Table 3.

Co-morbidity Results and Drinking Patterns of Respondents Receiving Treatment for Alcohol and/or Gambling Problems in N.S.W.

Treatment Services	Sample statistic	AUDIT 8 & over	SOGS 5 & over	Number of Standard drinks per day[a]	% drinking time when Gambling[b]	Number of Standard drinks when gambling[a]	Hazardous Alcohol Use[c]	Alcohol Dependence[c]	Harmful Alcohol Use[d]
Alcohol	n	32	32	32	32	32	32	32	32
	Mean	28.43	9.44	3.2	4.25	4.09	10.53	7.94	9.84
	SD	7	3.66	1.06	0.92	1.15	1.87	2.96	3.39
	Range	8-40	5-16	1-5	2-5	1-5	4-12	2-12	2-16
Gambling	n	11	11	11	11	11	11	11	11
	Mean	21.73	11.72	2.55	3.82	3	8.18	5.81	9.09
	SD	10.24	3.04	1.44	1.47	1.84	3.43	4.73	3.75
	Range	11-39	8-18	0-4	1-5	0-5	2-12	0-12	3-16
A & G	n	15	15	15	15	15	15	15	15
	Mean	26.33	13	3.47	3.87	3.4	10.67	7.2	8.4
	SD	4.55	2.8	0.74	1.6	1.89	1.29	2.57	2.61
	Range	18-35	8-17	2-4	1-5	0-5	8-12	2-12	3-12

Note. AUDIT scores of 8 and over refer to patterns of problem drinking. Audit scores range from 0-40.

SOGS scores of 5 and over refer to patterns of problem gambling. SOGS scores range from 0-20.

[a] Scores range from 1-5, and refer to: 1 = 1 or 2, 2 = 3 or 4, 3 = 5 or 6, 4 = 7 to 9, 5 = 10 or more standard drinks.

[b] Scores range from 1-5, and refer to: 1 = never, 2 = 10%, 3 = 25%, 4 = 50%, 5 = 100% of the time respondents drink during gambling.

[c] Patterns of Hazardous Alcohol Use & Alcohol Dependence refer to AUDIT scores of 8 and over in these sub- categories. Scores in these sub-categories range from 0-8.

[d] Patterns of Harmful Alcohol Use refer to AUDIT scores of 8 and over in this sub-category. Scores in this sub-category range from 0-16.

4.4.1 Descriptive Statistics

Descriptive statistics indicate that co-morbid respondents in all treatment groups scored well over the cut-off score of 8 for problem drinking on AUDIT and well over the SOGS cut-off score of 5 for problem gambling.

The number of standard daily drinks varied. Five to six standard drinks were consumed on a typical drinking day prior to treatment for respondents attending alcohol or alcohol and gambling services. Only 3 to 4 standard drinks were consumed on a typical drinking day for those receiving treatment for gambling problems.

The level of alcohol consumption did not increase for respondents receiving treatment for both alcohol and gambling problems during a typical gambling session. In contrast, the level of alcohol consumption increased considerably during a typical gambling session for respondents in treatment for alcohol (7 to 9 drinks) and increased from 3 to 4 standard drinks during a typical drinking day to 5 to 6 drinks during gambling for respondents in gambling treatment services.

All treatment groups scored above 8 on Hazardous and Harmful Alcohol Use, but did not score above 8 on Alcohol dependence.

4.4.2 Statistical Analysis

Statistical analysis was carried out on co-morbid respondents receiving separate or combined treatments for alcohol and gambling. Data screening was conducted for each independent variable (Alcohol, Gambling, Alcohol & Gambling treatment) across dependent variables (AUDIT, and AUDIT three sub-categories, SOGS, number of standard daily drinks, number of standard drinks when gambling, and per cent occasions spent drinking when gambling) and met parametric standards of normality.

To determine whether there was any difference between co-morbid respondents receiving treatment for alcohol and/or gambling problems on AUDIT scores of 8 or over a Kruskal-Wallis non-parametric test was performed. As the sample sizes were small, and homogeneity of variance was not met, this non-parametric test appeared most appropriate for analysis. Alpha was set at .05 with correction for ties and Chi-square conversion. There were no statistical differences between co-morbid

:spondents receiving treatments for alcohol and/or gambling problems on AUDIT χ^2 2, $\underline{N}$=58) =5.42, $\underline{p}$=. 067.

The scores of 5 or more on SOGS for the three types of groups receiving treatment for alcohol and/or gambling problems were analysed with a one-way analysis of variance (ANOVA), using alpha set at .05. The ANOVA test assumptions of normality and homogeneity of variance were found to be satisfactory, and the result was statistically significant, $\underline{F}$(2, 55) = 6.29, $\underline{p}$=.003. Post hoc comparisons using the Tukey HSD test revealed a significant difference between co-morbid respondents attending treatment services for alcohol ($\underline{M}$=9.44) and those in treatment for both alcohol and gambling ($\underline{M}$=13). Results can been seen in Figure 2. below.
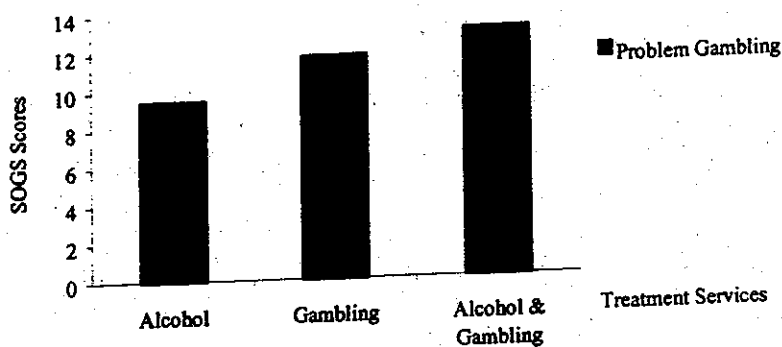

Figure 2. SOGS scores of 5 or over for co-morbid respondents attending treatment services.

The difference between respondents attending treatment services for alcohol and/or gambling problems on AUDIT sub-categories of Hazardous Alcohol Use, Alcohol Dependence and Harmful Alcohol were analysed using the Kruskal-Wallis non-parametric test due to the small sample sizes and lack of homogeneity of variance. Alpha was set at .05. There were no significant differences between the groups on all three sub-categories, χ^2 (2, $\underline{N}$=58) =5.79, $\underline{p}$=. .055, χ^2 (2, $\underline{N}$=58) =2.30, $\underline{p}$=. 317, and χ^2 (2, $\underline{N}$=58) =2.93, p=. .231 respectively.

Determining any difference between groups on number of daily standard drinks, number of standard drinks during gambling, and per cent of occasions co-morbid respondents drink when gambling were analysed using Kruskal-Wallis non-

parametric tests. Homogeneity of variance was not met and small sample sizes precluded parametric tests. Alpha was set at .05. Results reveal that there were no significant difference between presenting co-morbid treatment groups on number of standard daily drinks, χ^2 (2, $\underline{N}$=58) =3.11, $\underline{p}$= .211, standard drinks consumed during gambling, χ^2 (2, $\underline{N}$=58) =3.4, $\underline{p}$= .183, and per cent occasions spent drinking when gambling, χ^2 (2, $\underline{N}$=58) =.371, $\underline{p}$= .831.

4.5   Co-morbidity and Gambling Patterns of Respondents Attending Treatment Services in N.S.W.

The descriptive data describing co-morbid respondents gambling patterns including how often they gamble, the average duration of a typical gambling session, and the per cent occasions spent drinking during a typical gambling session can be seen in Appendix G1.

4.5.1   Descriptive Statistics

Co-morbid respondents in treatment for just gambling or alcohol and gambling appear to gamble around 2 to 3 times a week, while those in treatment for alcohol problems gamble bi-monthly to once a week. The average gambling session for those in treatment for gambling and alcohol and gambling problems is between 1 to 2 hours, while respondents in treatment for alcohol only gambled for one hour or less prior to treatment. The largest amount of money lost in one day, on average, for respondents in treatment for alcohol and gambling ($100-$1000). Respondents in treatment services for either gambling or alcohol problems largest loss, on average, was ($10-$100) in one day.

4.5.2   Statistical Analysis

Statistical analyses were conducted on gambling patterns of co-morbid respondents attending treatment services for alcohol and/or gambling problems. A one-way analysis of variance (ANOVA) was used to examine any differences between groups on the average number of gambling sessions, the average duration of a gambling session, and the largest amount of money lost in one day.

ANOVA assumption of normality was satisfied and alpha was set at .05. Homogeneity of variance was met for the amount of money lost in one day, the

number of gambling sessions played and the duration of play. Using a one-way ANOVA, there were no significant differences found between groups on the largest number of money lost in a single gambling day. Significant differences were found between co-morbid respondents attending different treatment services on the average number of gambling sessions played (see Figure 3.) and the average duration of play (see Figure 4.), $F(2,55) = 5.83$, $p = .005$, and $F(2,55) = 9.64$, $p = .000$ respectively. Post hoc analyses were conducted using Tukey HSD correction. Co-morbid respondents receiving treatment for alcohol (M=3.28) were significantly different from co-morbid respondents receiving treatment for gambling (M=4.09) and alcohol and gambling (M=4.13) on the average number of gambling sessions played. Co-morbid respondents in alcohol treatment services (M=2.19) were significantly different from those in gambling (M=3.73) and alcohol and gambling (M=3.73) services on the average duration of a gambling session.
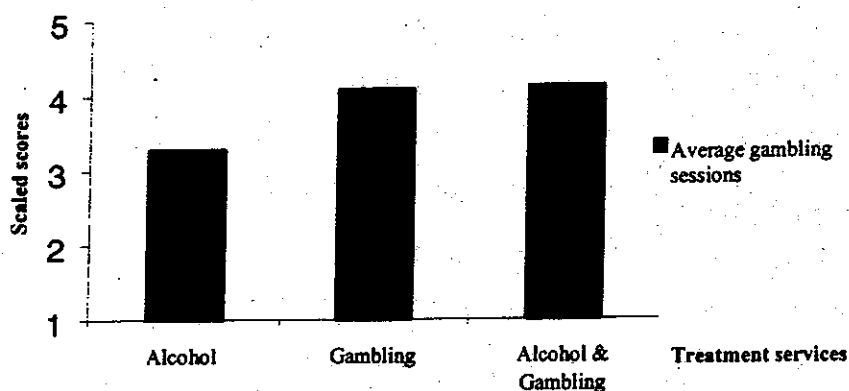

Figure 3. The average gambling sessions played by co-morbid respondents attending treatment services. **Note.** Scaled scores range from 1-5 and refer to: 1= never, 2= monthly or less, 3= 2 to 4 times a month, 4= 2 to 3 times a week, and 5= 4 or more times a week.
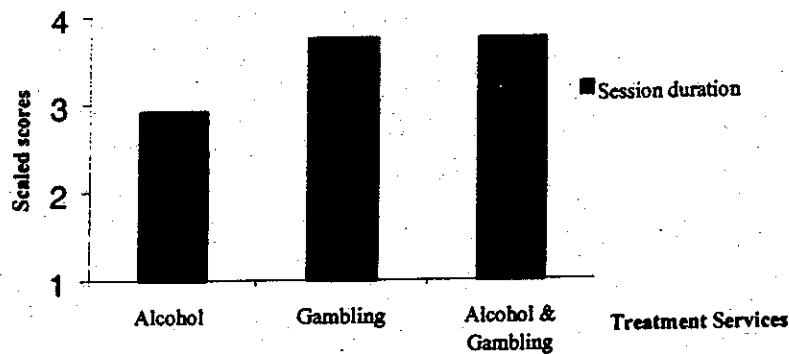
Figure 3. The average gambling session duration of co-morbid respondents attending treatment services. Note. Scores range from 1-4 and refer to: 1= never, 2= less than 1 hour, 3= between 1 and 2 hours, and 4= 3 hours or more.

4.6 Forms of Gambling Played Once a Week or More by Co-morbid Respondents in Treatment

Electronic gaming machines were the preferred gambling form of co-morbid respondents receiving treatment for alcohol and/or gambling problems. Approximately 40% in the alcohol treatment group, 82% of the gambling treatment group, and 87% of the alcohol and gambling treatment services group played EGM's once a week or more. (see Appendix E. for full descriptive statistics).

4.7 Demographic Characteristics of Co-morbid Respondents in Treatment

Co-morbid Respondents Receiving Treatment for Alcohol Problems

- There were 75% males and 25% females in this group.
- The greater proportion of respondents in this group ranged in age from 30 to 39 years (44%), with the least ranging from 60 to 69 (6%) in age.
- Ninety six per cent of the group spoke English as their first language.
- The highest education level reached by the greatest number of respondents was the School Certificate (44%), with the lowest number of respondents achieving post-graduate level of education (3%).
- Twenty five per cent of respondents work status was Unemployed in this group, followed by 15% in Full Time Work, and 15% Retired. The least amount of respondents were working in the home (3%).

- There was a fairly even split in marital status in this group. Approximately 28% were Married, 28% were Separated or Divorced and 28% were Single. Only 15.6% were in Defacto relationships.
- The largest number of respondents (31%) yearly income was less than $10,000 per annum. Twenty five per cent of respondents had an income of $20,001-$30,000. The lowest number of respondents (3%) had an income of $50,001-$60,000. (See Appendix B1. for full descriptive statistics.)

Co-morbid Respondents Receiving Treatment for Gambling Problems
- There were approximately 64% Males and 36% Females in this group.
- All respondents spoke English as their first language.
- The greatest number of respondents (36%) were in the age range of 30-39 years, with the lowest number (9%) equally found in age ranges 18-19, 50-59, and 60-69.
- The highest level of education reached by the greatest number of respondents (27%) was equally found for the School Certificate, the HSC, and TAFE courses. The lowest number of respondents (9%) had achieved either a degree and/or post-graduate level of education.
- In this group 45% the greatest number of respondents were in Full Time Work and 36% were Unemployed. The lowest number of respondents were students (9%) and Pensioners (9%).
- The majority of respondents marital status was Single (36%), and 27% were Married or living in Defacto relationships.
- The largest number of respondents were on an annual income of $0 to $10,000 (36%). The next largest income bracket was between $30,001-$40,000 (18% respondents). (See Appendix B2. for full descriptive statistics.)

Co-morbid Respondents Receiving Treatment for Alcohol & Gambling Problems
- Approximately 87% respondents in this group were Male and 13% were Female.
- The largest proportion of respondents were aged between 50 and 59 (40%), and the lowest number of respondents were aged between 40-49 (13%).
- All of this group spoke English as their first language.

- The largest number of respondents reached an education level of School Certificate (40%) or TAFE courses (40%).

- Approximately 53% of this group were in Full Time work. Twenty seven per cent were Pensioners, and 20% were Unemployed.

- The greatest proportion in this group were Separated or Divorced (40%), and the lowest proportion were Married (6%) or Widowed (6%).

- The highest yearly income bracket ranged between $40,001-$50,000 for 33% of this group, the lowest number of respondents income bracket ranged between $20,001-$30,000 (6%). (See Appendix B3. for full descriptive statistics.)

4.8   Family and Social Contacts with Alcohol and/or Gambling Problems

Co-morbid respondents receiving treatment for problem drinking
It was most common for those respondents to report alcohol problems associated with their Fathers (38%), and 31% associated alcohol problems with siblings. The largest proportion of reported gambling problems were associated equally with Mothers and Siblings (9%). Concurrent alcohol and gambling problems were largely associated with Fathers and Friends (25%). (See Appendix F1. for full descriptive details.)

Co-morbid respondents receiving treatment for problem gambling
For these respondents, the largest proportion of reported alcohol problems were associated with Fathers (27%). Gambling problems were associated prominently with Friends (18%). Alcohol and gambling problems were largely associated with Friends (27%). (See Appendix F1. for full descriptive details.)

Co-morbid respondents receiving treatment for problem drinking and problem gambling
Most alcohol problems were associated with Fathers (33%) and Friends (33%). The largest proportion of gambling problems were reported for Fathers (13%), and alcohol and gambling problems were largely associated with Friends (40%). (See Appendix F1. for full descriptive details.)

4.9   Treatment Patterns of Co-morbid Respondents

The information in tables below indicate the treatment patterns for respondents who were assessed by this study as having co-morbid problem drinking / problem gambling at the start of their current treatment program. The validity of the data may be assessed by examining the period of current treatment, the duration of problem drinking and/or problem gambling prior to treatment, and whether or not co-morbid respondents had received treatment prior to attending their current treatment service.

Table 4.

Duration of Current Treatment Received by Co-morbid Respondents

Duration of current treatment	Treatment Services		
	Alcohol	Gambling	Alcohol & Gambling
1 month or less	22%	55%	33%
Between 1 & 3 mths	28%	18%	13%
Between 3 & 6 mths	13%	9%	7%
Between 6 & 12 mths	6%	9%	7%
More than 12 mths	31%	9%	40%

Presented in Table 4.is the period of current treatment spent by co-morbid respondents attending treatment services for alcohol and/or gambling problems. Of the respondents receiving treatment for alcohol problems, the highest proportion (31%) had been in treatment for over 12 months. The highest proportion (55%) of respondents receiving treatment for gambling problems had been in treatment for one month or less, and 40% of respondents receiving treatment for alcohol and gambling problems had been in treatment for over 12 months.

Table 5.

The Duration of Drinking and/or Gambling Problems Prior to Seeking Help

Duration of problem prior to treatment	Treatment Services		
	Alcohol	Gambling	Alcohol & Gambling
Less than 6 months	n=1 (3.1%)	n=1 (9.1%)	0
6 to 12 months	n=2 (6.3%)	n=1 (9.1%)	0
More than 12 months	n=29 (90.6%)	n=9 (81.8%)	n=15 (100%)

Table 5. indicates the highest proportion of respondents attending treatment services for alcohol and/or gambling problems experienced alcohol and/or gambling problems for more than 12 months prior to attending their current treatment service.

Table 6.

Frequency of Treatment for Co-morbid Respondents Attending Treatment Services

Treatment services	First time in treatment	Prior treatment
Alcohol	n=15 (47%)	17 (53%)
Gambling	n=5 (46%)	n=6 (54%)
Alcohol & Gambling	n=6 (40%)	n=9 (60%)

Table 6. indicates that approximately half of the co-morbid respondents attending separate treatment services for alcohol and gambling problems had received treatment prior to current treatment and half had not. Of those co-morbid respondents attending treatment services for combined alcohol and gambling problems, more than half 60% had attended treatment services prior to the current one, and 40% had not.

4.10   Study 1. A Survey of Treatment services for Problem Drinking and/or Problem Gambling in N.S.W.

Purpose

Information on the current assessment and treatment of problem drinkers and/or problem gamblers was gathered from Clinic Managers participating treatment services in study 1. (See Appendix H. for the list of participating services in Study 1.).

It was expected that information on assessment and treatment would provide some understanding of the characteristics involved in problem drinking and problem gambling co-morbidity in treatment services. In addition, these data may inform recommendations for the development of new services or the improvement of existing services in N.S.W.

In conducting the survey of treatment services information was gathered on:
- Type of treatment service
- Formal screening assessment of clients
- Type of therapy
- Average number of sessions per client
- Follow-up information on treatment success
- Type of follow-up

4.10.1 Sample Size

All participating services in Study 1. provided information on treatment services offered to clients. Nine alcohol and gambling services, 4 gambling services and 5 drug and alcohol treatment services participated in the part of study 1.

4.10.2 Survey Results

Table 7.

Participating Treatment Services in Study 1.

Treatment Service	Out-patient	In-patient	In & Out patients	Individual counselling	Group therapy	Financial Counselling
Alcohol		2	1	1	1	
Gambling				3	1	2
A & G	5	2	1	1		

Note. Financial counselling services also provided individual counselling. In-patient services include drug and alcohol detoxification and rehabilitation.

Table 8.

Formal Screening Assessment

Treatment Service	Assessment of co-morbid problem A & G	Assessment of other co-morbidities	Motivational Model for Change	DSM-IV	In-house assessment	No formal assessment
Alcohol			1		1	1
Gambling				1	2	
A & G	4	6	3	4	3	1

Note. Participating treatment services may have indicated more than one formal screening assessment.

Table 8. presents assessment instruments used in treatment services that participated in this part of study 1. The assessments vary from in-house screening to no formal assessment. Formal instruments used by services to assess alcohol, gambling and other co-morbidities included DSM-IV criteria for alcohol and gambling disorders, AUDIT, Alcohol Withdrawal Scale, SOGS, G-MAP, Beck's Depression Inventory, SCL-R 90 and DAS. In-house assessment included the assessment of ADHD, self-esteem, family history and anxiety. It appears that only four of the nine alcohol and gambling treatment services participating in this part of the study formally screen for alcohol *and* gambling problems. Services providing treatment for alcohol or gambling did not report assessing clients for co-morbidity.

Table 9.

Type of Therapeutic Approach

Treatment Service	Pharma-cotherapy	Cognitive-behavioural Therapy	Psychodynamic Therapy	12 Step Program	Narrative Therapy	Supportive counselling	Other methods
Alcohol	3		1	1		2	2
Gambling		1		1		1	1
A & G		11	3		1	5	4

Note. Participating treatment services may have indicated more than one therapy used in treatment. Other therapeutic approaches included: Systemic therapy, Solution Focused therapy, Psycho-education, Relational counselling, Gestalt, Coping skills, Art therapy, NLP, TA and Guided Imagery.

Table 9. shows that cognitive-behavioural therapy is the most prominent form of therapy used for problems associated with drinking and gambling in respondents attending treatment services for co-morbid problems. Supportive counselling appears to be frequently used and various other methods of therapy are favoured by treatment services providing therapy to clients with alcohol and/or gambling problems. The 12 step programs are used by both Alcoholics Anonymous and Gamblers Anonymous.

Table 10.

Average Number of Counselling Sessions Per Client

Treatment Service	Between 3 to 4 sessions	Between 5 to 6 sessions	Between 7 to 10 Sessions	In-patient sessions 2 to 5 weeks	Ongoing weekly sessions	Not sure
Alcohol	1		1		1	1
Gambling		2			1	
A & G	2	2		4	1	

Note. AA and GA do not provide counselling and are not included here. In-patient counselling sessions may include both individual and group therapy over 2 to 6 hours per day.

Table 10.shows that the average number of counselling sessions per client varies from service to service.

Table 11.

Number and Type of Follow-up

Treatment Service	One follow-up	Between 2 to 3 follow-ups	No follow-up	Interview follow-up	Questionnaire follow-up	Other follow-up methods
					1	1
Alcohol	1	1	2			1
Gambling	2		1	1		1
A & G	5	1	3	3	1	2

Note. Other follow-up methods include referrals to AA and GA, sobriety weekly meetings, and relapse prevention programs including individual, group and pharmacotherapies.

Table 11. shows that the majority of alcohol and gambling services participating in this study conduct one follow-up session after the final treatment. The most typical form of follow-up is an interview of the clients' recovery status after the final therapy session. Some treatment services reported using the same assessment questionnaires used as screening measures at the initial therapy session. One treatment service reported sending clients a letter saying they had not seen them in a while and to contact the service if necessary.

4.11 Study 1. Summary

This study aimed to provide information regarding respondents that were assessed to have co-morbid problem drinking / problem gambling prior to attending their current treatment service for alcohol, gambling, or alcohol and gambling problems.

It was found that substantial numbers of respondents attending treatment services for alcohol or gambling problems actually experienced co-morbid alcohol and gambling problems at the start of their current treatment. The figures reveal that approximately *38% of respondents seeking help for alcohol problems had co-morbid gambling problems* at the start of treatment, and *48% of respondents seeking help for gambling problems had co-morbid alcohol problems.*

Approximately, 50% of these co-morbid respondents were in treatment for the first time and 50% had attended treatment services in the past. The majority of co-morbid respondents in treatment had experienced alcohol and/or gambling problems for 12 months prior to seeking help. Most respondents in alcohol or alcohol and gambling

services had been in treatment for more than 12 months, while the majority of respondents attending gambling services had been in treatment for one month or less.

A large proportion of co-morbid respondents attending treatment services for either alcohol or gambling problems had not been formally assessed for co-morbid problem drinking / problem gambling. It is possible, therefore, that respondents may not have been treated for their co-morbid condition at the time of this study. This may be due to the lack of co-morbid assessment techniques used in services and/or respondents' inability to communicate his or her co-morbid condition at the start of or during the treatment period.

Although average scores on AUDIT were much higher than the cut off score of 8 for problem drinking, there were no statistical differences between respondents in treatment for alcohol, gambling, or alcohol and gambling. In contrast, there were statistical differences in SOGS scores. Results appeared to reflect a general tendency for co-morbid respondents in treatment for either gambling or both alcohol and gambling problems to have significantly higher scores on SOGS when compared with those co-morbid respondents receiving treatment only for alcohol.

There were no statistical differences between co-morbid respondents on the number of standard drinks consumed on a typical drinking day. However, the average number of drinks consumed on a typical drinking day (5 to 6) by co-morbid respondents surpassed recommendations for responsible drinking for males and females (NHMRC, 1992).

While the number of alcoholic drinks on a typical drinking day (5 or 6) did not increase during a typical gambling session for respondents in alcohol and gambling treatment, it did increase to 7 to 9 drinks for respondents in treatment for alcohol. For respondents in gambling treatment services, alcohol consumption increased from 3 to 4 drinks during a typical drinking day to 5 to 6 drinks during gambling. The average duration of a typical gambling session was less than an hour for those in alcohol treatment, and between 1 and 2 hours for those in gambling or in alcohol and gambling treatment. The average level of alcohol consumption for co-morbid

respondents during a typical gambling session has the appearance of binge drinking while gambling.

Respondents in this study did show patterns of Hazardous Alcohol Use and Harmful Alcohol Use according to AUDIT sub-categories, but did not show signs of Alcohol Dependence. There were no statistical differences between respondents attending treatment services on these sub-categories.

4.11.1 Risk Profile of Co-morbid Problem Drinkers / Problem Gamblers Attending Treatment Services in N.S.W.

- A general trend in this data showed the majority of co-morbid respondents attending treatment services to be aged between 30-39 years, except for respondents in treatment for alcohol and gambling that were mainly aged between 50 and 59.
- There were 75% males and 25% females attending alcohol services, 64% males and 36% females in gambling services, and 87% males and 13% females in alcohol and gambling services.
- Most co-morbid respondents first language is English. However, it must be noted that English proficiency was a condition of this study, to aid respondents' anonymity and confidentiality of information.
- The marital status of co-morbid respondents varied. The largest proportion of respondents in treatment for gambling were single. The largest number of respondents receiving treatment for alcohol were equally split across married, separated or divorced, and single. The largest number of those in treatment for alcohol and gambling were separated or divorced.
- It appears that greatest proportion of co-morbid respondents in treatment reach a School Certificate level of education.
- Respondents in gambling, and alcohol and gambling services were generally working full time. The largest number of respondents receiving treatment for alcohol problems were unemployed.
- Most of the respondents attending treatment services for both alcohol and gambling were earning a yearly income of between $40,001-$50,000. The largest

number of those receiving treatment for gambling were earning $0-$10,000, as was those attending services for alcohol problems only.

- On average, respondents in alcohol services drank 50% of the occasions when they gambled prior to treatment, and respondents in gambling, and alcohol and gambling services drank 25% of the time they gambled.

- The majority of co-morbid respondents in this study prefer to gamble on EGM's over other forms of gambling.

- It was most common for co-morbid respondents to report alcohol problems associated with Fathers. Most respondents in alcohol treatment reported gambling problems associated with Mothers and Siblings. For those in gambling treatment, gambling problems were associated mainly with Friends. Respondents in alcohol and gambling services reported gambling problems in Fathers and Friends.

4.11.2   Treatment Patterns of Co-morbid Respondents

- Approximately half the respondents attending alcohol services and gambling services were receiving treatment for the first time. The other half had received prior treatment. There was an uneven split between respondents attending services for alcohol and gambling problems: 60% had received prior treatment and 40% were in treatment for the first time.

- The largest proportion of respondents attending alcohol, and alcohol and gambling services had been receiving treatment for more than 12 months. In contrast, the greater proportion of respondents in gambling services had been receiving treatment for one month or less.

- The majority of respondents attending treatment services for alcohol and/or gambling problems had endured problem drinking and/or problem gambling for more than 12 months prior to seeking help.

4.11.3   A Survey of Treatment Services in N.S.W.

- Eighteen participating treatment services gave information regarding the treatment service provided to their clients for alcohol and/or gambling problems.

- Formal screening for co-morbid problem drinking / problem gambling was undertaken by 4 of the 9 alcohol and gambling treatment services. There was no formal assessment for co-morbid drinking and gambling problems undertaken by

treatment services offering therapy to respondents attending services for gambling or alcohol alone.

- Cognitive-behavioural therapy appears to be the typical therapeutic approach used for co-morbid drinking and gambling problems along with supportive counselling techniques.
- The number of counselling sessions per client in treatment services differed. However, a pattern indicating between 5 to 6 sessions was common.
- It was typical for treatment services to conduct one follow-up on therapy success after the final treatment. An interview was a popular form of follow-up as well as referring clients on to AA or GA weekly meetings.

5. Study 2. The Incidence of Co-morbid Problem Drinking / Problem Gambling in a Sample of Respondents with Alcohol or Gambling Problems and Not Attending Treatment Services in N.S.W.

5.1 Design, Sample Selection and Recruitment

- This study was conducted in two parts: one part involved the recruitment of problem drinkers (with possible gambling problems) and the other involved the recruitment of problem gamblers (with possible drinking problems) through advertising in a State-wide newspaper "The Sunday Telegraph".
- Two adverts, one relating to the recruitment of problem drinkers and one relating to the recruitment of problem gamblers, were published on two consecutive Sunday's in October 2000.
- Each part of the phone-in study was conducted over three-day periods and started on the day of advertising.
- The criteria for selection of respondents involved:
  1) Each respondent was at least 18 years of age.
  2) Respondents believed they had either an alcohol or gambling problem.
  3) Respondents had not attended treatment services for problem drinking or problem gambling in the last 12 months.
- Each respondent, either phoning in for alcohol or gambling problems were given the same questionnaire given to those respondents attending treatment services in

study 1. The questionnaire included AUDIT, SOGS and demographic questions and referred to respondents' drinking and gambling patterns over the past 12 months.

Interview procedure

- An 1800 telephone number was published as the contact number for both parts of the study in the Sunday Telegraph.

- Three Research Assistants were trained to interview respondents. Each Research Assistant held an Honours Degree in Psychology and was experienced in administering psychological assessment instruments.

- Each person that called the 1800 number was automatically switched to a message which relayed information in relation to the study (see Appendix I) indicating the nature of the study and respondent involvement.

- Once the message was conveyed, the call was transferred to a Research Assistant who asked the respondent if they had heard and understood the information in the message. The Research Assistant then asked the person if they would like to participate in the study. If the person agreed to continue on to the questionnaire this was taken as an indication of their consent.

- Once the questionnaire was completed by the respondent, they were asked for their mailing details so that a gift voucher of AUS$20 could be sent to them. Because this study promised anonymity and confidentiality of respondent information, mailing details were not kept by the University, and respondents were made aware of this.

- Before hanging up the phone, each respondent was offered a phone number of 24-hour Alcohol and/or Gambling service for information and/or counselling.

5.2   Sample Size

A total of 71 calls to the 1800 phone number over the 6 research days were made by prospective respondents: 41 calls on the three days allocated to problem drinkers and 30 calls were made on the three days allocated to problem gamblers.

Fifty two (73%) of the calls converted to completed questionnaires. The number of completed questionnaires by problem drinkers and problem gamblers during phone-in interviews are shown below in Table 12.

Table 12.

Number of Completed Questionnaires During Phone-in Interviews with Problem

Drinkers and Problem Gamblers.

Phone-in groups	Completed Questionnaires
Alcohol	28
Gambling	24
Total	52

5.3   The Incidence of Problem Drinking and/or Problem Gambling Co-morbidity in Self-identified Problem Drinkers and Problem Gamblers in N.S.W. Not Receiving Treatment.

This study was designed to assess the rate of current co-morbid problem drinking / problem gambling in a sample of problem drinkers or problem gamblers who had not been in treatment for 12 months.

The number of questionnaires that indicated current untreated problem drinking, problem gambling and co-morbid problem drinking / problem gambling in N.S.W. are represented below in Table 13. Problem drinking refers to respondents scores of 8 or more on AUDIT exclusively; problem gambling refers to scores of 5 or more on SOGS exclusively; and co-morbid problem drinking / problem gambling refers to scores of 5 or more on SOGS as well as scores of 8 or more on AUDIT.

Table 13.

Rates of Problem Drinking and/or Problem Gambling Co-morbidity Among

Respondents Not Attending Treatment Services in N.S.W.

Phone-in Advertising	Problem Drinking	Problem Gambling	Co-morbid	Total respondents
Alcohol	n=14	n=0	n=14	28
Gambling	n=0	n=10	n=14	24
Total	14	10	28	52

Table 13. shows that 28 (54%) of the total sample of self-identified problem drinkers and problem gamblers not receiving treatment were assessed to have co-morbid drinking and gambling problems. Fourteen (50%) of the 28 volunteers responding to advertising for problem drinkers were co-morbid problem drinkers / problem gamblers not receiving treatment and 14 (50%) were exclusively problem drinkers. Of the 24 respondents that phoned-in for gambling problems, 14 (58%) were co-morbid problem drinkers / problem gamblers not attending treatment services and 10 (42%) respondents were exclusively problem gamblers.

5.4   Co-morbidity and Drinking Patterns of Self-identified Problem Drinkers and Problem Gamblers Not Receiving Treatment

Descriptive statistics referring to co-morbid respondents are shown below in Table 14. In particular the table shows SOGS scores of 5 or over and AUDIT scores of 8 or over, as well as AUDIT sub-categories scores on Hazardous Alcohol Use, Alcohol Dependence, and Harmful Alcohol Use. In addition, the table presents scores relating to the number of standard drinks consumed on a typical drinking day, the per cent occasions respondents drink when gambling, and scores relating to the number of standard drinks consumed during a typical gambling session.

Table 14.

Co-morbidity Results and Drinking Patterns of Self-identified Problem Drinkers and Problem Gamblers in N.S.W. Not Receiving Treatment.

Problem Advertising	Sample Statistic	Audit 8 & over	SOGS 5 & over	Number of Standard drinks per day[a]	% drinking times when gambling[b]	Number of Standard drinks when gambling[a]	Hazardous Alcohol Use[c]	Alcohol Dependence[c]	Harmful Alcohol Use[d]
Alcohol	n	14	14	14	14	14	14	14	14
	Mean	23.43	10.5	3.36	4.5	3.64	9.93	4.72	8.79
	SD	5.24	5.05	0.75	0.85	1.34	1.07	3.14	3.36
	Range	17-32	5-20	2-4	3-5	1-5	8-12	0-11	4-16
Gambling	n	14	14	14	14	14	14	14	14
	Mean	19.85	13.36	3.57	4.14	4.22	10.21	2.78	6.86
	SD	8.15	3.79	0.85	1.29	1.19	2.19	3.26	4.26
	Range	9-35	5-18	1-4	1-5	2-5	4-12	0-10	1-13

Note. AUDIT scores of 8 and over refer to patterns of problem drinking. Audit scores range from 0-40.

SOGS scores of 5 and over refer to patterns of problem gambling. SOGS scores range from 0-20.

[a] Scores range from 1-5, and refer to: 1 = 1 or 2, 2 = 3 or 4, 3 = 5 or 6, 4 = 7 to 9, 5 = 10 or more standard drinks.

[b] Scores range from 1-5, and refer to: 1 = never, 2 = 10%, 3 = 25%, 4 = 50%, 5 = 100% of the time respondents drink during gambling.

[c] Patterns of Hazardous Alcohol Use & Alcohol Dependence refer to AUDIT scores of 8 and over in these sub- categories. Scores in these sub-categories range from 0-8.

[d] Patterns of Harmful Alcohol Use refer to AUDIT scores of 8 and over in this sub-category. Scores range from 0-16.

5.4.1 Descriptive Statistics

Descriptive statistics reveal co-morbid respondents with average scores of higher than 8 on AUDIT and higher than 5 on SOGS. Average scores are higher than 8 for both groups on Hazardous Alcohol Use, and higher than 8 for self-identified problem drinkers on Harmful Alcohol Use. Self-identified problem drinkers and problem gamblers consume 5 to 6 drinks on a typical drinking day.

While co-morbid respondents with self-identified alcohol problems do not increase their level of consumption during gambling, self-identified problem gamblers consume considerably more standard drinks during a typical gambling session (7 to 9 drinks) than they do on a typical drinking day.

5.4.2 Statistical Analysis

Analysis were carried out on co-morbid respondents that phoned-in for current untreated alcohol or gambling problems. Data screening was conducted for two independent variables (Alcohol and Gambling phone-in interview groups) across dependent variables (AUDIT scores of 8 and over, and AUDIT three sub-categories, SOGS, number of standard daily drinks, number of standard drinks when gambling, and per cent occasions spent drinking when gambling) and appeared to be normally distributed.

To determine differences between co-morbid respondents that phoned-in for gambling problems and those that phone-in for alcohol problems independent t-tests were performed. These t-tests examined differences between groups on AUDIT scores of 8 and over and on SOGS scores of 5 and over. The test assumption of homogeneity of variance was met for SOGS but not for AUDIT. Results for unequal variances are reported for AUDIT. Alpha was set at .05 for both t-tests and results indicated no statistical differences in AUDIT scores, $t(26)=1.379$, $p=.182$, and no statistical differences in SOGS scores $t(26)=-1.692$, $p=.103$

Independent t-tests were performed to examine differences between co-morbid respondents that phoned-in for alcohol or gambling problems on AUDIT sub-categories (Hazardous Alcohol Use, Alcohol Dependence, and Harmful Alcohol Use); number of standard drinks consumed on a typical drinking day; number of standard

drinks consumed during gambling; and per cent occasions spent drinking when gambling. The test of assumptions of normality and homogeneity of variance were met for each dependent variable and Alpha was set at 0.05 for each test.

Investigating the differences in AUDIT sub-categories between co-morbid respondents, t-tests indicated no statistical differences between co-morbid respondents on AUDIT sub-categories Hazardous Alcohol Use, $t(26)=-.438$, $p=.665$, Alcohol Dependence, $t(26)=1.592$, $p=.124$, and Harmful Alcohol Use, $t(26)=1.331$, $p=.195$. No statistical differences were found between the two groups on the number of standard drinks consumed on a typical drinking day, $t(26)=-709$, $p=.485$, or the number of standard drinks consumed during a typical gambling session, $t(26)=-1.196$, $p=.243$, nor the per cent occasions that respondents consume alcohol during gambling sessions, $t(26)=.862$, $p=.396$.

5.5 Co-morbidity and Gambling Patterns of Self-identified Problem Drinkers and Problem Gamblers Not Receiving Treatment

The descriptive data describing co-morbid respondents gambling patterns including how often they gamble, the average duration of a typical gambling session, and the per cent occasions spent drinking during a typical gambling session can be seen in Appendix G2.

5.5.1 Descriptive Statistics

Co-morbid respondents that are self-identified problem drinkers appear to gamble, on average, 2 to 4 times a month for less than one hour, and the largest amount of money lost in one day was between $10 and $100. In contrast, co-morbid respondents that are self-identified problem gamblers gamble, on average, 2 to 3 times a week between 1 and 2 hours, and the largest amount of money lost in one day was, on average, between $100 to $1000.

5.5.2 Statistical Analysis

Data screening revealed homogeneity of variance and normally distributed groups across variables. Alpha was set at .05 and t-tests revealed no significant difference between groups on the average duration of a typical gambling session, $t(26)=-1.202$, $p=.241$. However, there were significant differences between groups on how often

they gamble, $t(26)=-2.704$, $p=.012$, and on the largest amount of money lost in one day of gambling, $t(26)=-2.174$, $p=.039$ (see Figures 5. & 6. below).
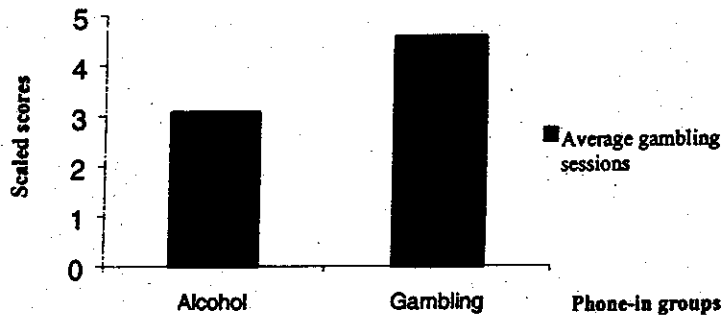

Figure 5. Average gambling sessions played by co-morbid respondents not attending treatment services. Note. Scaled scores range from 1-5 and refer to: 1= never, 2= monthly or less, 3= 2 to 4 times a month, 4= 2 to 3 times a week, and 5= 4 or more times a week.

Figure 6. On average, the largest amount of money lost in one day gambling by co-morbid respondents not attending treatment services for alcohol and/or gambling problems. Note. Scaled scores range from 0-6 and refer to: 0= never gamble, 1= $1 or less, 2= $1 to $10, 3= $10 to $100, 4= $100 to $1000, 5= $1000 to $10,000, and 6= more than $10,000

5.6   Forms of Gambling Played Once a Week or More by Co-morbid Respondents Not Receiving Treatment

Co-morbid respondents with either self-identified gambling problems or alcohol problems not attending treatment services appeared to prefer betting on horses and greyhounds compared to other forms of gambling (see Appendix D for descriptive statistics). It was 64% of the alcohol group and 71% of the gambling group that preferred this form of gambling. These figures may be biased by the location of

advertising for participants. Both adverts appeared in the sports section of the Sunday Telegraph. (See Appendix E. for full descriptive details.)

5.7 Demographic Characteristics of Co-morbid Respondents Not Attending Treatment Services

Respondents with Self-identified Alcohol Problems
- In this group of 14 respondents, 13 (93%) were males and 1(7%) female.
- The highest proportion of respondents were aged between 30-39.
- 100% spoke English as their first language.
- The highest education level reached by the greatest number of respondents was School Certificate (57%), with the lowest number of respondents equally split amongst Primary School (7%), HSC (7%) and Post-graduate study (7%).
- The highest proportion of respondents in this group worked full time (50%), followed by 29% working part time.
- The largest proportion of respondents were separated or divorced (36%), followed by those that were single (29%), those married (21%) and those in a defacto relationship (14%).
- Approximately, 29% of this group was on a yearly income of $10,001 to $20,000, and a further 29% were on a salary of $30,001 to $40,000. (See Appendix C1. For full descriptive statistics.)

Respondents with Self-identified Gambling Problems
- Approximately 86% of this group were male and 14% were female.
- The largest proportion of respondents (36%) were equally split across age ranges 30-39 and 40-49. The lowest number in this group were aged between 50-57 (7%), with 21% aged between 20-29.
- All of the respondents spoke English as their first language.
- The largest proportion of respondents reached a school certificate (50%) level of education, and 29% had accomplished the HSC.
- Most respondents were working full time (50%), followed by those working part time (21%).

- Marital status index in this group indicated the largest proportion of respondents to be single (43%), followed by married (21%) and living in a defacto relationship (21%).

- The highest yearly income bracket by the largest proportion of respondents was $40,0001 to $50,000 (29%), followed by 21% in the $10,001 to $20,000 bracket and 21% in the $20,001 to $30,000 bracket. (See Appendix C2. For full descriptive statistics.)

5.8   Family and Social Contacts with Alcohol and/or Gambling Problems

Co-morbid respondents with self-identified alcohol problems

It was most common for respondents to report alcohol problems associated with friends (43%). Gambling problems were reported in association to fathers (14%), and both alcohol and gambling problems were most commonly reported for fathers (29%), friends (29%) and other relatives (29%). (See Appendix F2. for full descriptive details.)

Co-morbid respondents with self-identified gambling problems

These respondents reported other relatives (21%) to be most frequently associated with alcohol. Gambling problems were commonly reported to be associated with siblings (36%), and alcohol and gambling problems were associated most prominently with friends (36%). (See Appendix F2. For full descriptive details.)

5.9   Study 2. Summary

This study attempted to provide information regarding co-morbid respondents in N.S.W. that had not attended treatment for their alcohol and/or gambling problems in the last 12 months. The data from this study was believed to provide support to the accuracy of descriptive information on co-morbid problem drinking / problem gambling in study 1.

The results of this research have shown that around 50% each group of respondents calling in for alcohol or gambling problems were assessed to have co-morbid drinking and gambling problems. The small sample sizes preclude generalising these results.

Further research would need to include larger samples to clarify these co-morbid patterns.

Although scores on AUDIT and SOGS were generally much higher than the cut-off scores of 8 and 5 respectively, there were no statistical differences between co-morbid respondents with self-identified alcohol and gambling problems.

There were no statistical differences between phone-in groups on AUDIT sub-categories of Hazardous Alcohol Use, Alcohol Dependence and Harmful Alcohol Use. However, descriptive statistics have shown that respondents in both groups were above scores of 8 on Hazardous Alcohol Use, and self-identified problem drinkers were, on average, over 8 on Harmful Alcohol Use. Average scores were less than 8 on Alcohol Dependence for both groups, and self-identified problem gamblers scored lower than 8 on Harmful Alcohol Use.

The average number of standard drinks consumed by co-morbid respondents on a typical drinking day exceeded national norms for safe drinking (NMHRC, 1992). Both groups drink between 5 or 6 standard alcoholic drinks on a typical drinking day and drink on 50% of the occasions that they gamble. Self-identified problem drinkers consume 7 to 9 drinks during typical gambling session. Self-identified problem drinkers number of standard drinks during gambling was the same as their in-take on a typical drinking day. These results are concerning. Self-identified problem drinkers typical gambling session lasts, on average, less than an hour and they gamble, bi-monthly to once a week. Self-identified problem gamblers gamble typically between 1 and 2 hours, and gamble around 2 to 3 times a week. The average number of drinks consumed during a typical gambling session coupled with how frequently they gamble puts these co-morbid respondents at risk of harm to themselves and others and is tantamount to binge drinking while gambling.

The preferred gambling form is horse and grey hound racing by co-morbid respondents in this study. However, this result maybe biased by advertising for respondents in the sports section of the newspaper.

Alcohol problems were reported to be mostly commonly associated with fathers for co-morbid respondents with self-identified alcohol problems. Co-morbid respondents with self-identified gambling problems reported alcohol problems most prominently in other relatives. Gamblers associated gambling problems most commonly with siblings, while drinkers reported gambling problems in fathers and siblings. Alcohol and gambling problems were reported mostly for fathers and other relatives in drinkers, and gamblers reported both problems in friends and fathers.

5.9.1 Risk Profile of Co-morbid Problem Drinkers / Problem Gamblers Not Attending Treatment Services in N.S.W.

Most of the phone-in sample were men aged between 30 to 39. They all spoke English as their first language and the highest level of education reached was the School Certificate. Around 50% of co-morbid respondents worked full time, with most self-identified drinkers earning between $10,001 to $20,000 or $30,001 to $40,000 annually, and most self-identified gamblers earning between $40,001 to $50,000. Of those co-morbid respondents that were self-identified problem drinkers the majority were mostly separated or divorced, and self-identified gamblers were mainly single.

6. Study 3. The Incidence of Co-morbid Problem Drinking / Problem Gambling in a Sample of Regular Electronic Gaming Machine Players in Western Sydney

6.1 Design, Sample Selection and Recruitment

- This study took place in two clubs in Western Sydney.
- A convenience sampling method was employed. Researchers approached male and female Electronic Gaming Machine (EGM) players to take part in the study. The study was conducted over two days, one day in each club, researching between 2pm and 10pm. The researchers involved were Ph.D students experienced in the psychological assessment of gamblers.
- The criteria for respondent selection was as follows:
  1) EGM players were classed as regular players if they gambled on EGM's once a week or more.

2) Respondents were at least 18 years of age.

3) Respondents had not consumed more than 2 standard drinks for at least an hour before the questionnaire was filled out.

- The AUDIT and SOGS measures were used to assess co-morbid problem drinking / problem gambling, and some demographic questions were asked. The questions referred to drinking and gambling patterns over the past 12 months.

- A $20 food and beverage gift voucher from each club was issued to respondents who participated in the study.

6.2 The Incidence of Co-morbid Problem Drinking / Problem Gambling in a Sample of Regular Electronic Gaming Machine (EGM) Players

This study was designed to assess rates of co-morbidity amongst regular EGM players in club settings. Subject selection was by asking individuals gambling on EGM's if they would like to participate in the study.

The number of questionnaires indicating current co-morbid problem drinking / problem gambling in clubs in Western Sydney are presented below in Table 15. Problem drinking refers to respondents scores of 8 or more on AUDIT exclusively; problem gambling refers to scores of 5 or more on SOGS exclusively; and co-morbid problem drinking / problem gambling refers to scores of 5 or more on SOGS and scores of 8 or more on AUDIT.

Table 15.

Rates of Problem Drinking and/or Problem Gambling Co-morbidity Among Regular EGM Players

	Respondents	Problem gambling	Problem drinking	Comorbid
Regular EGM Players	n= 154	21% (n= 32)	13% (n= 20)	20% (n=31)

Table 15. shows that 31 (20%) of the total sample of regular EGM players were co-morbid problem drinkers / problem gamblers. It appears that 13% of the sample were problem drinkers exclusively and 21% were problem gamblers. Forty six per cent of regular EGM players were without drinking or gambling problems.

6.3 Co-morbidity Results and Drinking Patterns of Regular EGM Players

Below in Table 16. are descriptive statistics relating to co-morbid problem drinking / problem gambling respondents. In particular the table shows SOGS scores of 5 or over and AUDIT scores of 8 or over, as well as AUDIT sub-categories scores on Hazardous Alcohol Use, Alcohol Dependence, and Harmful Alcohol Use. In addition, the table shows scores relating to the number of standard drinks consumed on a typical drinking day, and scores relating to the number of standard drinks consumed during a typical gambling session.

Table 16.

Co-morbidity Results and Drinking Patterns of Regular EGM Players

Regular EGM Players	Sample Statistic	AUDIT 8 & over	SOGS 5 & over	Number of standard drinks per day [a]	Number of standard drinks when gambling [a]	Hazardous Alcohol Use [b]	Alcohol Dependence [b]	Harmful Alcohol Use [c]
	n	31	31	31	31	31	31	31
Gambling	mean	21.03	9.7	2.35	1.77	7.35	5.28	8.51
	SD	6.09	3.2	1.45	1.25	3.53	2.69	4.2
	Range	11-34	5-16	0-4	0-4	0-12	0-10	0-14

Note. AUDIT scores of 8 and over refer to patterns of problem drinking. Audit scores range from 0-40.

SOGS scores of 5 and over refer to patterns of problem gambling. SOGS scores range from 0-20.

[a] Scores range from 1-5, and refer to: 1 = 1 or 2, 2 = 3 or 4, 3 = 5 or 6, 4 = 7 to 9, 5 = 10 or more standard drinks.

[b] Patterns of Hazardous Alcohol Use & Alcohol Dependence refer to AUDIT scores of 8 and over in these sub-categories. Scores in these sub-categories range from 0-8.

[c] Patterns of Harmful Alcohol Use refer to AUDIT scores of 8 and over in this sub-category. Scores range from 0-16.

6.3.1 Descriptive Statistics

The results of this study show respondents with average scores of higher than 8 on AUDIT and higher than 5 on SOGS that were assessed by this study to be co-morbid problem drinkers / problem gamblers. Co-morbid respondents also show average scores of 8 and above on Harmful Alcohol Use, but do not appear to have scores that indicate Hazardous Alcohol Use or Alcohol Dependence.

Co-morbid respondents drink, on average, 3 to 4 standard drinks on a typical drinking day and 1 or 2 during a typical gambling session.

6.4 Gambling Patterns of Co-morbid Respondents that Regularly Gamble on EGM's

Descriptive statistics of co-morbid respondents gambling patterns including how often they gamble, the average duration of a typical gambling session, and the per cent occasions spent drinking during a typical gambling session are shown in Appendix G3.

Figure 7. below indicates that co-morbid respondents gamble, on average, 2 to 4 times a month for 1 or 2 hours. The largest amount of money lost in one day by these co-morbid respondents varies, on average, between $100 to $1000.
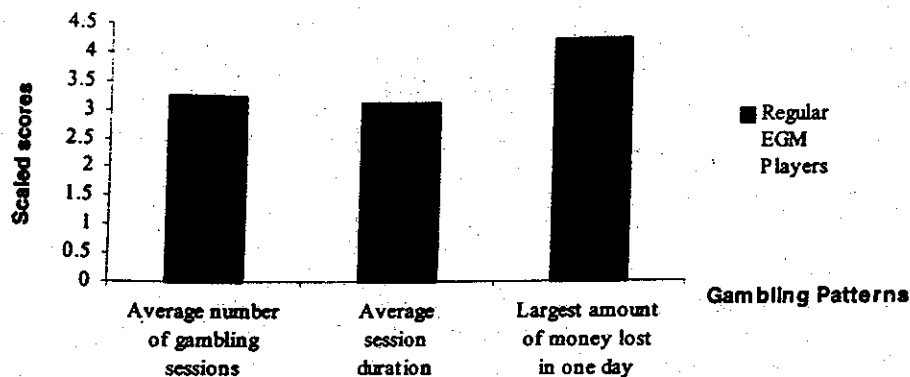
Figure 7. The average gambling sessions, session duration and the largest amount of money lost in one day by co-morbid respondents that are regular EGM players.

Note.

- *Number of Gambling Sessions* scaled scores range from 1-5 and refer to: 1= never, 2= monthly or less, 3= 2 to 4 times a month, 4= 2 to 3 times a week, and 5= 4 or more times a week.
- *Session Duration* scaled scores range from 1-4 and refer to: 1= never, 2= less than 1 hour, 3= between 1 and 2 hours, and 4= 3 hours or more.
- *Largest Amount of Money Lost in One Day* scaled scores range from 0-6 and refer to: 0= never gamble, 1= $1 or less, 2= $1 to $10, 3= $10 to $100, 4= $100 to $1000, 5= $1000 to $10,000, and 6= more than $10,000

6.5 Forms of Gambling Played Once a Week or More by Co-morbid Regular EGM Players

Electronic gaming machines was the preferred continuous gambling form of this group. Eighty five per cent of co-morbid respondents gamble once a week or more on EGM's, and 58% gamble once a week or more on Lottery tickets and Scratchies, and 58% play Lotto, Powerball, Oz Lotto forms of gaming weekly or more. (Full detail can be seen in Appendix E.)

6.6 Demographic Characteristics of Co-morbid Regular EGM Players

- There were 52% males and 48% females in this co-morbid group.
- The largest proportion of respondents in this group were aged between 20 and 29 (42%).
- Eighteen or 58% of respondents spoke English as their first language.
- The highest education level reached by the greatest number co-morbid respondents was the School Certificate (36%), followed by the HSC (26%), a University Degree (19%) and TAFE (16%).

- The largest number of respondents (26%) yearly earnings were between $10,001 to $20,000, and the lowest number of respondents (3%) earned between $40,001 to $50,000 per annum. (See Appendix D. for full descriptive statistics.)

6.7   Study 3. Summary

This study aimed to provide information regarding co-morbid problem drinking / problem gambling patterns in regular EGM players. The design of this study was to approach EGM players in a club setting. Thus data on the incidence of co-morbid problem drinking / problem gambling in club settings provides a description of co-morbid individuals that may not have identified their own drinking and/or gambling problems, nor contemplated appropriate treatment.

The results has demonstrated that of the 154 respondents that regularly play EGM's in clubs in Western Sydney, 20% had co-morbid drinking and gambling problems, 13% had gambling problems exclusively, and 21% were problem drinkers. In this sample of regular players, one out of every two had either drinking or gambling problems, or both.

For co-morbid respondents the average AUDIT score and SOGS score were well over the cut-off scores of 8 and 5 respectively. Respondent scores indicated Harmful Alcohol Use but not Hazardous Alcohol Use or Alcohol Dependence according to AUDIT sub-categories.

The number of standard drinks consumed on a typical drinking day did not exceed daily limits set out by the NHMRC guidelines for safe alcohol levels in men but were slightly high for females. Co-morbid respondents did not consume larger volumes of alcohol during a typical gambling session. On average, co-morbid respondents drink 3 to 4 on a typical drinking day and only 1 or 2 during gambling sessions.

Co-morbid respondents, on average, gamble 2 to 4 times per month for 1 or 2 hours, and the largest amount of money lost on one day was, on average, between $100 to $1000.

6.7.1 Risk Profile of Co-morbid Problem Drinkers / Problem Gamblers that Regularly Gamble on EGM's

Co-morbid respondents in this study were generally aged between 20 to 29 and evenly split between males and females. The highest level of education reached by the greatest proportion of respondents was the School Certificate. English was the first language spoken by approximately half of the sample. The largest number of respondents earned between $10,001 and $20,000 per annum.

7. Implications and Recommendations for Intervention and Treatment of Co-morbid Problem Drinking / Problem Gambling in N.S.W

The empirical research studies in the present project have confirmed that the strong association between alcohol and gambling problems portrayed in the literature, based on US clinical samples, is equally true of the situation in NSW. From the regular EGM player sample through to those attending treatment for either problem to the self-identified problem drinker or gambler currently not receiving treatment, there is an increasing co-morbidity from 1 in 5 to 1 in 2. Despite the low return rate in Study 1 the overall 'shape' of the results supports the claim that the results are valid.

Implications for harm minimisation/early intervention:
The younger age and the equal proportion of men and women in the EGM player sample compared with those in treatment in which males predominate may represent an earlier stage in the development of more severe co-morbid problems. Regular EGM players, and probably those who prefer other forms of continuous forms of gambling (Productivity Commission, 1999) are therefore a group that merit significant attention in the planning and delivery of harm minimisation/early intervention for both excessive alcohol use and problem gambling.

Implications for treatment service delivery:
❖ **Equity of access to services:** the differences in the proportions of men and women attending treatment services compared with the sample of EGM players raises the question of how this comes about, whether for example from differences in the natural history of the co-morbid problems for men compared with women. Without longitudinal information it is only possible to speculate on the causes. It

is however a possibility that the lower proportion of women attending the gambling and alcohol treatment services is a function of the lack of equity of access for women problem drinkers/gamblers. The Victorian data for the new clients attending the Break Even services for problem gamblers and their families shows an equal proportion of men and women gamblers and has been interpreted as a possible indication of equity of access for women (e.g. Client and Service Analysis Report No. 3, 1997).

❖ *Assessment procedures:* The high co-morbidity in clinical samples combined with the fact that the present research also established that very few of either the gambling or alcohol service centres have formal assessment procedures that evaluate both addictive behaviours is a cause for concern. Given the high co-morbidity found in both service populations routine screening for both alcohol and gambling problems should be service delivery/funding requirement. The use of standardised measures such as the AUDIT and the SOGS (or the recently validated Australian measure soon to be released in Victoria) are the best option as they would permit comparisons across services and facilitate other linkages to international research findings. Should a service reject this preferred option on the grounds of costs then the minimum requirement should be two questions that cover frequency of gambling on a particular form, drinking alcohol and secondly the amount consumed on any one occasion (expenditure of time and money for gambling). This descriptive data permits the level of risk of harm to the drinker/gambler to be estimated from recommended levels of 'safe' drinking (NHMRC, 2000) and for gambling, from the table of levels of risk associated with regular, weekly gambling by form (Productivity Commission, 1999). The use of such brief cost-effective questions to assess the likely presence of harmful impacts of drinking alcohol and gambling merits consideration in any service or research concerned with public health issues.

❖ *Treatment delivery:* the treatment of co-morbid problems involving both alcohol and gambling is likely to be significantly more complex than for either problem alone. The manner in which even small quantities of alcohol, 2-3 standard drinks, may influence both the choice to start a 'new' session of gambling and to persist during an ongoing losing session has been demonstrated for typical, non-problem drinkers/gamblers(Baron & Dickerson, 2000: Kyngdon & Dickerson, 2000). Although there is good face validity to the assumption that the two addictive

behaviours will interact to maintain each other and to precipitate relapse the process has yet to be studied longitudinally. The literature review above noted that some addiction centres in the US have developed the content of treatment interventions designed for co-morbid alcohol and gambling problems. In addition there must exist a wealth of clinical expertise in NSW centres that offer services for both problems. This knowledge needs to be drawn upon and included in service training and treatment manuals. It seems essential in the light of the information from the present series of studies that individual therapists working in either gambling or alcohol services should be professionally trained to assess and treat both conditions, especially when presenting as a co-morbid condition.

Conclusion;
Health service planning for the addictive behaviours needs to fully explore the implications flowing from the high co-morbidity levels found in the present sequence of studies between excessive alcohol use and problem gambling. The implications range across all aspects from harm minimisation/early intervention to treatment delivery itself.

Further research is needed to explore the extent of co-morbidity between problem gambling and other addictive behaviours especially smoking and the use of illicit substances.

Despite the high co-morbidity between problem gambling and excessive use of alcohol the case can still be made that services that specifically target gambling problems 'alone' should be continued rather than subsumed under a generic 'addiction' service. The history of the provision of services for problem gambling is still so very recent that the general population still requires significant education and awareness before it becomes common knowledge that gambling *can* cause significant harmful impacts to the individual and family. In addition, that there are services available to assist those who need help and that this help can successfully resolve the problems.

8. Limitations of this study

8.1   Study 1. Treatment Services

- Lack of research time precluded a full-scale multi-levelled methodology for accessing treatment services in N.S.W.
- The data was limited by the small number of participating treatment services, with only two services participating in the Mid-Western rural area in N.S.W.
- This study used self-report to examine the data on the incidence of co-morbid drinking / gambling and this method often incurs respondent biases.
- As the information in this study was gathered retrospectively, caution should be taken when examining the validity of the data.

8.2   Study 2. Phone-in

- Results could have been strengthened by larger samples sizes.
- Larger numbers of respondents may have been accessed if the study was advertised in large local papers across N.S.W. as well as the Sunday Telegraph.
- The location of both adverts may have biased the sample by capturing a limited audience of gamblers who enjoy horse and greyhound racing.

8.3   Study 3.Regular EGM Players

- The reliability of the results could have been improved by the selection of more than two clubs for the study, and the selection of other gambling outlets such as hotels and TAB's.
- The results may have further supported the findings in study 1. and study 2. if data were collected on treatment patterns of respondents.