measure of the success of treatment is whether the individual is able to apply their skills to prevent further gambling episodes, that is, to prevent a lapse from becoming a relapse to (near) pre-treatment levels.
- **Self reported gambling problems.** Clients were asked to indicate if they were experiencing problems because of continued gambling or because of strong urges or a preoccupation with gambling.

- Changes in subjective preoccupation, urges and self-control. Clients were asked to provide ratings of pre-occupation with gambling, urge to gamble and self control over gambling during the six months prior to assessment on 10 point Likert scales (1 = not at all, 10 = all the time/extremely strong) at pre-treatment and at each follow-up assessment.
- A clinical rating. Based on all available information obtained about the clients gambling behaviour in the follow-up assessment, clients were categorised as showing a:
 - *Decline:* Increased gambling (sessions and expenditure) following treatment.
 - *No change:* Ongoing problems with gambling or urges to gamble equivalent to those reported at pre-treatment.
 - *Moderate improvement:* Individuals experiencing some problems as a result of ongoing gambling or urges and pre occupation, but to a consistently lesser extent than at pre-treatment and showing evidence of applying treatment skills to manage problematic urges and preoccupation when they occur.
 - *Great improvement:* clients experiencing no problems with ongoing gambling, minimal urges or preoccupation with gambling and applying techniques successfully where necessary.

7.20 Pre treatment comparisons

A series of one-way analyses of variance and chi-square analyses were carried out on a range of pre-treatment variables reflecting gambling severity. This data was presented in Table 32, Table 33, and Table 34. There were no differences between clients who commenced treatment (completers and dropouts) across treatment conditions on these variables.

7.21 One month treatment outcome

In the following results section the reported figures and percentages are based on the number of clients who completed treatment. As noted in the previous discussion "success" rates will differ depending on the base population (eg. treatment completers versus all clients). Examination of the attrition data indicated that not all clients who dropped out of treatment did so because of the treatment offered or because they were treatment failures. As a consequence, reporting only the results of an "intent to treat" type analysis is likely to artificially lower the efficacy and effectiveness of specific treatments. We will return to a discussion of these issues after presenting data for treatment completers.

7.22 Follow-up completion rates

One-month follow-up data was available for 43 (93.5%) of clients who completed treatment; full data was available for 39 (84.8%) clients, and partial data was obtained for four clients. One client refused follow-up and the remaining two clients could not be contacted.

Where possible, one-month interviews were conducted in person. Not all clients attended these interviews. For these clients one-month interviews was conducted via telephone by an independent interviewer. Where interviews were conducted via telephone the questionnaire battery (including the GBQ, SIS, BDI, and the STAI-Y) was mailed to clients to complete and return in a postage-paid return envelope. Despite reminder calls not all clients returned these questionnaires. Consequently, the sample size varies across analyses; therefore the cell size for each variable is reported in the tables.

7.23 Gambling behaviour

At one month follow-up 48.9 % of clients were abstinent or participated in controlled gambling episodes during the month since treatment completion, 23.6 % of clients continued uncontrolled gambling, and the remaining 27.9% of clients reported one to two gambling episodes that displayed at least one feature of uncontrolled gambling.

Table 38 presents gambling behaviour data for each treatment group. The pattern of gambling behaviour did not differ between treatment conditions.

Table 38: Gambling behaviour at one-month follow-up

	Total n = 43	CTG n = 20	IDCTG n = 12	IID n = 11
Abstinent	15 (34.9)	6 (30.0)	5 (41.7)	4 (26.7)
Controlled	6 (14.0)	2 (10.0)	2 (16.7)	2 (18.2)
1-2 sessions	12 (27.9)	7 (35.0)	3 (27.3)	2 (18.2)
Uncontrolled	10 (23.6)	5 (25.0)	2 (16.7)	3 (27.3)

On average, clients in the controlled condition gambled one day a week and spent \$20 per session in the month following treatment. Clients in the uncontrolled condition gambled on a mean of three days per week and spent an average of \$128

per session and clients who reported one to two uncontrolled sessions spent a mean of \$134 per session.

7.24 Self-reported problems

Participants were asked to indicate whether they were still experiencing problems because of gambling. Data was available for 41 clients. Of these, 13 (31.7%) reported experiencing some ongoing problems related to gambling; three (7.3%) reported problems because of continued gambling, five (12.2%) reported being troubled by urges and a pre-occupation with gambling, and 5 (12.2%) reported problems with both ongoing gambling and urges and preoccupation. In other words, one month after treatment 68.3% of clients who completed treatment reported that they no longer experienced any problems with gambling. The number of clients reporting problems with either gambling or urges and preoccupation is presented in Table 39. There were no differences in the proportion of clients reporting problems between treatment conditions.

Table 39: Self reported problems with gambling at one-month follow-up.

	Total n = 41	CTG n = 20	IDCTG n = 11	IID n = 10
Ongoing gambling	3 (7.3)	1 (5.0)	0 (0.0)	2 (20.0)
Urges/Preoccupation	5 (12.2)	3 (15.0)	1 (9.1)	1 (10.0)
Both problems	5 (12.2)	3 (15.0)	1 (9.1)	1 (10.0)
Total experiencing problems	13 (31.7)	7 (35.0)	2 (18.2)	4 (40.0)

7.25 Subjective ratings

Clients provided ratings of their preoccupation with gambling, urge to gamble and perception of self-control over gambling during the six-months prior to treatment and at the one month follow-up on 10-point scales (where 1 = not at all, and 10 = a great deal/all the time). Mean subjective ratings are presented in Table 40.

Overall, mean scores indicated that clients had experienced a high level of preoccupation with gambling ($M = 7.5$, $SD = 1.9$), a strong urge to gamble ($M = 7.9$, $SD = 1.9$), and a low level of self-control over gambling ($M = 2.7$, $SD = 1.6$) during

the six months prior to assessment. One-way analyses of variance indicated no significant differences between treatment conditions on pre-treatment ratings.

At the one-month assessment mean ratings indicated relatively low levels of pre-occupation ($M = 3.1$, $SD = 1.4$) and urge to gamble ($M = 4.3$, $SD = 1.9$), and moderate to strong levels of self-control ($M = 7.9$, $SD = 2.5$). A 3×2 (group \times time) repeated measures analyses of variance conducted on each variable indicated a significant change in pre to one-month ratings for all three variables. On average, ratings of pre-occupation ($F(1,37) = 111.4$, $p < .001$) and urge ($F(1,37) = 342.0$, $p < .001$) decreased, and ratings of perceived self control ($F(1,37) = 339.1$, $p < .001$) increased over this time. There were no differences between treatment conditions.

Table 40: Ratings of pre-occupation, urge and self control over gambling at pre treatment and one month follow-up

	Total n =	CTG n =	IDCTG n =	IID n =
Pre- occupation				
Pre	7.5 (1.9)	7.8 (1.9)	7.6 (2.2)	6.8 (1.4)
Post	3.1 (1.4)	3.2 (2.2)	3.4 (2.7)	2.6 (1.4)
Urge				
Pre	7.9 (1.9)	8.2 (2.0)	7.3 (2.4)	7.9 (1.0)
Post	3.4 (2.8)	3.5 (3.1)	3.6 (3.2)	2.7 (2.1)
Self control				
Pre	2.7 (1.6)	2.6 (1.7)	2.6 (1.6)	3.0 (1.6)
Post	7.9 (2.5)	7.9 (2.7)	8.1 (2.1)	7.9 (2.8)

Note: Data presented in the above table are averaged across one-month gambling behaviour.

Mean figures presented in Table 40 are averaged across treatment outcome. The absence of group differences indicates no consistent change in levels of pre-occupation, urge, or self control for a particular treatment modality. However, this is not unexpected given that we would anticipate changes in these ratings to be a function of treatment outcome. Table 41 presents mean pre-occupation, urge, and self-control ratings according to the one-month gambling behaviour reported above. There were no differences at pre-treatment between clients who achieved abstinence, controlled gambling, one to two session uncontrolled or repeated uncontrolled gambling on these ratings.

A 4×2 (behaviour \times time) repeated measures analyses of variance indicated a significant main effect and linear interactions for all three factors (due to small

numbers in some cells, treatment group was not included in this analysis). On average ratings of preoccupation decreased significantly from pre treatment to one-month post treatment ($F(1,36) = 128.2, p < .001$) with the significant trend towards the abstinent condition showing the largest decrease through to the uncontrolled condition showing the smallest decrease ($F(3,36) = 5.5, p < .004$). Similarly, there was an overall decrease in urge ratings ($F(1,36) = 70.0, p < .001$), and an identical linear trend ($F(3,36) = 6.0, p < .003$). Alternatively, ratings of self-control showed an overall increase, ($F(1,36) = 176.4, p < .001$) with a linear trend towards the abstinent group showing the largest increase and the uncontrolled group showing the least increase ($F(3,36) = 5.1, p < .006$).

Table 41 : Ratings of pre-occupation, urge and self control according to gambling behaviour

	Abstinent n = 15	Controlled n = 6	1-2 sessions n = 12	Uncontrolled n = 7
Pre- occupation				
Pre	7.5 (1.7)	7.0 (1.9)	7.1 (2.2)	8.7 (1.8)
Post	1.7 (0.6)	2.7 (0.8)	3.0 (1.8)	6.7 (1.7)
Urge				
Pre	7.6 (2.0)	8.0 (1.4)	7.6 (1.9)	8.4 (2.2)
Post	1.5 (0.9)	2.5 (1.0)	3.6 (2.6)	7.6 (2.6)
Self control				
Pre	3.3 (1.6)	2.0 (1.1)	2.8 (1.7)	1.9 (1.5)
Post	9.7 (1.3)	8.2 (1.7)	7.3 (2.0)	4.6 (2.6)

These results correspond with one-month self-reported problems, and suggest that irrespective of treatment modality, clients who achieved abstinence or control over gambling were less trouble by their gambling at the one-month assessment than clients who continued uncontrolled gambling. Whilst this finding may seem self-evident, it indicates that abstinent and controlled clients showed changes in both overt and subjective gambling behaviour.

7.26 Clinical rating of gambling behaviour

Based on the information obtained during the one-month follow-up assessment the clinician rated clients as showing a great improvement, a moderate improvement, no change or a decline compared to pre-treatment gambling behaviour. Overall, 79.1% of clients were rated as showing either moderate or great improvement at the one-month follow-up. The remaining 20.1% of clients were rated as showing no change

in gambling. No clients showed a decline in gambling behaviour at follow-up. The data for each category for each treatment group is presented in Table 42.

Table 42: One-month clinical outcome ratings

	Total n = 43 n (%)	CTG n = 20 n (%)	IDCTG n = 12 n (%)	HD n = 11 n (%)
Outcome 1 month				
Great improvement	20 (46.5)	8 (40)	6 (42.9)	6 (54.5)
Moderate improvement	14 (32.6)	7 (35)	4 (28.6)	3 (27.3)
No change	9 (20.9)	5 (25)	2 (14.3)	2 (18.2)
Decline	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

7.27 Changes in gambling related beliefs at one-month follow-up.

An important question to investigate when evaluating the efficacy of a particular treatment approach is whether the treatment in question produces changes in the specific variables targeted by that treatment. For example, does cognitive therapy change the client's cognitions as hypothesised?

At the pre-treatment assessment and at the follow-up interviews, clients completed a measure of gambling related cognitive distortions. Mean total scale scores are presented in Table 43. Analysis of variance indicated that there were no significant differences between treatment groups on mean pre-treatment total scale scores. A 3 x (2) repeated measures analysis of variance was carried out on the pre post-data. On average mean total scale scores decreased from pre-to post treatment ($F(1,34) = 45.9, p < .001$). There were no interaction effects. There were no differences in the mean change on the scale between treatment conditions.