



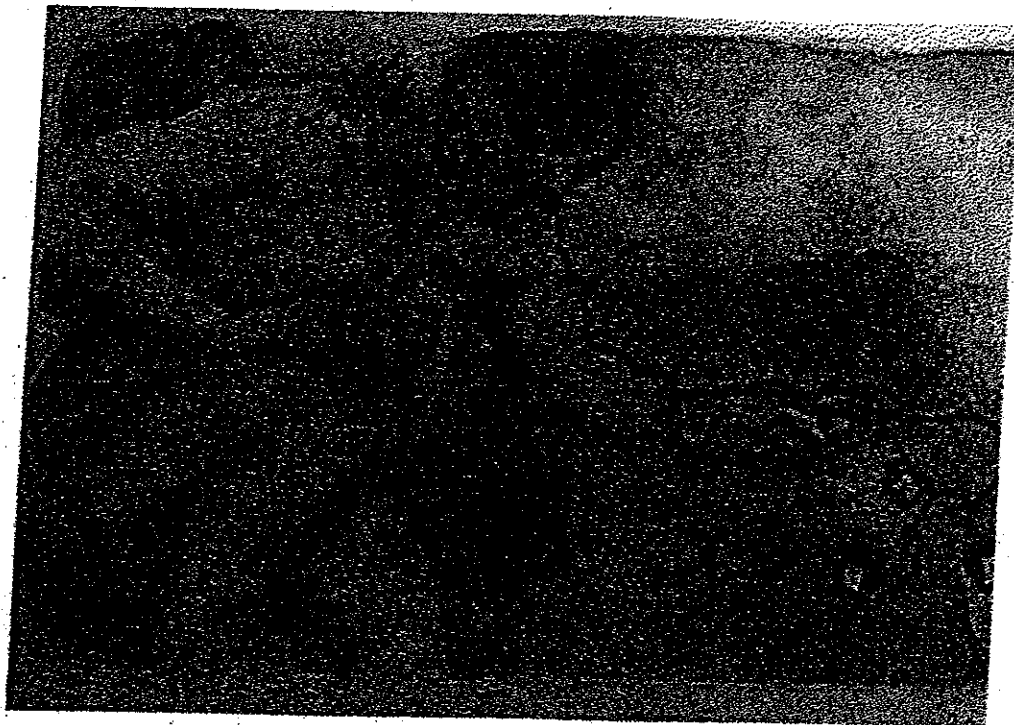
UNSW



FINAL REPORT

**An evaluation of the effectiveness of a
treatment program for pathological gamblers.**

**Prepared for the
Casino Community Benefit Fund Trustees**



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Psychiatry Research and Teaching Unit, School of Psychiatry, University of New South Wales
&
South Western Sydney Area Health Service**

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1 PREAMBLE

This report was prepared in accordance with the requirements of the Casino Community Benefit Fund Round 3 funding agreement to conduct and evaluate an inpatient and outpatient clinical research service for problem gamblers in the geographical region of metropolitan Sydney covered by the South Western Sydney Area Health Service.

The project included a number of proposed research studies. The objective of these studies were to provide empirical data on the efficacy and effectiveness of specific treatment interventions for problem gamblers, the effectiveness of anti-depressant medication in the management of suicidality and the identification of key personality, demographic and clinical characteristics that may represent predictors of treatment outcome.

The aim of the overall project was to obtain empirical evidence on various aspects of the clinical management of pathological gamblers that would assist in guiding best-practice approaches to the development of comprehensive treatment programs for problem gamblers and their families in New South Wales.

Principal Investigator:

Associate Professor Alexander Blaszczynski, Director, Impulse Control Research Clinic, Psychiatry Research and Teaching Unit, School of Psychiatry, University of New South Wales & the South Western Sydney Area Health Service.

Research Psychologist:

Ms. Fiona Maccallum, South Western Sydney Area Health Service.

Funding:

Financial assistance for this project was provided by the New South Wales Government from the Casino Community Benefit Fund. Funding for an amount of \$114,210 for a two and one-half year period (including extensions) was allocated for the employment of one research psychologist and infrastructure support. The project agreement was signed in April 1998 with the termination date reached in November 2000.

2 EXECUTIVE SUMMARY

Introduction

In the last ten years there has been an expansion in the number of specialist counselling services established in response to the recognition of the deleterious impact of excessive gambling on the welfare and well being of certain segments and individuals in the community. This rise in counselling services occurred in response to the funding opportunities made available by the New South Wales Government's implementation of the Street Report (1991) recommendation to impose a 2% levy on casino revenue. In part, the funds generated by this levy were to be specifically allocated to set up community services and support agencies to assist problem gamblers and their families.

As the Productivity Commission's (1999) report into Australia's gambling industries observed, a wide range of counselling services have been implemented each differing in their theoretical orientation, content and approach to therapy. While there is a consensus that problem gambling is a treatable condition, Blaszczynski, Walker, Sagris and Dickerson (1999) note that currently there is no single intervention modality that is the 'gold standard' or best practice in the management of problem gambling. Consequently, there is an imperative to conduct systematic research to evaluate the efficacy and effectiveness of interventions used to assist problem gamblers and to establish proper guidelines for the development of an appropriate service delivery model. Jackson, Thomas and Thomason (2000) emphasise the need for research to examine the efficacy and long-term effectiveness of established programs, the accessibility and the cost-effectiveness of such programs.

The objective of this series of projects was to evaluate the effectiveness of two popular treatment interventions for problem gambling and to gain a further understanding of variables that may predict a positive response to counselling and treatment.

To achieve maximum benefit, the type of treatment offered should suit the needs of the client. Another aim of the project was to assist counsellors match client characteristics to a particular intervention in order to maximise the effectiveness of treatment.

(Note: The Performance Indicators as enumerated in the Agreement document have been re-ordered in the body of the report to improve the logical flow of the report.)

Performance Indicator 1: The effectiveness of the residential program to manage pathological gamblers suffering psychiatric disorders and those in crisis situations

One purpose of this project was to establish a residential program for pathological gamblers with serious comorbid psychiatric disorders and for those in a crisis situation where admission into a hospital unit to manage suicidal risk may be required.

- In the course of the project it became evident that the demand for a residential program was less than anticipated.
- Few pathological gamblers fulfilled the clinical requirements justifying admission into hospital.
- An analysis of cases presenting for treatment indicated that pathological gamblers with a comorbid psychiatric disorder or at-risk for suicidality had already received treatment for such conditions prior to their referral to the specialist gambling program.
- In a small proportion of cases, it was noted that clients declined to enter a gambling program following resolution of their comorbid psychiatric disorder or suicidal risk. Gambling appeared to be a secondary symptom of a primary psychiatric disorder.
- There does not appear to be a strong need for the establishment of a residential based problem gambling program. Comorbid conditions, in particular suicidality, should be managed and stabilised before specific interventions for problem gambling can be implemented or continued.

Performance Indicator 2: The effectiveness of cognitive behavioural treatment techniques in the management of pathological gambling

Cognitive behavioural therapy is increasingly becoming the treatment of choice for problem gambling. In terms of treatment, the effectiveness of only two psychological interventions, cognitive therapy and imaginal desensitisation, is supported by empirical evidence based on controlled randomised outcome studies with long-term follow-up.

The results of this project are consistent with and reinforce the findings of other studies that a substantial minority of clients refuse to enter treatment or dropout during the course of a program. The attrition rate for the project was 33.8%.

Importantly, dissatisfaction with treatment may not be the predominant reason for clients dropping out from a program. Slightly less than two thirds (61%), indicated that they felt able or wanted to cease gambling without further assistance or unable to attend because of external commitments. Approximately a quarter of the sample felt the treatment format was not suitable for them.

One month follow-up data was available on 93% of clients who completed treatment. Six month and twelve month follow-up data is continuing to be collected.

- Cognitive therapy resulted in 76% of clients reporting a significant improvement in their gambling behaviour.
- The breakdown by level of improvement is as follows:
 - 49% reported abstinence or controlled gambling.
 - 27.9% showed significant reduction in gambling reporting only one to two episodes of excessive gambling.
 - 23.6% of clients failed to respond by continuing to engage in uncontrolled gambling.

Clinicians showed a tendency to rate clients as having a better response to treatment as compared to psychometric measures, which showed lower levels of overall improvement. Clinicians rated 80% of clients as showing a moderate to significant improvement. This suggests that counsellors exhibit a positive bias in evaluating response rates by reporting inflated outcome success.

At six-months, 77% of clients were rated as improved. Although the sample size is small and data collection is continuing, preliminary findings suggest that gains are maintained over the longer term

There were no significant differences between the three treatment conditions in terms of dropout rates, gambling behaviour and continued gambling-related problems at the one-month follow-up.

There were no differences in outcome across different treatment interventions. Gambling problems were found to have decreased following treatment with a home-based imaginal desensitisation, a six-week group cognitive group therapy program or a combined six-week group imaginal desensitisation and cognitive therapy program.

The outcome rate achieved by the imaginal desensitisation was similar to that reported in an earlier hospital based inpatient program (Blaszczynski, et al, 1991).

Overall, the findings indicate that cognitive therapy and imaginal desensitisation are highly effective strategies for problem gambling.

These findings provide promising signs that a cost-effective home-based imaginal desensitisation program may be equally as efficacious as group cognitive therapy in reducing problem gambling, at least in the short-term.

Performance Indicator 3: Investigation of the effectiveness of anti-depressant medication in the treatment of severe and potentially suicidal impulsive gamblers

The initial aim of this component of the project was to evaluate the effectiveness of anti-depressant medication in the treatment of severe and potentially suicidal pathological gamblers.

Consistent with the clinical literature, clients attending the clinic reported mild depressive symptomatology and suicidal ideation. However, in only a minority of cases did clients reporting severe levels of disturbance contact our clinic without having had prior psychiatric or medical contact. This unexpected situation posed a number of ethical and practical impediments to conducting the planned study. It was not considered ethically appropriate to cease or alter existing medications, and there were too few un-medicated cases to enable a proper controlled outcome study evaluating the effectiveness of a specific anti-depressant medication. In light of this situation the focus of the investigation shifted towards reviewing relevant information about medication use and suicidality within the client sample. This review indicated that:

- Depressive symptomatology was a common feature of clients attending the clinic.
- Gambling related depression and suicidal ideation might not be an immediate prompt for clients to seek assistance for their gambling. The majority of clients in crisis had previous contact with a GP or psychiatrist and the average recency of ideation was more than one month before assessment.
- Suicidal behaviours (ideation, plans, and attempts) were higher among this sample of treatment seeking gamblers than in the general population
- Females tended to report suicidal ideation over longer time frame and intended to use less immediately lethal methods. Males were more likely to report acute episodes of less specific ideation, but with more immediately lethal methods.

- Pathological gamblers exhibiting less serious suicidal ideation should be considered at risk for suicide.

Performance Indicator 4: The identification of psychological predictors of treatment outcome

To maximise treatment effectiveness, identifying predictors of poor compliance and outcome will assist in the process of determining which clients may fail to respond to treatment and/or require additional support and assistance. Gaining an understanding of predictor variables would offer significant advantages in being able to adapt and match treatment interventions to individual clients. Improved matching would enhance the likelihood of a successful response to treatment.

- Age and sex may predict treatment attrition. There was a trend for non-attenders and dropouts being younger and male.

A number of variables did not predict outcome:

- Gambling severity as measured by SOGS scores, preoccupation, self-control and urge to gamble, mean debt or gambling expenditure, did not predict attrition or treatment outcome.
- Level of harmful alcohol use is not related to treatment outcome.

Several variables appeared to predict outcome:

The relationship between depression and outcome is complex and requires further study.

- Beck Depression Inventory scores were associated with poorer outcome. However, a past history of depression as diagnosed by a psychiatric interview did not show any relationship with outcome.
- There does not appear to be an association between anti-depressant medication and treatment outcome but the caveat of a small sample size needs to be imposed on this finding. Clients currently prescribed selective serotonin reuptake inhibitors did not show any different response to treatment compared to those not requiring medication.
- Trait anxiety is a predictor of poor response to treatment as is pre-treatment level of state anxiety. The higher the level of anxiety, the poorer is the response to treatment.

- Dysfunctional impulsivity appears to be significantly predictive of a poor response to treatment.

Performance Indicators 5 and 6: Personality and other relevant characteristics of treatment seeking pathological gamblers and the effectiveness of research into the personality characteristics of pathological gamblers

The primary objective of this component of the grant was to identify specific personality and other relevant characteristics descriptive of pathological gamblers. Such knowledge will assist counsellors to apply or modify interventions to suit the specific needs of the client.

There is no single profile descriptive of problem gamblers as a homogenous group. The following characteristics were found among the sample of clients seeking treatment:

- 286 clients contacted the service between September 1998 and August 2000. There is no data on how large is the total population of problem gamblers residing in the catchment area serviced by the South Western Sydney Area Health Service.
- 187 clients attended their scheduled assessment interview.
- There were 121 (64.7%) males and 66 (35.3%) females in this population of treatment seeking gamblers.
- The average age of clients was 37 years.
- Male clients tended to be younger than females.
- The majority of clients (65%) were born in Australia.
- The distribution of overseas born clients was consistent with that found in the general community in the South Western Sydney region.
- Electronic gaming machine players were over represented in the sample.
- Only one client reported problems associated with Internet gambling.
- Problem gamblers clearly meet criteria for diagnosis as pathological gamblers. This is expected given that high scores were required for inclusion in the study. The mean South Oak Gambling Screen score was 11.7.

- 41% of 104 clients administered a psychiatric screen met criteria for an affective disorder in the 12 months prior to assessment. The majority were classified as single episode major depression.

3 INTRODUCTION

3.1 Background

The South Western Sydney Area Health Service provides a range of health services for approximately 700,000 community members residing in six local government areas: Bankstown, Lidcombe, Fairfield, Campbelltown, Liverpool and Wingecarribee Shire. The rate of expenditure on electronic gaming machines in clubs and hotels in the region is among the highest in New South Wales.

In 1991 the Psychiatry Research and Teaching Unit of the School of Psychiatry, University of New South Wales and the South Western Sydney Area Health Service commenced a specialist treatment program for problem gambling. The foundation for the program originated in earlier work conducted under Associate Professor Neil McConaghy at the Behaviour Therapy Unit at the Psychiatric Unit, The Prince of Wales Hospital, Randwick. This Unit was the first university teaching hospital to offer inpatient treatment for pathological gamblers in Australia and the first to publish a randomised control treatment outcome study reporting the long term effectiveness of several interventions; aversive therapy, imaginal desensitisation, in-vivo exposure and relaxation.

In the mid-1990s, the Impulse Control Disorder Research Clinic was formed to research psychological and personality characteristics of a broad range of impulse control disorders including pathological gambling.

In 1997 financial support was obtained through a Round 3 grant application to the NSW Casino Community Benefit Fund to establish a research oriented clinical treatment program for pathological gamblers.

In part, the terms of reference for Round 3 were to:

- Fund appropriate research into gambling and the social and economic impact of gambling on individuals, families and the general community in New South Wales, and
- To support treatment and rehabilitation services for problem gamblers and their families.

The following list of minimal performance indicators were associated with the clinical and research project:

- The effectiveness of the residential program to manage pathological gamblers suffering psychiatric disorders and those in crisis situations.
- The effectiveness of the cognitive behavioural treatment techniques in the management of pathological gambling.

- The effectiveness of anti-depressant medication in the treatment of severe and potentially suicidal impulsive gamblers.
- The identification of psychological predictors of treatment outcome.
- The effectiveness of research into the personality characteristics of pathological gamblers.
- The presentation of the study outcomes and a final report to the Casino Community Benefit Fund.

Funding for an amount of \$114,210 for a two and one-half year period (including extensions) was allocated for the employment of one research psychologist and infrastructure support to carry out these research projects.

During the course of the project, additional important issues or shifts in emphasis arising from preliminary analyses of data were identified and pursued for further study.

The following report describes the relevant findings of the various research and clinical programs in respect to the performance indicators as outlined above.

It is the intention of the chief investigator to continue the statistical analyses of the comprehensive database compiled on clients and to prepare further articles for publication in scientific journals and presentation to national and international conferences. The dissemination of material and knowledge is in accordance with the general objective of the grant.

As indicated, the Performance Indicators as enumerated in the original agreement have been re-ordered to improve the logical flow of the report.

4 PERSONALITY AND OTHER RELEVANT CHARACTERISTICS OF TREATMENT SEEKING PATHOLOGICAL GAMBLERS (PERFORMANCE INDICATOR 5)

4.1 Introduction

Little is known about personality and other relevant characteristics that may operate to influence compliance with counselling/treatment programs and predict the long-term successful outcome for problem gamblers seeking assistance.

In the present study, a significant component of the counselling/treatment research evaluation project was a systematic data collection and assessment procedure. This data set was required to meet the performance indicators for the research project designed to describe characteristics of pathological gamblers and treatment outcome predictors.

The objective of this component of the project was to investigate putative variables that may assist counsellors and clinicians to identify specific characteristics that will assist them in determining which clients will be most likely to enter into, remain in and respond well to a program of counselling. Knowledge of such variables will greatly improve the effectiveness of a treatment intervention by allowing counsellors to select out vulnerable clients who may require and benefit from additional individual support and assistance in overcoming their problem gambling.

Blaszczynski (1999, 2000) has postulated a conceptual model that describes the existence of at least three major subgroups of problem gamblers: non-pathologically disturbed or 'normal' problem gamblers, emotionally vulnerable gamblers, and biologically based impulsive gamblers. The utility of the model lies in its integration of the complex and dynamic interaction of ecological, psychophysiological, psychological, developmental, cognitive and behavioural components contributing to the aetiology of the condition. The fundamental implication underlying the model is that each subgroup follows distinct pathways in developing their problem gambling condition and that, as a corollary, different intervention strategies may be required for individuals in the different subgroups.

The process of data collection commenced during the initial assessment consultation interview and continued at various points throughout the contact with the clinic. In this section of the report the general characteristics of the client sample presenting for treatment will be described. The relationship between these client characteristics, other relevant variables, and treatment outcome is discussed in subsequent sections.

This research was exploratory in nature and therefore no specific hypotheses were stipulated. The following section describes the procedure employed for this component of the clinical research project.

4.2 Procedure

The initial phase of the project involved the construction of a semi-structured interview protocol (that included the clinical diagnostic criteria listed in the American Psychiatric Association's Diagnostic and Statistical Manual (fourth edition) (DSM-IV; A.P.A., 1994) and battery of psychometric measures. A substantive task of the clinical psychologist employed under the terms of the Casino Community Benefit Fund grant involved the development of this assessment package.

Currently there is no generally accepted standard gambling interview schedule available that is specifically designed to obtain detailed and comprehensive information on all aspects of a client's gambling behaviour in the context of a full clinical case history assessment. There are a number of screening instruments used in clinical and survey settings (South Oaks Gambling Screen, Gamblers Anonymous 20 Questions and the Massachusetts Adolescent Gambling Screen) and minimal data sets used to collect essential data for corporate planning requirements (Victorian Department of Human Services). The information elicited by these protocols is limited in scope and depth and therefore does not suit the clinical assessment needs of counsellors.

To allow the identification of predictor variables across all domains of personality, background history, life-experiences and psychiatric status, a semi-structured interview protocol was constructed. This protocol was developed for administration by an appropriately qualified counsellor/clinician and designed to capture the full range of demographic and clinical data from which variables of interest could be extracted as indices to predict and measure response to treatment.

The interview contained items covering such areas as personal and family background history, gambling behaviour, impact of gambling on all domains of personal and interpersonal functions, substance use, suicidality, history of psychiatric/psychological difficulties and current and past treatments.

The psychometric measures included in the battery are described below (in alphabetical order). They were selected on the basis of their reliability, validity and theoretical relevance to the field of pathological gambling shown in other studies.

The measures included in the project were the:

- Alcohol Use Disorders Identification Test (AUDIT): Saunders, J., Aasland, O., Barbor, T., de la Fuente, J. & Grant, M. (1993) 'Development of the alcohol use

disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption', *Addiction*, 88, 791-804). The questionnaire is recommended as a brief screening instrument for the detection of hazardous and harmful levels of alcohol consumption. The widely used 10 item self-report questionnaire provides an estimate of alcohol consumption at three levels – non-hazardous, harmful and alcohol dependence.

- Beck Depression Inventory (BDI): Beck, A. T. & Steer, R. A. (1987) *Manual for the Revised Beck Depression Inventory*, The Psychological Corporation, San Antonio, Texas). The BDI is a 20 item widely used, reliable and valid self-report measure used to assess for the severity of depressive symptomatology.
- Beck Scale for Suicide Ideation (BSS): Beck, A.T. & Steer, R.A. (1993) *Beck Scale for Suicide Ideation*, The Psychological Corporation, San Antonio, Texas). The BSS is a 21 item self-report instrument used to detect and measure the severity of suicidal ideation over the previous week. There is no specific cut off score for suicidality: Increasing scores reflect increasing suicide risk.
- Composite International Diagnostic Interview (CIDI-Auto): World Health Organization. (1997) *Composite International Diagnostic Interview – auto*, World Health Organization, Geneva). The CIDI-auto 12 is a computerised clinician administered standardised interview that assesses for the presence of a broad range of mental disorders during the previous 12 months and provides psychiatric diagnoses according to the definitions and criteria of DSM-IV (APA, 1994).
- Gambling Beliefs Scale (GBQ): Joukhador, Blaszczynski, & Maccallum, 2000). A 65-item questionnaire containing statements describing irrational and distorted beliefs about gambling. The statements covered 12 categories, including “illusions of control”, “superstition” and “entrapment”. Clients rated their belief in each statement on a five-point scale (0 = not at all, 4 = very much). Scores are summed to obtain a total scale score. Statements from each category were placed in random order within the questionnaire. The Gambling Beliefs Questionnaire is an instrument that is in its developmental stage and has been constructed by the authors as an assessment of common irrational beliefs, cognitive distortions and erroneous perceptions purportedly held by problem gamblers. Such cognitive belief structures are regarded as playing a central role in the development and maintenance of problem gambling.

The scale was developed as a means of assessing the effectiveness of cognitive interventions in correcting irrational beliefs and erroneous perceptions.

Although cognitive therapy is one of only two approaches with demonstrated efficacy, no study has assessed the ability of cognitive therapy to effect actual changes in thinking. The Gambling Beliefs Questionnaire, although not presently

validated, has been shown to distinguish beliefs held between social and problem gamblers (Joukhador, Maccallum & Blaszczynski, 2000).

- The Self-Descriptive Inventory (SDI) (Dickman, S.J. (1990) 'Functional and Dysfunctional Impulsivity; Personality and Cognitive Correlates', *Journal of Personality and Social Psychology*, 58, 95-102). This self-report measure assesses the personality trait of impulsivity, defined by the author as the tendency to deliberate less than most people of equal ability before taking action, and distinguishes between functional impulsivity and dysfunctional impulsivity. Functional impulsivity refers to the tendency of an individual to engage in rapid, error-prone information processing (i.e., to act with relatively little forethought) when such a strategy is optimal for the situation. Dysfunctional impulsivity represents the tendency to engage in rapid, error-prone information processing because of an inability to use a slower, more methodical approach under general circumstances.
- South Oaks Gambling Screen (SOGS) (Lesieur, H.R. & Blume, S.B. (1987) 'The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers', *American Journal of Psychiatry*, 9, 1184-87). This 20 item self-report measure of problem gambling is the most widely used reliable and valid screening instrument to detect problem gambling. It is a useful measure of the severity of problem gambling. Modification of the set of instructions allows for lifetime, twelve and six month estimates of gambling level to be obtained. Wording of the questionnaire was altered to reflect Australian gambling forms; for example 'poker machines' was substituted for 'slot machines'.
- Spielberger's State Trait Anxiety Inventory Form Y (STAI) (Spielberger, C. (1983) *State Trait Anxiety Inventory Form Y-1 Self-Evaluation Questionnaire*, Consulting Psychological Press, Palo Alto, California). This widely used self-report scale comprises two separate 20-item scales assessing state and trait anxiety, respectively. Scores on both scales can be compared to a normal population.

State anxiety refers to current "at the moment" feelings of tension apprehension, nervousness, and worry. Trait anxiety refers to relatively stable individual differences in anxiety-proneness. On this scale, clients are asked to respond in terms of how they "generally" feel. The higher the level of trait anxiety the more likely an individual will be to interpret situations as stressful or threatening. That is, high-trait anxiety individuals are more likely to be chronically stressed than low trait anxiety individuals.

- The Structured Clinical Interview for DSM-IV Personality Disorders (First, M.B., Gibbon, M., Spitzer, R.L., Williams, J.B.W. & Benjamin, L.S. (1997) *User's guide for the Structured Clinical Interview for DSM-IV Axis II Personality Disorders*. Washington, DC: APP Press). The SCID-II is a

structured clinical interview for assessing the ten DSM-IV (A.P.A., 1994) Axis II personality disorders as well as Depressive Personality Disorder and Passive-Aggressive Personality Disorder. The SCID-II interview was used in conjunction with the self-report screen SCID-II Personality Questionnaire.

It is important to note that there were revisions and modifications made to items in the semi-structured gambling interview schedule in the early stages of the protocol's development and use. In addition, the suicidality measures were incorporated after the data collection commenced in response to further issues identified in the course of the study. As a result, not all clients completed the all measures outlined above. This accounts for some missing data and the variation in sample sizes reported in the statistical analyses. The relevant sample sizes are listed in the tables and text where necessary.

4.3 Client database

The systematic data collection on clients attending the clinic commenced in September 1998 and continued until client recruitment ceased in August 2000. The clinic maintained a contact database of all calls made to the clinic by clients expressing interest or seeking information for themselves about the services offered.

Although assessed and managed by the service, a number of additional clients were not included in the contact database or the clinical research project. These were clients referred specifically for medico-legal assessment in relation to alleged offences committed in respect to their gambling behaviour, those referred directly and specifically as private patients to A/Professor Alex Blaszczynski, or persons seeking information, guidance and advice for the management of a family member with problem gambling. These client contacts do not appear in the figures listed below.

During the 24-month period a total of 286 problem gamblers telephoned the clinic with an enquiry regarding treatment. The client contact database indicated that 76 clients contacted the service and made an appointment but for unknown reasons did not attend their scheduled interview. An additional 23 clients telephoned the service for information regarding the service but elected not take any steps to arrange an appointment for a variety of reasons, including the waiting time being too long, or that information was being sought on behalf of a friend or significant other. It was not possible to obtain any substantive data on this cohort of problem gamblers.

A total of 187 problem gamblers contacted the service, made an appointment and attended the initial assessment consultation during which they completed the semi-structured gambling interview. This figure indicates that 71% of the clients who made an appointment kept that appointment, a rate that compares very well to the 50% to 80% range of attendance rates reported by Jackson, Thomas and Thomason (2000) for Victorian counselling services.

4.4 Results

This section provides a description of the demographic and personality characteristics found among the sample of 187 problem gamblers attending the service for treatment.

- **Demographics**

4.4.1.1 Sex distribution

There were 121 (64.7%) males and 66 (35.3%) females included in this sample. This sex ratio is consistent with the trend observed in the majority of the literature describing the relative distribution of males and females in clinical samples.

It is interesting to note that the reported gender ratio in the decade of the 1980s was heavily biased toward males with a ratio of approximately 9:1 males to females. The recent marked shift toward a more equitable ratio of 3:1 males to females could indicate that:

- More females are experiencing gambling problems as a result of changes in the socio-political climate promoting the expansion of gambling in the community.
- More females are now being identified as experiencing gambling problems by family members due to the effectiveness of community education campaigns highlighting the impact of problem gambling on families and individuals.
- More females are prepared to enter treatment in response to increased awareness of service availability.

It is likely that combination of all three of the above has led to the observed changes in the relative distribution of male and female problem gamblers in the community and in treatment seeking populations.

4.4.1.2 Age

Clients had a mean age of 37.1 years (standard deviation (SD)= 10.9 years). Male clients (mean M) = 34.5 year, SD = 9.8) were found to be significantly younger than female clients (M = 41.9, SD = 11.1) (F (1,186) = 21.9, p < .001). The age range extended from 18 years to 71 years. It should be noted that the clinic is directed toward the provision of services for adults defined as a person over the age of 18 years. However, the policy was adopted that adolescents aged 16 years or 17 years complaining of problem gambling behaviours would be assessed and treated within

the facility. There were no instances of adolescents actually coming in for treatment although there were a number of inquiries from parents expressing concern over the gambling behaviour of children under age 18 years.

The distribution of ages of clients attending the service is presented in the Table 1.

Table 1: Distribution of clients according to age and sex

Age	Total n=187 n (%)	Males n = 121 n (%)	Females n = 66 n (%)
11-20 years	6 (3.2)	5 (4.1)	1 (1.5)
21-30 years	50 (26.7)	40 (33.1)	10 (15.2)
31-40 years	63 (33.7)	47 (38.8)	16 (24.2)
41-50 years	48 (25.7)	24 (19.8)	24 (36.4)
51-60 years	16 (8.6)	3 (2.5)	13 (19.7)
61-70 years	3 (1.6)	1 (0.8)	2 (3.0)
71-80 years	1 (0.5)	1 (0.8)	0 (0.0)
Mean age in years (Standard deviation)	37.1 (10.9)	34.5 (9.8)	41.9 (11.1)
Age range in years	18-71	18-71	18-70

A comparison of the difference in the age distribution between the sexes reveals that a surprising 60% of females were aged 40 years or older compared to only 24% of males. At the other end of the age spectrum, twice as many males as females were aged 30 years or less.

In interpreting these results, it is argued that males are at risk for developing problem gambling in early adulthood whereas females are more likely to commence experiencing difficulties in middle life. These findings can be taken as providing support for the argument that males and females gamble for different reasons. Synthesizing the findings reported in the literature in respect to impulsivity and cognitive distortions, it is argued that male adolescents and young adults are more prone to risk taking and impulsivity, gamble for excitement and view gambling as a potential source of income.

In contrast, females commence gambling later in life perhaps, as Jacobs (1986) and others (Blaszczynski & McConaghy, 1989) have suggested, in response to emotional stresses associated with changes in home circumstances, loneliness and boredom. Jacobs (1986; 1999) has found evidence that the excitement produced by gambling is

of sufficient intensity to induce a state of dissociation/distraction. Gambling is thus used as a mechanism by which a person can narrow his or her focus of attention and temporarily escape from emotional stresses. The emotional stresses and anxiety may relate to changes in mid-life circumstances such as children growing up and leaving home (empty nest syndrome), lack of purpose and direction in life, and boredom. Young females are more risk averse and, therefore, do not participate as readily as young males. As noted below, and consistent with this hypothesis, compared to males there were fewer single but more separated or divorced females represented in the sample.

4.4.1.3 Marital status

Of the total sample, 100 (53.5%) clients stated that they were married or in a defacto relationship. Twenty-one of these clients (11.2% of the total sample) stated that they were separated at the time of initial assessment. A further 33.2% ($n = 61$) reported that they were single, 10.2% ($n = 19$) were divorced and 2.1% ($n = 4$) were widowed. Table 2 provides a breakdown of marital status according to gender.

Table 2: Marital status of clients by sex

Marital status	Total n (%)	Males n (%)	Females n (%)
Single	62 (33.2)	47 (38.8)	15 (22.7)
Married/Defacto	81 (43.3)	55 (45.5)	26 (39.4)
Separated	21 (11.2)	13 (10.7)	8 (12.1)
Divorced	19 (10.2)	5 (4.1)	14 (21.2)
Widowed	4 (2.1)	1 (0.8)	3 (4.5)
Total n (%)	187 (100)	121 (100)	66 (100)

4.4.1.4 Education

Data on education was available for 175 (93.6%) of the sample. As shown in Table 3 below, 20% of clients left school prior to finishing a level of education equivalent to Year 10, 34% left after completing Year 10, 17% after the Higher School Certificate, 22% after technical or further education and 7% completed tertiary studies.

Table 3: Highest level of education achieved by clients

Education	Total n (%)	Males n (%)	Females n (%)
Primary	4 (2.3)	(0.0)	4 (6.7)
Secondary: Year 9 or less	30 (17.1)	12 (10.4)	18 (30.0)
Year 10 / intermediate	60 (34.3)	38 (33.0)	22 (36.7)
HSC	31 (17.7)	25 (21.7)	6 (10.0)
TAFE	37 (21.2)	30 (26.9)	6 (10.0)
University	13 (7.4)	9 (7.8)	4 (6.7)
Total n (%)	175 (100)	115(100)	60 (100)

4.4.1.5 Occupational level

Clients were classified into occupational groups according to the categories listed in the Australian Bureau of Statistics publication, *Australian Standard Classification of Occupations (second edition) (1998)*. This is a skill-based classification system that encompasses all occupations in the Australian work force. An occupation is defined as a collection of jobs that are sufficiently similar in their main tasks as to be able to be grouped together for purposes of classification.

The largest single group of clients (25.5%) represented was not in the workforce being either unemployed or pensioners.

Table 4 below provides a detailed description of the occupational levels for the total sample and according to sex. Less than 20% of the sample were from the higher three occupational groups. The distribution of occupational ratings supports the observation that gambling is regressive in nature in that it causes problems for those who can least afford to participate.

Table 4: Occupational level for clients

Occupational level	Total n (%)	Males n (%)	Females n (%)
Manager	8 (4.4)	7 (6.0)	1 (1.5)
Professional	14 (7.7)	10 (8.6)	4 (6.1)
Associate Professional	14 (7.7)	12 (10.3)	2 (3.0)
Trades person	24 (13.2)	24 (20.7)	0 (0)
Advanced clerical/sales	2 (1.1)	0 (0)	2 (3.0)
Intermediate clerical/sales	30 (16.5)	15 (12.9)	15 (22.7)
Intermediate production/trans	11 (6.0)	8 (6.9)	3 (4.6)
Elementary clerical/sales	12 (6.6)	7 (6.0)	5 (7.6)
Labourers & Related	17 (9.3)	13 (11.2)	4 (6.1)
Unemployed	47 (25.8)	18 (15.5)	29 (43.9)
Student	3 (1.7)	2 (1.7)	1 (1.5)
Total N	182 (100)	116 (100)	66 (100)

4.4.1.6 Ethnicity

For purposes of this study, ethnicity was determined by country of birth. The Australian Bureau of Statistics publication, *Australian Standard Classification of Countries (SACC) (1998)* category for country was used to classify clients. The SACC's main classification structure of countries is based on geographical proximity, similarity in terms of social, cultural, economic and political characteristics and the location of the country within a single geographic continent.

The majority of clients utilising the service were born in Australia (65%). There were no identified Aboriginal and Torres Strait Islanders in the sample. Table 5 presents a breakdown of the birthplace for remaining clients. Clients from Southern and Eastern Europe and the Middle East represented the two most common countries of birth after Australia, with Asian clients obtaining a rank of 5th. The proportion of persons born overseas is consistent with that found in the local government area serviced by the clinic, that is, South Western Sydney bounded by Bankstown, Liverpool, Fairfield and Campbelltown.

Table 5: Place of Birth for Problem Gamblers Attending the Clinic

Place of Birth	Total n (%)	Male n (%)	Female n (%)
Australia	121 (64.7)	75 (62.0)	46 (69.7)
Oceania	10 (5.3)	8 (6.6)	2 (3.0)
North West Europe	8 (4.3)	4 (3.3)	4 (6.1)
Southern & Eastern Europe	15 (8.0)	10 (8.3)	5 (7.6)
North African & Middle East	13 (7.0)	9 (7.4)	4 (6.1)
South East Asia	9 (4.8)	5 (4.1)	4 (6.1)
North East Asia	1 (0.5)	1 (.08)	0 (0)
Southern & Central Asia	1 (0.5)	1 (.08)	0 (0)
Americas	6 (3.2)	5 (4.1)	1 (1.5)
Sub-Sahara Africa	3 (1.6)	3 (2.5)	0 (0)
Total	187 (100)	121 (100)	66 (100)

4.4.1.7 Forms of gambling

Poker machine gambling was the main form of problem gambling for 85.0% ($n = 158$) of the sample. There was a sex bias as shown by the fact that electronic gaming machines were the preferred form of gambling for a greater proportion of females (100%; $n = 66$) as compared to males (76.9%; $n = 93$).

Of the remaining 23.1% ($n = 28$) of males, 14.9% nominated horses, dogs and trots as their main problem form, 5.8% nominated casino table games and 0.8% ($n = 1$ each) nominated Keno or sports betting. Despite the concerns expressed in the media claiming the potential of Internet gambling to create problems, only one client reported impaired control over Internet gambling.

In the majority of cases, problems with multiple forms of gambling were the exception rather than the rule. Overall, 14.4% of clients (21.5% males and 1.5% of females) reported experiencing significant problems on more than one form of gambling.

4.5 Pathological gambling diagnostic criteria

All clients attending the clinic were assessed for their eligibility to participate in the project phase designed to evaluate cognitive and behavioural treatments for pathological gambling. As a prerequisite for participation in this study clients were required to meet diagnostic criteria for pathological gambling.

Two approaches were used to establish a diagnosis of pathological gambling: the clinical criteria described in DSM-IV (APA, 1994) and the self-report 20 item South Oaks Gambling Screen (Lesieur & Blume, 1987). The DSM-IV items were imbedded in the semi-structured gambling interview schedule.

While questions have been raised regarding the specificity and sensitivity of the South Oaks Gambling Screen in general population epidemiological studies, for purposes of the project it was accepted that the measure was developed on a clinical population and has validity as an index of gambling severity. One further advantage was that the use of the South Oaks Gambling screen permitted the comparison of our results with those reported in other studies. To reduce the possibility of Type I errors, the 10-point cut-off threshold recommended for Australian populations was used for diagnostic purposes.

Results revealed that at baseline assessment, 95.7% ($n = 179$) (males = 95%; $n = 114$; females = 98.5%; $n = 65$) of the clients met the requisite DSM-IV criteria for diagnosis of pathological gambling.

The mean score obtained by clients on the South Oaks Gambling Screen was 11.7 ($SD = 3.4$). There was no significant difference between males ($M = 12.1$ ($SD = 3.2$)) and females ($M = 11.0$, $SD = 3.7$) on this measure.

- **Psychiatric and psychological morbidity**

One hundred and four clients attended a second assessment interview during which they were administered a semi-structured psychiatric interview schedule (CIDI-auto) and a battery of psychometric measures. The results of these instruments are described in the following sections. In reporting these results, findings will be presented in the following order: psychiatric diagnosis, psychometric scores and, where relevant, self-report data.

To investigate the proportion of clients meeting criteria for major depression and other psychiatric disorders, the CIDI-auto was administered at baseline interview. The CIDI-auto is a standardised interview that assesses for the presence of mental disorders during the previous 12 months and provides psychiatric diagnoses according to the definitions and criteria of DSM-IV.

4.5.1.1 Affective disorders: psychiatric diagnosis

Perhaps the most consistent finding in the gambling literature relates to the association between problem gambling and mood disorders particularly depression (Becona, Lorenzo, del Carmen & Fuentes, 1996; Blaszczyński & McConaghy, 1988;

Linden, Pope & Jonas, 1986; McCormick & Taber, 1988). However, at least one study failed to find such an association due perhaps to methodological weaknesses (Thorson et al, 1994). As noted by the National Research Council (1999) few studies have explored for depression using formal diagnostic criteria. Apart from the Linden, Pope and Jonas (1986) study utilising the Research Diagnostic Criteria to diagnose major depression and Specker et al's (1996) study using the Structured Clinical Interview Patient version, most studies have relied on psychometric measures such as the SCL-90 or Beck Depression Inventory to assess depressed mood.

Given the emotional stresses produced by the effects of excessive gambling on an individual's financial position, marital relationships, and their attempts to conceal continued gambling and avoid disclosure of debts and/or criminal offences, the finding of depressed mood and anxiety is not surprising.

However, from a treatment perspective, it is important to determine if:

- (a) The depression is a primary condition (precedes the onset of problem gambling) or whether it represents a secondary symptom produced by the emotional distress associated with the adverse impact of excessive gambling.
- (b) The depression meets psychiatric diagnostic criteria for a major depression.
- (c) The nature of the depression is amenable to psychopharmacological interventions.
- (d) The severity of depression represents a risk factor for suicidality.

The National Research Council (1999) states that in affective disorders loss of judgment and excessive gambling may follow the onset of the mood disorder with the severity of gambling functionally related to the severity of the affective disorder. As the depression deepens, gambling worsens causing further problems and feeding back to aggravate the depression.

It is difficult to determine the direction of causality between depression and problem gambling. In the majority of cases evidence suggests that participation in gambling is a normative behaviour found among adolescents and young adults. Although features of problem gambling may not emerge until their mid twenties, on average, 90% of problem gamblers report having participated in gambling before the age of 20 years (Blaszczynski, 1988). McCormick, Taber, Kruegelbach and Russo (1987) estimated that only 14% of depressed gamblers experienced the onset of depression prior to the development of problem gambling. However, the reliability of such estimates should be drawn into question. Problem gambling is a chronic condition with an incipient onset. Problem gamblers have difficulty in retrospectively defining the precise point at which control was lost and its relationship to the emergence of depressed mood. Gamblers usually recognise or acknowledge that a problem exists only when confronted with irrefutable evidence or in response to a crisis. Under

these circumstances reliance is placed on the recall of diffuse and vague behaviours that often occurred several years previously preventing an accurate determination of when the depression emerged relative to loss of control over gambling.

Irrespective of direction of causality, it is important to identify and manage treatable depression suffered by problem gamblers. In this regard, it is imperative that an accurate diagnosis of depression is made in distinguishing a psychiatric condition that can be treated effectively with psychological interventions or medication from other forms of depression that may require alternative interventions. For example, a reactive state of depressed mood, adjustment disorder with depressed mood or dysthymic disorder may be best managed by improving coping and stress management skills and utilising agencies to help deal with the crisis confronting the client such as financial counselling.

We were interested in determining the prevalence of specific psychiatric affective disorders that met threshold criteria among the population of clients attending our clinic. The main disorders assessed were major depression, dysthymia and bipolar disorder. Major depression is characterised by an episode of depressed mood or loss of interest accompanied by at least four additional listed symptoms: marked weight loss/gain, sleep disturbance, psychomotor retardation/agitation, fatigue, impaired concentration and recurrent morbid thoughts. Symptoms must have been present for at least three weeks. Dysthymic disorder is characterised by at least two years of constant depressed mood accompanied by additional depressive symptoms that do not meet criteria for a major depressive episode, while an episode of depression in response to a psychosocial stressor is labelled an adjustment disorder with depression. Bipolar disorder is characterised by the presence of manic episodes with or without an accompanying depressive episode.

As shown in Table 6, results indicated that 41% of clients met criteria for a diagnosis of an affective disorder during the 12 months immediately prior to assessment.

Table 6: Proportion of n = 104 clients meeting CIDI criteria for depression.

CIDI Depression	Total n (%)	Males n (%)	Females n (%)
Major Mild, Single	21 (20.6)	16 (23.5)	5 (14.7)
Major Moderate, Single	7 (6.9)	3 (4.4)	4 (11.8)
Major Moderate, Recurrent	2 (1.9)	2 (2.9)	0
Major Severe, Single	11 (10.6)	7 (10.3)	4 (11.1)
Major Severe, Recurrent	1 (1)	1 (1.5)	0
Dysthymia	1 (1)	0	1 (2.9)
Bipolar Depressed, severe	1 (1)	0	1 (2.9)

An analysis of the sub-type and severity of the affective disorder indicates that only 3% met criteria for recurrent depressive disorder in the last twelve months. Slightly over a third of the total sample (38%) were classified as a single episode of major depression with half of these being rated mild and half as either at a moderate or severe level of severity.

Dysthymic and bipolar disorders were relatively uncommon representing only 2% of the total sample.

In the majority of cases (73%), the affective disorder first commenced more than twelve months prior to coming in for assessment. A quarter of the sample (27%) reported the first onset within the immediate twelve-month period prior to assessment with only two clients reporting its onset within the month prior to the assessment.

Approximately half the sample with an affective disorder stated that their most recent symptoms were experienced in the month prior to the baseline interview.

Table 7 describes the recency of symptoms for the affective disorder experienced within the last twelve months.

Table 7: Recency affective episode in the last twelve months prior to interview for n = 44 clients

Recency of CIDI diagnosed depression	Total n = 44 n (%)	Males n = 30 n (%)	Females n = 14 n (%)
Last 2 weeks	16 (36.4)	11 (36.7)	5 (35.7)
2 weeks – 1 month	7 (15.9)	5 (16.6)	2 (14.3)
1 month – 6 months	16 (36.4)	11 (36.7)	5 (35.7)
6 months – 12 months	5 (11.4)	3 (10)	2 (14.3)

4.5.1.2 Depression: psychometric data

The Beck Depression Inventory was used to determine severity of self-reported symptoms of depression. As a group ($n = 122$), the problem gamblers obtained a mean score of 16.3 ($SD = 9.2$), which placed them in the mild to moderate range for depression. There was a significant sex difference with females ($M = 20.1$, $SD = 10.3$) scoring higher, in the moderate to severe range, as compared to males ($M = 14.6$, $SD = 8$) who obtained a mean score placing them in the mild to moderate range for depression.

4.5.1.3 Anxiety disorders: psychiatric diagnosis

The National Research Council (1999) states that there is little known about the association between anxiety disorders and problem gambling. Blaszczynski (1988) found Spielberger state anxiety scores to be significantly higher among problem gamblers in treatment compared to normative data while the anxiety was found in 12% and 28% of subjects in two studies using small samples of problem gamblers (Roy, Adinoff, Roehrich, Lamparski, Custer, Lorenz, Barbaccia, Guidotti, Costa & Linnoila, 1988; Crockford & el-Guebaly, 1998).

Table 8 describes the baseline point-prevalence of specific types of anxiety disorders meeting psychiatric diagnostic criteria among the sample of problem gamblers.

Table 8: Prevalence of anxiety disorders at baseline assessment for n = 104 clients

CIDI diagnosed anxiety disorders	Total n (%)	Male n (%)	Female n (%)
Specific phobias			
• Animal	1 (1)	0	1 (2.9)
• Environment	5 (4.9)	2 (2.9)	3 (8.6)
• Blood/injury	8 (7.8)	2 (2.9)	6 (17.1)
Social phobia	10 (9.7)	6 (8.8)	4 (11.4)
Panic with agoraphobia	2 (1.9)	0	2 (5.7)
Panic without agoraphobia	3 (2.9)	2 (2.9)	1 (2.9)
Generalised anxiety disorder	13 (12.6)	4 (5.9)	9 (25.7)
Obsessive compulsive disorder	4 (3.9)	1 (1.5)	3 (8.6)
Post traumatic stress disorder	4 (3.9)	3 (3.9)	1 (2.9)

The most commonly reported anxiety disorder was that of generalized anxiety. This is an expected finding given that clinically, most gamblers expressed concern and worry about the possible disclosure of the extent and nature of their activities (gambling, debts or crime) and/or locating potential sources of funds to support their habit or meet necessary expenses. However, it is reasonable to argue that some conditions, such as the specific phobias found in 14% of the sample, have at face value little if any relevance to problem gambling. The prevalence rate of anxiety matches the rate found in the general population suggesting that there is no over-representation of these conditions among problem gamblers.

Social phobia was found in 10% of the sample with a slight trend toward females. The role of social phobia as a precipitant for problem gambling is yet to be clarified. At face value, it could be argued that some problem gamblers have difficulty at the social level. These individuals find that the anonymity and safe social environment afforded by casinos, clubs and hotel settings are non-threatening and attractive (in the sense that they are able to merge unobtrusively into the social background of the venue).

The present finding that only 4% of clients met criteria for post traumatic stress disorder over the previous twelve months period is at variance with an earlier report of a high rate of trauma (29%) in a cohort of Veteran's Administration problem gamblers in treatment (McCormick, Taber, Kruedelbach & Russo, 1987). Given the nature of patients attending a Veteran's Administration facility, that is, armed forces personnel, it is not surprising that trauma appears to be over-represented in such a

population. Our finding does not support a hypothesis that trauma was a key variable involved in the maintenance of problem gambling behaviours, however it should not be ruled out entirely as an aetiological factor. It may well be that for some individuals trauma is instrumental in triggering the development of problem gambling but that following the amelioration of PTSD other factors are involved in the persistence of gambling over the longer term.

4.5.1.4 Anxiety: Psychometric data

Responses to the Spielberger State Trait Anxiety Inventory confirmed the presence of high levels of state and trait anxiety among clients (see Table 9). In terms of trait levels of anxiety, elevated scores on the STAI-Y indicated that clients were generally more anxious as a group than 80% of the population. At time of completing the STAI-Y, immediately prior to commencing treatment, females obtained scores indicating that they were more anxious than 78% of females, and males more anxious than 60% of males in the general population.

To what extent the gambling problems generated chronic stresses that over the long term were of sufficient magnitude to elevate both state and trait anxiety levels as compared to trait anxiety itself as a predisposing factor cannot be ascertained by the results of the present study. In light of Blaszczynski's (1999, 2000) three pathway mode of gambling, it is reasonable to argue that a cohort of emotionally vulnerable gamblers manifest high levels of trait anxiety that predispose such persons to seek escape through gambling while in the remainder, the anxiety is the end-result of gambling-related stresses.

Table 9: STAI scores for n = 72 pathological gamblers

Anxiety – STAI-Y percentile scores	Total n (%)	Males n (%)	Females n (%)
State (n = 72)	66.1 (31.2)	61.2 (30.3)	78.0 (30.7)
Trait (n = 70)	80.2 (24.5)	77.7 (22.7)	85.4 (28.2)

4.5.1.5 Substance use: psychiatric diagnosis

The addiction model of gambling remains the predominant paradigm in Western countries (Custer, 1982; Jacobs, 1986; Shaffer, 1997; Ferris, Wynne & Single, 1998) with gambling referred to as the 'purest [form of] addiction' (Custer & Milt, 1985; Jacobs, 1986). This paradigm is reflected in previous and current editions of DSM

(APA, 1980, 1987, 1994) where, paradoxically classified as an Impulse Control Disorder, its diagnostic criteria have been deliberately adapted from those used for substance dependence including the elements of tolerance and withdrawal. As a consequence, most treatment interventions for pathological gambling apply similar techniques used in the treatment of substance abuse and measure successful outcome in terms of abstinence (Spunt, Dupont, Lesieur, Liberty & Hunt, 1998).

While many argue that the realm of addictive behaviours should be extended beyond substance use to incorporate other repetitive activities such as pathological gambling, compulsive sexual acts, eating and computer play (Shaffer, 1997; McGowan & Chamberlain, 2000), the addiction model of pathological gambling is not universally accepted (National Research Council, 1999). Those ascribing to more biologically oriented models emphasising processes of neuro-adaptation have argued that, beyond the reinforcing qualities of subjective excitement associated with winning, no fundamental pathology has yet been demonstrated among gamblers to validate a diagnosis of addiction. Instead, it is suggested that the basis for this model is founded more on the observation of superficial similarities between gambling and substance use outlined below (McGowan & Chamberlain, 2000) than on any strong empirical evidence demonstrating addictive processes (Walker, 1989).

Both activities are characterised by an excessive preoccupation, continued participation in the face of escalating negative psychosocial consequences and co-morbid affective and personality disturbances, particularly depression and anti-social personality disorders. Impaired control is manifested by the inability to voluntarily cease during the course of a session and indulging more in terms of time, money or substances than initially intended. Both involve repetitive activities that induce a state of altered arousal characterised by subjective excitement. Many gamblers describe this excitement as equivalent in intensity to the 'high' produced by psychoactive substances (Lesieur, Blume & Zoppa, 1986; Lesieur & Rosenthal, 1991) and this is often regarded as the primary motivation underpinning the behaviour. The observation of tolerance and withdrawal-like symptoms among pathological gamblers is also used to strengthen the argument for its equivalence as an addictive disorder. In addition, patterns of abstinence and relapse are claimed to be similar between pathological gamblers and substance users (Lesieur & Rosenthal, 1991; Lesieur & Wallisch, 1993).

Despite widespread claims for such similarities, the empirical evidence in support is lacking, derived from methodologically compromised studies or open to alternative explanations. No studies have systematically validated the equivalence of the subjective excitement generated by gambling or being in 'action' with that produced by illicit drugs or alcohol. Lesieur and Heineman (1988) found a small but statistically significant positive correlation between severity of gambling and alcohol, cocaine and amphetamine use and a negative correlation with sedative use but it remains unclear whether gambling is pursued as a deliberate strategy to achieve the same effect as drugs. Gambling facilities are often located in venues where alcohol or drugs are available. The concurrent use of these activities may

reflect the environment in which these behaviours take place. For example, it is not surprising to find high rates of alcohol consumption among electronic gaming machine players in registered clubs or hotels. The question is are both activities pursued for the same psychological reasons.

In addition, there is little conclusive evidence that tolerance and withdrawal are features typically found among pathological gamblers. Pathological gamblers report increasing bet size within and across gambling sessions but it is unclear whether this reflects "tolerance" to excitement or a strategic attempt to gain a return of sufficient size to cover accumulated debts. After spending several hundred dollars, a small bet size does not represent a viable investment to the gambler needing a large win to cover debts. Instead the bet size must be large enough to provide an opportunity for a "big win" to break even.

Similarly, there is evidence that on cessation of gambling, pathological gamblers report irritability, restlessness, poor concentration and emotional disturbance similar to the symptoms reported by high frequency alcohol users on cessation of drinking (e.g., Shaffer, Hall, Walsh & Vander Bilt, 1995; Wray & Dickerson, 1981). However, it is uncertain whether these symptoms are indicative of a withdrawal-like process, or whether they can be explained by the gambler's life circumstances. In the face of continuing stressors such as large debts, disrupted family and work relationships, loss of trust, guilt, possible legal action, the presence of mood disturbance, poor concentration and emotional turmoil would be expected as a normal response. In fact, the absence of such a reaction would be clinically meaningful in raising the possibility of a major personality disorder.

Nonetheless empirical evidence is emerging to suggest that alcohol use and gambling are interrelated. High rates of co-morbidity have been reported in the literature, and in comparison to non-gambling substance users, pathological gambling substance users have a history of earlier and heavier alcohol and drug use (Daghestani, Elenz & Crayton, 1996). Using the Alcohol Use Disorders Test (AUDIT), Abbott and Volberg (1991) and Dickerson, Allcock, Blaszczyński, Nicholls, Williams and Maddern (1995) found regular use of continuous forms of gambling such as electronic gaming machines was associated with high-risk categories of alcohol consumption. Within gambling sessions, alcohol is known to impair rational judgement and control, and increase risk-taking among gamblers (Daghestani, Elenz & Crayton, 1996). Baron and Dickerson (1999) found that the ingestion of alcohol prior to gambling reduced resistance to begin and end a session of gambling while Kyngdon and Dickerson (1999) demonstrated that even in regular uses, a small amount of alcohol during a session prolonged the duration and intensity of gambling.

These findings suggest that treatments which fail to address the issue of pathological gambling among substance users, in particular alcohol dependent clients, or those that fail to address the issue of alcohol use among pathological gamblers, may have a detrimental impact on relapse. For example, it is well established that depression is

a correlate of pathological gambling (Blaszczynski & McConaghy, 1988; Linden, Pope & Jonas, 1986). Impaired control over a session of gambling may evoke a sense of despair and depression in the substance abuser suffering a co-morbid gambling disorder that in turn precipitates the resumption of substance use in an attempt to self-medicate against gambling-induced affective disturbances.

Alternatively alcohol use may precipitate a gambling lapse in a pathological gambler by impairing judgement, increasing risk taking and self-confidence in their ability to control their gambling.

Little is known about the extent of cross-morbid substance use problems among Australian samples of pathological gamblers.

A number of community survey studies have reported data on the co-morbid presence of substance use among identified samples of problem gamblers with rates of alcohol use among problem gamblers being two to three times higher than that found in the general population. Abbott and Volberg (1991) found that 60% of problem gamblers as compared to 19% of non-problem gamblers admitted to current hazardous or harmful alcohol use while Dickerson, Allcock, Blaszczynski, Nicholls, Williams and Maddern (1995) found a significant positive correlation between problem gambling and alcohol problems in the general Australian population. From a 1981 large-scale epidemiological catchment area study of 3,004 adult residents from St Louis, Missouri, Cunningham-Williams, Cottler, Compton, and Spitznagel (1998) reported that approximately 5 % of total respondents met Diagnostic Interview Schedule criteria for a lifetime history of alcohol disorder and 0.9%, criteria for pathological gambling. Among the sample identified as pathological gamblers, the rate of co-morbid alcohol problems was 44%. Recreational and problem gambling was associated with increased rates of psychiatric illness and substance use, abuse or dependence. The specific causal relationship between gambling and substance use was not determined but in 65% of cases, it was found that problem gambling occurred within two years after the onset of alcoholism.

In the only community study reporting actual levels of alcohol consumed by problem gamblers, Becona (1993) identified a prevalence rate of 1.7% pathological gambling in a representative random sample of 1,615 adults in the Galicia region of Spain. Three quarters of the pathological gamblers consumed alcohol on a daily basis. Eleven percent consumed 101-150 cc alcohol daily ("excessively") and 14%, 150 + cc daily ("bordering on alcoholism") compared to 2.5% and 2% respectively for the remainder of the sample. The only illicit substance use rates reported was that for marijuana use, 7% reporting daily or weekly use.

However, it must be borne in mind that epidemiological surveys detect population prevalence rates and rates of co-occurrence of behaviours among individuals but fail to shed light on the specific nature of the association or interaction between the two, often not clarifying whether lifetime or current co-morbidity was being assessed. Importantly, it is not possible to determine if the lifetime pattern of usage for

gambling and substance use is sequential, concurrent or whether one invariably precedes the other.

The association between gambling and substance use is more robust in populations of treatment seeking pathological gamblers with high rates found in samples drawn from clients attending drug and alcohol facilities. Forty seven percent of male pathological gamblers treated in a Veteran's Administration hospital had a lifetime, and 39% current, history of substance abuse (Ramirez, 1983; McCormick, Russo, Ramirez & Taber, 1984). Comparable rates of abuse have been reported for gamblers attending drug and alcohol (Ciarrocchi & Richardson, 1989; Lesieur & Blume, 1991) and other treatment centres (Linden, Pope & Jonas, 1986). Lesieur and Blume (1991) noted that of 72 gamblers followed-up post treatment, 50% had a dual or triple addiction with a further 24% indicating that substance abuse was their main problem. Forty-seven clients lost to follow-up had more serious alcohol problems as compared to those followed-up.

Toneatto and Skinner (2000) reported lower rates in a Canadian sample of 200 treatment-seeking gamblers. Of the sample recruited from a variety of mental health and referral agencies including addiction programs, 25% reported "problematic use" of alcohol at some point in their lifetime, and approximately 17% had sought treatment for this problem.

Based on Gamblers Anonymous samples, much lower rates of 8% (Custer & Custer, 1978), 11% (Dell, Ruzicka & Palisi, 1981) and 15% (Lesieur, 1984) were observed. More recently, Ladouceur, Boisvert, Pepin, Loranger and Sylvain (1994) found that almost half of 60 Gamblers Anonymous attendees abused substances with 20% consuming an unspecified amount of alcohol six to ten times, and 13% using non-prescription drugs one to ten times, weekly. However, the interactive effect of substance abuse and gambling has not been investigated

Most studies have relied on self-report, clinical judgment or responses to psychometric instruments in determining the presence of substance use. We were interested in assessing the prevalence of substance use that met criteria for a psychiatric diagnosis. In so doing, we examined rates for abuse and dependence for nicotine, alcohol, cannabis, amphetamine and inhalant use as the primary drugs. We also included items in the semi-structured gambling interview to examine the extent of matching between self-report and psychiatric diagnosis. The results are shown in the tables below.

Table 10: CIDI diagnosed substance use disorders for n = 104 clients

CIDI Substance Use	Total n (%)	Males n (%)	Females n (%)
Nicotine Abuse	10 (9.8)	9 (13.2)	1 (2.9)
Nicotine Dependence	36 (34.6)	25 (36.8)	11 (30.6)
Alcohol Abuse	15 (14.7)	13 (19.1)	2 (5.9)
Alcohol Dependence	7 (6.9)	6 (8.8)	1 (2.9)
Cannabis Abuse	4 (3.9)	4 (5.9)	0
Cannabis Dependence	4 (3.9)	3 (4.4)	1 (2.9)
Amphetamine Abuse	1 (1.0)	1 (1.5)	0
Inhalant Abuse	1 (1.0)	1 (1.5)	0

Approximately 7% of the sample met criteria for alcohol dependence. Inclusive of these, a total of 15% were diagnosable as suffering alcohol abuse. This rate is consistent with those reported for samples of problem gamblers drawn from the general community and about half the rate for samples drawn from drug and alcohol or Veteran's Administration facilities.

4.5.1.6 Substance use: Psychometric data

Substance use was also assessed using the AUDIT measure. The AUDIT was developed as a screen to identify persons who were at risk for developing alcohol use disorders. As noted by Volk, Steinbauer, Cantor and Holzer (1997), the measure has certain advantages over other instruments in that it:

- Identifies "at risk" alcohol consumers who do not meet criteria for dependence.
- Includes both consumption-based indicators of alcohol problems and indicators of harmful use and dependence.
- Can be adapted to assess both current and lifetime estimates.

In terms of interpreting results, harmful use can be described as a pattern of consumption that has caused physical or mental damage but does not meet criteria for dependence. Dependence is defined as the presence of three criteria over the preceding twelve-month interval; withdrawal symptoms, impaired control over drinking and use despite harmful consequences to health. Hazardous levels of consumption are considered to entail a pattern of consumption that places the

individual at greater risk of developing future physical or mental harm but has not as yet produced such harm (Volk et al, 1997).

The original instrument recommended a cut-off score of 11 for classification as a positive case. However, Conigrave, Hall and Saunders (1995) argued for the use of a lower cut-off point of eight in light of recent trends to adopt safer drinking limits. In their study, the eight-point cut-off provided an acceptable level of sensitivity and specificity in the detection of current problems related to alcohol consumption.

Consequently, for purposes of this study, the AUDIT scores are presented with both the original and the recommended lower cut-points. Results are shown in Table 11.

Table 11: AUDIT scores for pathological gamblers

AUDIT	Total n = 69	Males n = 47	Females n = 21
Mean	5.7 (4.8)	6.4 (4.9)	4.1 (4.2)
< 8	47 (68.1%)	29 (61.7%)	18 (81.8%)
8-10	11 (15.9%)	10 (21.3%)	1 (4.5%)
> 11	11 (15.9%)	8 (17.0%)	3 (13.6%)

Of the sample, approximately a third of clients manifested harmful levels of alcohol consumption. This figure is comparable to the proportion of hazardous and harmful alcohol consumption found in the general community (Conigrave et al, 1995).

In interpreting these findings, it would seem that high rates of alcohol abuse associated with gambling are found among biased populations of clients attending facilities oriented toward providing treatment for drug and alcohol related disorders. The rate of alcohol abuse in samples of problem gamblers attending specialised programs and those drawn from the general community may be comparable to that found for the population at large. The results of the present study suggest that problems of alcohol abuse are not over-represented among client problem gamblers attending specialised gambling programs.

Using the higher cut-off point of 11, less than a fifth of the sample were classified as positive cases with no difference between males and females. There were more males than females in the low and intermediate (score of 8 – 10) range but this disparity disappears once scores fall within the greater than 11 range.

4.5.1.7 Substance use: Self-report

Self-reported estimates for substance abuse were derived from responses to items in the semi-structured demographic interview. The responses to these items are listed in Table 12.

Table 12: Self-report estimates for substance use for n = 187

Clinical interview self-report for substance use	Total n = 187	Males n = 121	Females n = 68
Alcohol (while gambling)	76 (41.6)	62 (51.2)	14 (20.5)
Self report of alcohol problem	18 (9.6)	12 (9.9)	6 (8.8)
Nicotine use	117 (62.5)	76 (62.8)	41 (60.3)
Marijuana	19 (10.2)	12 (9.9)	7 (10.3)
Amphetamine	5 (2.7)	3 (2.5)	2 (2.9)
Ecstasy	1 (0.5)	1 (0.8)	0
Multi-drug use	2 (1.1)	2 (1.6)	0

The results of the interview suggest that clients tend to under-report the presence of an alcohol problem with only 10% indicating that they considered this to be a problem compared to 15% to 20% on formal psychometric measures and structured clinical assessment interviews.

4.6 Summary

One purpose of the project was to identify features of gambling, demographic data and cognitive variables that may be useful in acting as predictors of treatment outcome. Gaining an understanding of such predictor variables would be of significant use in matching treatment interventions with individual characteristics so as to maximise response to treatment.

To achieve this objective, an interview schedule and battery of psychometric measures were given at baseline and repeated at the relevant one-month and twelve-month follow-up intervals and pre to post treatment differences in outcomes analysed.

The data obtained at baseline describes the characteristics of all problem gamblers who attended the Impulse Control Research Clinic. This clinic provides services to the community members residing in the South Western Sydney Area Health Service local government boundaries.

- The average age of clients was 37 years.
- On average males were younger than females. Sixty percent of females were aged over 40 years.
- Electronic gaming machines were the primary forms associated with problem gambling for both males and females.
- Clients of low socio-economic status and education were over-represented in the sample.
- The distribution of ethnicity in the sample was similar to the population demographics found in the South Western Sydney Area Health region.
- Clients obtained an average score of 11.7 on the South Oaks Gambling Screen.
- Forty one percent of clients met psychiatric criteria for a diagnosis of an affective disorder, 12.6% for generalised anxiety and 10% for social anxiety disorders in the twelve months immediately prior to assessment.
- Fifteen percent of clients met criteria for an alcohol disorder and five percent for illicit substance use.
- Forty percent of clients reported alcohol consumption in prior to or during a gambling session.
- Sixty three percent of clients smoked cigarettes with self-reports indicating an increase in the rate of cigarette consumption during gambling sessions.