# ANALYSIS OF CHARACTERISTICS OF TREATMENT-SEEKING PROBLEM GAMBLERS IN OREGON BASED ON PREFERRED GAMBLING ACTIVITY

By

Hon L. Ho

#### A THESIS

Presented to the Department of Public Health & Preventive Medicine and the Oregon Health & Science University

School of Medicine

in partial fulfillment of the requirements for the degree of

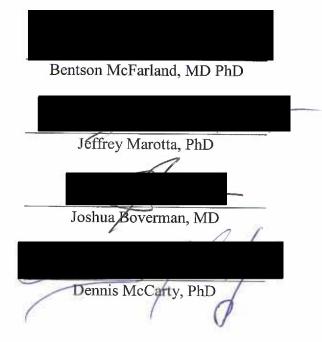
Master of Public Health
May 2007

# School of Medicine Oregon Health & Science University CERTIFICATE OF APPROVAL

This is to certify that the Master's thesis of

Hon L. Ho, MD

has been approved



# TABLE OF CONTENTS

Section	Page
Background	1
Literature Search	8
Objectives	13
Methods	15
Results	16
Discussions	40
References	43
Appendices	47

#### ACKNOWLEDGMENTS

Bentson McFarland, MD PhD Professor of Psychiatry, Public Health and Preventive Medicine Oregon Health & Science University

Jeffrey Marotta, PhD Problem Gambling Services Manager Oregon Department of Human Services Mental Health & Addiction Services

Joshua Boverman, MD Assistant Professor of Psychiatry, Family Medicine Oregon Health & Science University

Dennis McCarty, PhD Professor of Public Health and Preventive Medicine Oregon Health & Science University

#### Abstract

#### Background

Although the prevalence of pathological gambling is comparable to that of other psychiatric disorders (e.g. schizophrenia and bipolar disorder), less is known about people with gambling disorder compared to individuals with other psychiatric conditions. Expansion of legalized gambling from traditional casino to video lottery terminals (VLTs, e.g. video poker, video slot) and online gambling may have increased the prevalence of pathological gambling. However, little is known about game preference among problem gamblers.

## Objective

The primary objective of this study was to examine associations between game preference and other characteristics of treatment-seeking problem gamblers.

#### Methods

The de-identified dataset was obtained from Oregon Problem Gambling Services. First, multinomial regressions were performed to examine game preference's association with any of the factors/covariates of interest (univariate model): gender, age, age when problem gambling was diagnosed, age of first gambling, race, American Psychiatric Association Diagnostic and Statistical Manual (DSM) score, each of the DSM criteria, education, income, debt, marital status, employment status, venue of gambling, and year of admission to problem gambling treatment program. Then, another multinomial

regression was performed with all those selected factors/covariates entered into the preliminary model as the independent variables (multivariate model), and game preference as the dependent variable. Finally, another multinomial regression was performed with all those selected factors/covariates entered into the final model as the independent variables (multivariate model).

#### Results/Conclusions

Pathological gamblers who are male, younger, were younger when they first gambled, and with higher education level tend to prefer card games; pathological gamblers who are female, older, were older when they first gambled, and with lower education level tend to prefer slot and/or video poker. No statistically significant association between game preference and income or marital status was found. Asians tend to report a preference for card games and Hispanics tend to endorse a preference for slot machines. There was a significant association between a preference for card games and endorsing the preoccupation DSM-IV diagnostic characteristic for pathological gambling, and between a video poker preference and the characteristics of escape and chasing. This study demonstrates significant consistency with previous studies. Findings may help researchers and clinicians better understand the epidemiology, diagnosis, treatment, and prevention of pathological gambling.

#### Background

Gambling disorder has drawn increasing attention over the past 10 years among the general public, researchers and clinicians. Meta-analysis of prevalence studies in the United States and Canada has shown life-time prevalences of pathological and problem gambling were 1.60% (CI: 1.35, 1.85) and 3.85% (CI: 2.94, 4.76) respectively, and pastyear prevalences of pathological and problem gambling were 1.14% (CI: 0.90, 1.38) and 2.80% (CI: 1.95, 3.65) respectively (Shaffer et al., 1999). Issues such as expansion of gambling facilities into urban areas, online gambling and legalization of gambling have increased public concern about gambling disorder, because the prevalence of gambling disorder appears to be increasing along with legalization of gambling. According to the same meta-analysis of prevalence studies in the United States and Canada, life-time prevalence of problem gambling in recent studies (1994-1997) was significantly higher than that in early studies (1977-1993): 4.88 v 2.93%, p<0.05; life-time prevalence of combined problem and pathological gambling in recent studies (1994-1997) was significantly higher than that in early studies (1977-1993): 6.72 v 4.38%, p<0.05; pastyear prevalence of pathological gambling in recent studies (1994-1997) was significantly higher than that in early studies (1977-1993): 1.29 v 0.84%, p<0.05 (Shaffer et al., 1999). In a more recent Canadian Community Health Survey of 34,770 respondents, the 12month prevalence of gambling problems was 2.0%, but higher prevalence was found in provinces with high concentrations of video lottery terminals (VLTs) in the community combined with permanent casinos: Manitoba (2.9%) and Saskatchewan (2.9%) (Cox et al., 2005). That finding suggests expansion of legalized gambling may lead to worsened burden of pathological gambling.

Although the prevalence of pathological gambling is comparable to that of other psychiatric disorders (e.g. schizophrenia and bipolar disorder), diagnostic criteria and research on gambling disorder were not as well established as some other psychiatric disorders until recently. Gambling disorder was not included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) until 1980. When gambling disorder was first included in DSM III in 1980, non-pathological (i.e., social and problem) and pathological gambling were differentiated by a cut-off score of 4 out of 9 criteria (APA, 1980). DSM IV emerged in 1994, and subsequently the cut-off score has been changed to 5 out of 10 criteria (APA, 1994). To reach the diagnosis, clinicians need to rule out mania as the cause of the problem.

DSM IV definition criteria of pathological gambling (APA, 1994):

Preoccupation: client is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)

Tolerance: client needs to gamble with increasing amounts of money in order to achieve the desired excitement

Loss of control: client has repeated unsuccessful efforts to control, cut back, or stop gambling

Restlessness: client is restless or irritable when attempting to cut down or stop gambling Escape: client gambles as a way of escaping from problems or of relieving a dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, depression)

Chasing: after losing money gambling, client often returns another day in order to get even ("chasing" one's losses)

Lying: client lies to family members, therapist, or others to conceal the extent of involvement with gambling

Illegal acts: client has committed illegal acts, such as forgery, fraud, theft, or embezzlement, in order to finance gambling

Risked relationship: client has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling

Bailout: client relies on others to provide money to relieve a desperate financial situation caused by gambling

The following paragraphs provide a general overview of the most studied areas of pathological gambling.

Association between pathological gambling and age, gender, race, marital status, and psychiatric comorbidity

Studies have shown that pathological gambling is associated with younger and older ages, male gender, non-married status, ethnic minority, and multiple psychiatric comorbidities.

Gray (2004) reviewed nationally representative studies of problem gamblers from seven countries: United States, United Kingdom, Canada, Australia, New Zealand, Switzerland and Sweden. The studies reveal that in all countries expect Australia, pathological

gamblers were predominately males; most data except the most recent from the US and New Zealand showed young adults were over-represented among problem gamblers.

Petry et al. (2005) investigated the relationship between pathological gambling and psychiatric conditions using data from the National Institute on Alcohol Abuse and Alcoholism's (NIAAA's) National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), the largest comorbidity survey ever conducted. Similar to Gray's study, Petry et al. found that respondents with pathological gambling were significantly more likely to be male (72.2+-3.28 vs. 47.8+-0.31%); however, they found older individuals of 45 to 64 years of age (39.4+-4.34 vs. 31.0+-0.31%) tend to have more gambling problems. They also found that respondents with pathological gambling were significantly more likely to be African American (22.1+-3.34 vs. 11.0+-0.64%), widowed/separated/divorced (27.5+-4.19 vs. 17.4+-0.23%), and less likely to be married (46.0+-4.97% vs. 61.7+-0.47%).

There were also statistically significant (p<0.05) associations between pathological gambling and psychiatric cormorbidity such as alcohol use (OR=6.0), drug use (OR=4.4), nicotine dependence (OR=6.7), mood disorder (OR=4.4), anxiety disorder (OR=3.9), and personality disorder (OR=8.3), even after adjusting for sociodemographic and socioeconomic characteristics. Comparing women to men, the associations between pathological gambling and alcohol dependence (OR=9.5 vs. 4.6), drug abuse (OR=6.9 vs. 2.8), nicotine dependence (OR=14.7 vs. 5.0), major depressive episode (OR=5.6 vs. 2.6),

and generalized anxiety disorder (OR=5.2 vs. 1.7) were significantly greater (p<0.05) among women than men.

In another survey of 2417 randomly selected US residents, Gerstein et al. (1999) found that in the past year, manic symptoms were found in 0.7% of non-gamblers, 13.4% of problem gamblers, and 40.1% of pathological gamblers; depressive episode was found in 0.1% of non-gamblers, 5.2% of problem gamblers, and 20% of pathological gamblers; alcohol or drug dependence were found in 0.9% of non-gamblers, 13.9% of problem gamblers, and 20% of pathological gamblers.

In a more recent study, Kessler et al. (2008) used data from the US National Comorbidity Survey Replication (NCS-R), a nationally representative US household survey, to investigate the temporal relationships between pathological gambling and other psychiatric comorbidity. Some 9282 subjects were interviewed between February 2001 and April 2003. Kessler et al. found pathological gambling predicted the subsequent onset of bipolar disorder (OR=1.4-28.2), post-traumatic stress disorder (PTSD) (OR=1.7-31.4), any anxiety disorder (OR=1.5-9.5), alcohol or drug dependence (OR=3.7-25.7), and nicotine dependence (OR=2.4-11.7). Conversely, pathological gambling was predicted by mood disorders (OR=2.0-13.0), anxiety disorders (OR=2.3-11.0), impulse control disorders (OR=1.5-8.7), and substance use disorders (OR=1.6-12.7).

Although pathological gamblers tend to be men, women seem to have more problems and progress more quickly. In a study with 131 consecutive subjects drawn from 2 treatment

groups, Grant et al. (2002) found that men had an earlier age of first gambling (26.2 +- 15.7 vs. 33.4 +- 12.2 years, p=0.004). The mean length of time between first gambling behavior and onset of pathological gambling was 6.3 +/-8.9 years. However, it seemed to take less time for women to progress to pathological gambling after beginning to gamble (5.7 +- 8.4 vs. 7.1 +- 9.4 years, p=0.545).

In another study of 69 consecutive subjects recruited from a specialized outpatient treatment program, Ibanez et al. (2003) found that women had a later age at first bet (32.7 +- 9.9 vs. 23.8 +- 12.1, p=0.01), but it took less time for women to progress to pathological gambling after first bet (4.2 +- 6.4 vs. 11 +- 10.7 years, p=0.007).

In another study with 70 female and 70 male Brazilian treatment-seeking pathological gamblers, Tavares et al. (2003) investigated the risk factors for "telescoping effect" (faster progression) of pathological gambling. Gambling was divided into 3 progressive stages: social gambling, intense gambling, and problem gambling. Compared to males, a higher proportion of female subjects demonstrated telescoping in social gambling (67 vs. 27%, p<0.001), intense gambling (83 vs. 51%, p=0.006) and problem gambling (73 vs. 39%, p=0.011) stages.

The severity of pathological gambling among older and younger gamblers seems to differ. In a study that compared geriatric with younger patients (n = 73) seeking medication treatment for pathological gambling, Grant et al. (2001) found that the geriatric gamblers

(age > 60) endorsed significantly fewer DSM-IV criteria than the 40-50 year-old gamblers (7.1+-1.4 v 8.1+-1.5, p=0.025).

Association of pathological gambling with DSM criteria

Some studies investigated which DSM criteria may better differentiate pathological gambling from social gambling. By analyzing the DSM criteria among 399 gamblers who endorsed at least 1 DSM IV criterion, Toce-Gerstein et al. (2003) found that chasing (59.6%), preoccupation (38.8%), and escape (33.6%) were the most frequently endorsed criteria, whereas illegal acts (4.0%), bailout (15.3%) and loss of control (15.3%) were the least frequently endorsed criteria. They further suggested that there may be an order in which symptoms emerge as pathological gambling progresses: gamblers who scored 1 or 2 have higher than expected level of prevalence for chasing; preoccupation, escape and lying happen more frequently than expected among gamblers who score 3 or 4; comparing gamblers who score 4 versus 5 (cut-off score for pathological gambling), withdrawal and stop/control happen more frequently than expected among gamblers who score 5, suggesting a parallel to the distinction between substance dependence and substance abuse; risked relationships and illegal acts appear to differentiate the more severe pathological gamblers from the less severe.

However, in another study that compared 121 treatment-seeking gamblers to 138 randomly selected community respondents, Strong et al. (2005) seemed to suggest another sequence may be possible: risked relationship, preoccupation, lying, stop/control, chasing, escape, restlessness, tolerance, and finally, bailout or illegal acts.

Purpose of this study

After reviewing the most studied areas of pathological gambling, the author found that relative to gender, age, race, psychiatric comorbidity and the DSM IV criteria, little is known about the association between game preference and other variables. There were only a handful of studies that specifically investigated game preference (see literature search), and no meta-analysis has been done so far.

As stated previously, expansion of legalized gambling from traditional casino to VLTs (e.g. video poker, video slot) and online gambling seems to increase the prevalence of pathological gambling. Also, in the previously discussed study using data from NCS-R, Kessler et al. (2008) found that among all gamblers, pathological gamblers tend to participate in games involving mental skills (e.g., cards) (OR=3.1-47.7) and gambling machines (e.g., video poker) (OR=1.3-8.4). Therefore, more analysis of game preference, especially the games associated with pathological gambling (e.g., video poker, slot, cards), may help researches and clinicians gain better understanding about pathological gambling, such as its epidemiology, diagnosis and treatment.

#### Literature search

One objective of this study is to compare results with pertinent past studies and see whether there were consistencies or inconsistencies. In order to ensure covering as much pertinent literature as possible, literature search was done using Pubmed and PsychInfo databases. Also, it would be important to ensure no explanatory variables were missed in

the analysis. Therefore, search criteria were to be least restrictive. Search criteria included key words 1. "gambling" and 2. "slot", "poker", "video", or "card". About 530 articles were found. Only 2 studies directly examined game preference as the topic of interest and its association with other explanatory variables. The rest of the articles had either none, very little, or some discussion about game preference, but they were mainly focused on variables other than game preference. The following summarizes the association between game preference and the significant explanatory variables found in past studies.

Association between game preference and age

Studies suggest older gamblers tend to prefer slot machines and younger gamblers tend to prefer card games.

In a study with 1084 subjects calling the Connecticut Council on Problem Gambling helpline, Potenza et al. (2006) found that older as compared with younger adult problem gamblers were more likely to report problems with casino slot machine gambling (66.2% vs. 50.4%, p=0.027) and less likely to report problems with casino table gambling (23.7% vs. 43.2%, p=0.0002).

In a retrospective study with 347 consecutive subjects drawn from a treatment program,

Petry (2003) compared treatment-seeking pathological gamblers based on preferred

gambling activity: sports, horse/dog races, cards, slots, and scratch/lottery. Since the

present study focused on video, slot and card games, pertinent results regarding cards and

slots in Petry's study are reported as follows. Compared to slot players, card players tended to be younger (40.3 +- 1.3 vs. 47.9 +- 0.9 years, p<0.001).

In the previously discussed study that compared geriatric with younger patients seeking medication treatment for pathological gambling, Grant et al. (2001) also found that the geriatric gamblers (age > 60) were significantly less likely to play blackjack than the 20-30 year-old gamblers (6.3 vs. 46.5%, p=0.027) or the 40-50 year-old gamblers (6.3 vs. 34.8%, p=0.048). The geriatric gamblers were also less likely to play cards than the 20-30 year-old gamblers (12.5 vs. 36.4%) or the 40-50 year-old gamblers (12.5 vs. 34.8%), but the difference was not statistically significant. The geriatric gamblers were more likely to play slots than the 20-30 year-old gamblers (81.3 vs. 45.5%) or the 40-50 year-old gamblers (81.3 vs. 58.7%), but the difference was not statistically significant.

Association between game preference and gender

Studies suggest male problem gamblers tend to prefer card games and female problem gamblers tend to prefer bingo, VLTs, and/or slot machines.

In the previously discussed retrospective study with 347 consecutive subjects drawn from a treatment program, Petry (2003) also found that compared to slot players, card players tended to be males (73.4% vs. 33.6%, p<0.001).

In another study with 562 subjects calling the Connecticut Council on Problem Gambling helpline, Potenza et al. (2001) found that male gamblers were more likely than female gamblers to report problems with blackjack (46.2 vs. 20.2%, p<0.001) or poker (11.9 vs.

4.4%, p<0.004), whereas female gamblers were more likely to report problems with slot machines (77.3 vs. 37.1%, p<0.000) or bingo (10.3 vs. 0.6%, p<0.001).

In another study with 131 consecutive subjects drawn from 2 treatment groups, Grant et al. (2002) found that slot machines (65%), cards (33%), and blackjack (26%) were the most popular forms of gambling. Compared to women, men were more likely to play cards (56.6% vs. 16.7%, p<0.001), sports (22.6% vs. 3.8%, p=0.001), the track (17% vs. 2.6%, p=0.007), and pull-tabs (22.6% vs. 7.7%, p=0.02), whereas women enjoyed slot machines (92.1% vs. 45.3%, p<0.001) and bingo (15.4% vs. 1.9%, p=0.015).

In the previously discussed Brazilian study, Tavares et al. (2003) also found that more women than men (73 vs. 56%, p=0.034) reported being exclusive players of electronic bingo, VLT, or both.

Association between game preference and race

In the previously discussed retrospective study with 347 consecutive subjects drawn from a treatment program, Petry (2003) found no statistically significant difference in race (but only Caucasians, African Americans and Hispanics were compared in that study) when comparing slot and card players. However, compared to other ethnic groups, Asians in Australia were more often card/casino players (Banks and Fitzgerald, 1999).

Association between game preference and psychiatric comorbidity

In the previously discussed retrospective study with 347 consecutive subjects drawn from a treatment program, Petry (2003) found that compared to slot players, card players tended to have more illegal drug use (7.8% vs. 4.7%, p<0.01) but fewer days of alcohol use (2.4 +- 0.7 vs. 2.6 +- 0.6 days, p<0.001) in the past 30 days. Compared to slot players, card players tended to have fewer problems with anxiety (64% vs. 75%, p<0.05) and depression (53.3% vs. 63.3%, p>0.05).

Association between game preference and DSM criteria

The author did not find any studies that investigated the association between game preference and DSM criteria.

Association between game preference and other variables

In the previously discussed retrospective study with 347 consecutive subjects drawn from a treatment program, Petry (2003) found that compared to slot players, card players tended to be more educated (13.1 +- 0.2 vs. 12.7 +- 0.2 years, p<0.05), have less current gambling debt (\$6250, interquartile [IQ] range \$25000 vs. \$10000, IQ range \$28450; p<0.001), less life-time gambling debt (\$17500, IQ range \$69250 vs. \$30000, IQ range \$50000; p<0.001), and start gambling regularly at a younger age (32.2 +- 1.1 vs. 35.0 +- 0.8, p<0.01). No statistically significant difference was found in employment status, income or marital status.

In the previously discussed Brazilian study, Tavares et al. (2003) also investigated the association between game preference and progression of pathological gambling.

Compared to other games (lotteries, cards, and horse racing), a higher proportion of gamblers who preferred electronic bingo and/or VLTs demonstrated telescoping in social gambling (58% vs. 28%, p=0.004), intense gambling (79% vs. 46%, p=0.001) and problem gambling (66% vs. 38%, p=0.012) stages.

#### **Objectives**

The primary objective of this study was to determine if game preference has any association with clinical characteristics of treatment-seeking problem gamblers. In particular, the questions of interest were:

- 1. Is there a gender difference in game preference?
- 2. Is game preference associated with age of gamblers?
- 3. Do people of different race have different game preference?
- 4. Is game preference associated with any of the DSM criteria?

It would be helpful to evaluate whether game preference might affect DSM score.

However, since the DSM score is a sum of endorsement of the 10 DSM criteria, and the 10 DSM criteria were already included in the analysis, DSM score was not included in the analysis to avoid co-linearity.

It would also have been useful to analyze the association between game preference and psychiatric comorbidity. But unfortunately, there was insufficient data in the dataset to address this question.

Other variables were also included in the analysis for adjustment and to ensure potential confounders were taken into account. For example, older people may seem to prefer slot than card games. But in general it costs more to play card games than slots, making slots more appealing to older people who live on a fixed income. So, the income of clients should be considered. The other variables included in the analysis were:

- 1. Age of onset of problem gambling
- 2. Age when first gambled
- 3. Level of education
- 4. Marital status
- 5. Employment status
- 6. Income
- 7. Debt
- 8. Venue of gambling
- 9. Year of admission to problem gambling treatment program

In this study, game preference has 4 categories:

- 1. Card (reference group)
- 2. Video poker
- 3. Slot
- 4. Other preference

Previous studies showed many pathological gamblers believe they could control the outcome by their skills and strategy. So, it would be meaningful to evaluate the difference

between strategic games and non-strategic games. Therefore, in the statistical analysis, card game is the reference group (notice that "video poker" is actually a non-strategic game, although the word "poker" may seem to imply otherwise). To answer the above 4 questions of interest, the comparison groups of game preference were:

- 1. Video poker vs. card
- 2. Slot vs. card
- 3. Other preference vs. card

#### Methods

The de-identified dataset was obtained from Oregon Problem Gambling Services. When clients were admitted to their treatment programs, information about their demographics and clinical characteristics was obtained (appendices). The dataset involved clients who were admitted between 2002 and 2005.

First, preliminary statistical analyses were done to determine if game preference is associated with any of the factors/covariates of interest: gender, age, age when problem gambling was diagnosed, age of first gambling, race, DSM score, each of the DSM criteria, education, income, debt, marital status, employment status, venue of gambling, and year of admission to problem gambling treatment program. Multinomial regressions were performed for each of the above factors/covariates individually (univariate model), with game preference as the dependent variable. Factors/covariates with p-value smaller than 0.1 were selected and entered into a preliminary model.

Then, another multinomial regression was performed with all those selected factors/covariates entered into the preliminary model as the independent variables (multivariate model), and game preference as the dependent variable. The purpose of this multinomial regression was to eliminate variables that were no longer statistically significant after adjustment. Factors/covariates with p-value smaller than 0.05 were selected and entered into a final model.

Finally, another multinomial regression was performed with all those selected factors/covariates entered into the final model as the independent variables (multivariate model), and game preference as the dependent variable. The purpose of this multinomial regression was to calculate the adjusted odds ratios with only statistically significant factors/covariates included in the final model. SPSS was the statistical software used in this study.

#### Results

There are 4871 clients in this dataset. The characteristics of this client population are summarized as follows:

## Demographics

There were slightly more male clients (52%) than female (48%), consistent with expectation. Most clients (1560) were between 40 and 49 years of age when they were admitted to the treatment program. The majority of clients were Caucasians (87.8%), consistent with the general population in the state of Oregon. However, African

Americans (2.1%), Native Americans (1.8%) and Asian Americans (3.8%) were slightly overrepresented in this client population. This finding is consistent with the observation that some ethnic minority groups have a larger burden of pathological gambling.

Fig. 1: gender of clients

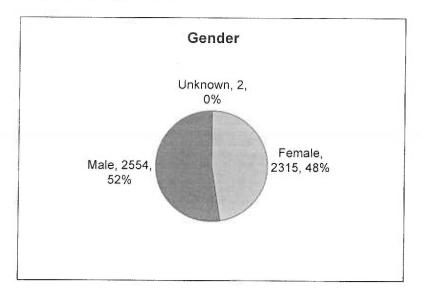


Fig. 2: age distribution of clients

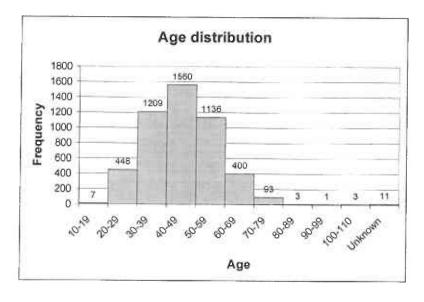
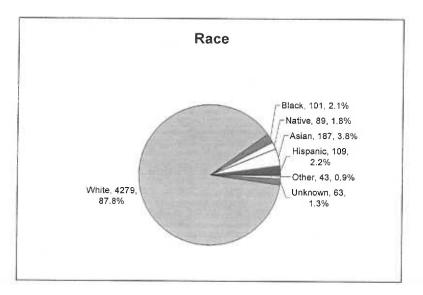


Fig. 3: race of clients



DSM score and endorsement of DSM IV criteria

The DSM score distribution of this population is negatively skewed: the majority (4534) of clients had DSM score 5 or above. This finding is consistent with the fact that the population consists of treatment seeking gamblers. The most frequently endorsed DSM IV criteria were preoccupation, chasing and escape; the least frequently endorsed DSM IV criteria were bailout, risked relationship, and illegal acts. Both are consistent with findings from the previously discussed study of Toce-Gerstein et al. (2003).

Fig. 4: DSM score distribution of clients

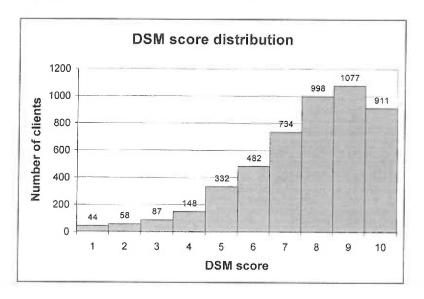
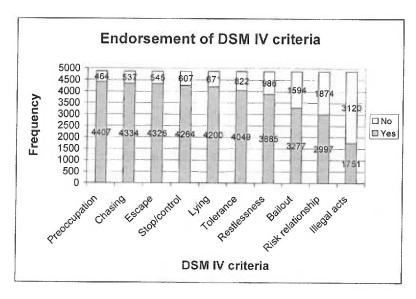


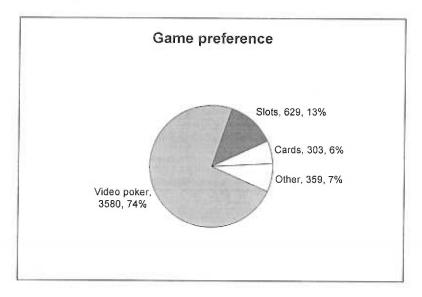
Fig. 5: endorsement of DSM IV criteria of clients



# Game preference

The majority (74%) of clients indicated "video poker" as their preferred game. Some 13% of clients indicated "slot" as their preferred game. Only 6% of clients indicated "card" as their preferred game.

Fig. 6: game preference of clients



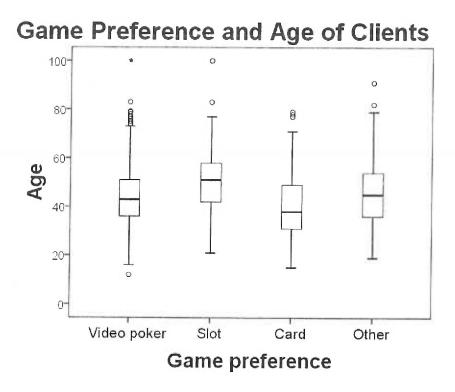
# Statistical analyses

To test the association between game preference and each independent variable, multinomial regressions (univariate model) were performed. The following tables and charts summarize the results.

Table 1: Game preference and gender of clients

			Ga	ame preferen	ice	
		Video poker	Slot	Card	Other	Total
Gender	Female	1688	430	70	127	2315
		47.2%	68.4%	23.1%	35.4%	47.5%
	Male	1890	199	233	232	2554
		52.8%	31.6%	76.9%	64.6%	52.5%
	Total	3578	629	303	359	4869
		100.0%	100.0%	100.0%	100.0%	100.0%

Male was the reference gender. Males were overrepresented (76.9%) among problem gamblers who played card rather than other games (p<0.001 for video poker vs. card [OR=2.973], slot vs. card [OR=7.192], and other vs. card [OR=1.822]).



Clients who were card players were overall younger (median age < 40) than other players (p<0.001 for video poker vs. card, slot vs. card, and other preference vs. card).

Table 2: Game preference and race of clients

			G	ame prefere	nce	
		Video poker	Slot	Card	Otner	Total
Race	Black	73	5	6	17	101
		2.1%	.8%	2.0%	4.8%	2.1%
	Native	63	14	7	5	89
		1.8%	2.3%	2.4%	1.4%	1.9%
	Asian	78	29	65	15	187
		2.2%	4.7%	22.0%	4.3%	3.9%
	Hispanic	65	29	5	10	109
		1.8%	4.7%	1.7%	2.8%	2.3%
	Other	30	5	6	2	43
		.8%	.8%	2.0%	.6%	.9%
	White	3234	536	207	302	4279
		91.3%	86.7%	69.9%	86.0%	89.0%
	Total	3543	618	296	351	4808
		100.0%	100.0%	100.0%	100.0%	100.0%

White/Caucasian was the reference race. It is noteworthy that Asians were overrepresented (22%) among problem gamblers who played card rather than other games (p<0.001 for video poker vs. card [OR=0.077], slot vs. card [OR=0.172], and other preference vs. card [OR=0.158]).

Table 3: Game preference of clients in gambling treatment program between 2002 and 2005

		Year of	admission to	treatment pro	gram	
		2002	2003	2004	2005	Total
Game	Video poker	838	953	877	912	3580
preference		72.8%	73.6%	75.1%	72.4%	73.5%
	Slot	137	168	146	178	629
		11.9%	13.0%	12.5%	14.1%	12.9%
	Card	65	83	69	86	303
		5.6%	6.4%	5.9%	6.8%	6.2%
	Other	111	90	75	83	359
		9.6%	7.0%	6.4%	6.6%	7.4%
Total		1151	1294	1167	1259	4871
		100.0%	100.0%	100.0%	100.0%	100.0%

Year 2002 was the reference year. The percentage of card players was usually the smallest among all clients (except in 2005, when there were slightly more card players than other players). The overall ratios of video poker:card and slot:card players were basically unchanged over the years (p>0.1), and the number of card players was much smaller than those of video poker and slot players. However, the number of card players and other players were similar, and there were statistically significant decreases in other players relative to card players in 2003 (OR=0.635, p=0.037), 2004 (OR=0.637, p=0.048), and 2005 (OR=0.565, p=0.009).

Table 4: Game preference and endorsement of preoccupation

		Game preference					
		Video poker	Slot	Card	Other	Total	
Preoccupation	No	376	45	7	36	464	
		10.5%	7.2%	2.3%	10.0%	9.5%	
	Yes	3204	584	296	323	4407	
		89.5%	92.8%	97.7%	90.0%	90.5%	
	Total	3580	629	303	359	4871	
		100.0%	100.0%	100.0%	100.0%	100.0%	

More clients endorsed preoccupation than not, regardless of game preference. But relatively speaking, card players endorsed preoccupation more often than clients who preferred video poker (OR=0.202, p<0.001), slot (OR=0.307, p = 0.004) or other games (OR=0.212, p<0.001).

Table 5: Game preference and endorsement of tolerance

			Game preference					
		Video poker	Slot	Card	Other	Total		
Tolerance	No	588	96	53	85	822		
		16.4%	15.3%	17.5%	23.7%	16.9%		
	Yes	2992	533	250	274	4049		
		83.6%	84.7%	82.5%	76.3%	83.1%		
	Total	3580	629	303	359	4871		
		100.0%	100.0%	100.0%	100.0%	100.0%		

More clients endorsed tolerance than not, regardless of game preference. But relatively speaking, card players endorsed tolerance more often than clients who preferred other games (OR=0.683, p=0.052).

Table 6: Game preference and endorsement of stop/control

			Game preference					
		Video poker	Slot	Card	Other	Total		
Stop/control	No	405	85	56	61	607		
		11.3%	13.5%	18.5%	17.0%	12.5%		
	Yes	3175	544	247	298	4264		
) )		88.7%	86.5%	81.5%	83.0%	87.5%		
	Total	3580	629	303	359	4871		
		100.0%	100.0%	100.0%	100.0%	100.0%		

More clients endorsed attempt to stop/control than not, regardless of game preference. But relatively speaking, card players endorsed attempt to stop/control less often than clients who preferred video poker (OR=1.777, p<0.001) or slot (OR=1.451, p = 0.048).

Table 7: Game preference and endorsement of restlessness

		Game preference					
		Video poker	Slot	Card	Other	Total	
restlessness	No	721	112	73	80	986	
		20.1%	17.8%	24.1%	22.3%	20.2%	
	Yes	2859	517	230	279	3885	
		79.9%	82.2%	75.9%	77.7%	79.8%	
	Total	3580	629	303	359	4871	
		100.0%	100.0%	100.0%	100.0%	100.0%	

More clients endorsed restlessness than not, regardless of game preference. But relatively speaking, card players endorsed restlessness less often than clients who preferred slot (OR=1.465, p=0.025).

Table 8: Game preference and endorsement of escape

		077	Game preference						
		Video poker	Slot	Card	Other	Total			
escape	No	370	57	57	61	545			
		10.3%	9.1%	18.8%	17.0%	11.2%			
	Yes	3210	572	246	298	4326			
		89.7%	90.9%	81.2%	83.0%	88.8%			
	Total	3580	629	303	359	4871			
		100.0%	100.0%	100.0%	100.0%	100.0%			

More clients endorsed escape than not, regardless of game preference. But relatively speaking, card players endorsed escape less often than clients who preferred video poker (OR=2.01, p<0.001) or slot (OR=2.325, p<0.001).

Table 9: Game preference and endorsement of chasing

			Game preference						
		Video poker	Slot	Card	Other	Total			
chasing	No	363	77	43	54	537			
		10.1%	12.2%	14.2%	15.0%	11.0%			
	Yes	3217	552	260	305	4334			
		89.9%	87.8%	85.8%	85.0%	89.0%			
	Total	3580	629	303	359	4871			
		100.0%	100.0%	100.0%	100.0%	100.0%			

More clients endorsed chasing than not, regardless of game preference. But relatively speaking, card players endorsed chasing less often than clients who preferred video poker (OR=1.466, p=0.028).

Table 10: Game preference and endorsement of lying

			Game preference						
		Video poker	Slot	Card	Other	Total			
lying	No	441	106	64	60	671			
	50	12.3%	16.9%	21.1%	16.7%	13.8%			
	Yes	3139	523	239	299	4200			
		87.7%	83.1%	78.9%	83.3%	86.2%			
	Total	3580	629	303	359	4871			
		100.0%	100.0%	100.0%	100.0%	100.0%			

More clients endorsed lying than not, regardless of game preference. But relatively speaking, card players endorsed lying less often than clients who preferred video poker (OR=1.906, p<0.001).

Table 11: Game preference and endorsement of illegal acts

			Gá	ame preferen	ce	
		Video poker	Slot	Card	Other	Total
Illegal acts	No	2257	449	194	220	3120
		63.0%	71.4%	64.0%	61.3%	64.1%
	Yes	1323	180	109	139	1751
		37.0%	28.6%	36.0%	38.7%	35.9%
	Total	3580	629	303	359	4871
		100.0%	100.0%	100.0%	100.0%	100.0%

Fewer clients endorsed illegal acts than not, regardless of game preference. But relatively speaking, card players endorsed illegal acts more often than clients who preferred slot (OR=0.714, p<0.023).

Table 12: Game preference and endorsement of risked relationship

		Game preference						
		Video poker	Slot	Card	Other	Total		
Risked relationship	No	1333	306	105	130	1874		
		37.2%	48.6%	34.7%	36.2%	38.5%		
	Yes	2247	323	198	229	2997		
		62.8%	51.4%	65.3%	63.8%	61.5%		
	Total	3580	629	303	359	4871		
		100.0%	100.0%	100.0%	100.0%	100.0%		

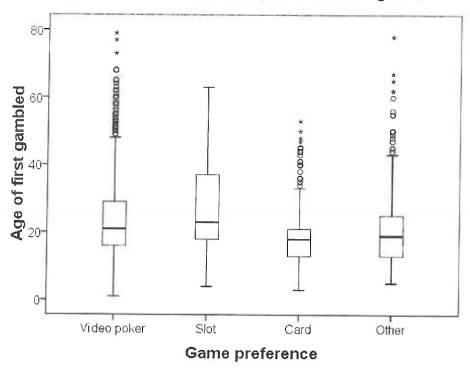
More clients endorsed risked relationship than not, regardless of game preference. But relatively speaking, card players endorsed risked relationship more often than clients who preferred slot (OR=0.56, p<0.001).

Table 13: Game preference and endorsement of bailout

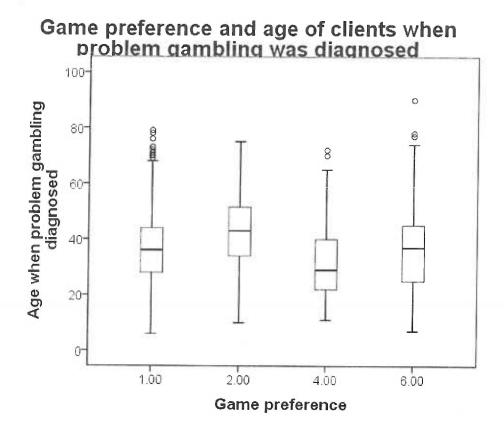
		Game preference						
		Video poker	Slot	Card	Other	Total		
bailout	No	1104	255	100	135	1594		
		30.8%	40.5%	33.0%	37.6%	32.7%		
	Yes	2476	374	203	224	3277		
		69.2%	59.5%	67.0%	62.4%	67.3%		
	Total	3580	629	303	359	4871		
		100.0%	100.0%	100.0%	100.0%	100.0%		

More clients endorsed bailout than not, regardless of game preference. But relatively speaking, card players endorsed bailout more often than clients who preferred slot (OR=0.722, p=0.027).

# Game preference and age of clients when first gambled

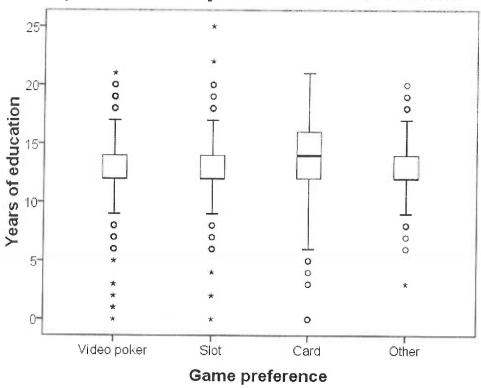


Clients who were card players were overall younger than other players when they first gambled (p<0.001 for video poker vs. card, p<0.001 for slot vs. card, and p=0.005 for other preference vs. card).



Clients who were card players were overall younger than other players when they were diagnosed with problem gambling (p<0.001 for video poker vs. card, slot vs. card, and other preference vs. card).

## Game preference and years of education of clients



Card players overall had more years of education than clients who preferred other games (p<0.001 for video poker vs. card, p=0.01 for slot vs. card, and p=0.038 for other preference vs. card).

Table 14: Marital status and game preference

		Game preference					
		Video poker	Slot	Card	Other	Total	
Marital	Never	746	73	89	89	997	
status	married	21.0%	11.6%	29.4%	24.9%	20.6%	
	Widowed	90	29	11	13	143	
		2.5%	4.6%	3.6%	3.6%	3.0%	
	Divorced	853	173	50	68	1144	
		24.0%	27.6%	16.5%	19.0%	23.7%	
	Separated	213	29	21	27	290	
		6.0%	4.6%	6.9%	7.6%	6.0%	
	Living as	250	32	16	15	313	
	married	7.0%	5.1%	5.3%	4.2%	6.5%	
	Married	1396	291	116	145	1948	
		39.3%	46.4%	38.3%	40.6%	40.3%	
	Total	3548	627	303	357	4835	
		100.0%	100.0%	100.0%	100.0%	100.0%	

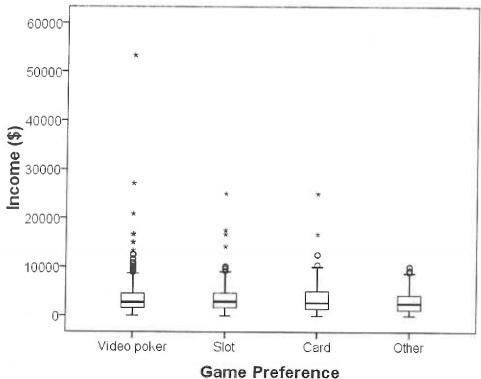
Married was the reference marital status. Compared to married clients, never married clients tended to play cards rather than video poker (OR=0.697, p=0.015) or slot (OR=0.327, p<0.001). Compared to married clients, divorced clients were less likely to be card players than video poker (OR=1.418, p=0.046) or slot (OR=1.379, p<0.098) players. Compared to married clients, separated clients tended to play cards rather than slot (OR=0.55, p=0.052).

Table 15: Employment status and game preference

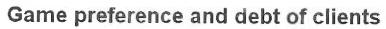
			Game preference					
		Video poker	Slot	Card	Other	Total		
Employme	nt Part time	336	66	20	22	444		
status		9.5%	10.5%	6.6%	6.2%	9.2%		
	Irregular	104	23	8	8	143		
		2.9%	3.7%	2.7%	2.3%	3.0%		
	Looking	567	70	64	57	758		
	for job	16.0%	11,2%	21.3%	16.1%	15.7%		
	Not	450	124	41	71	686		
	looking for job	12.7%	19.8%	13.6%	20.1%	14.2%		
	Retired	37	20	2	7	66		
		1.0%	3.2%	.7%	2.0%	1.4%		
	Disabled	52	12	5	10	79		
		1.5%	1.9%	1.7%	2.8%	1.6%		
	Full time	2001	311	161	178	2651		
		56.4%	49.7%	53.5%	50.4%	54.9%		
	Total	3547	626	301	353	4827		
		100.0%	100.0%	100.0%	100.0%	100.0%		

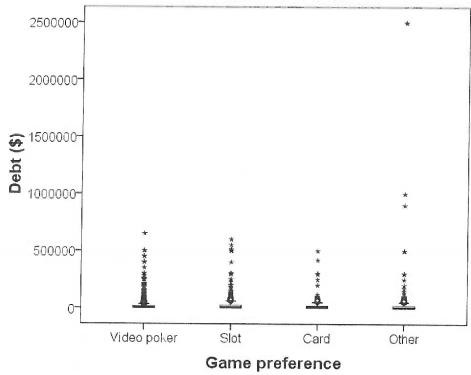
Full time was the reference employment status. Comparing slot to card players, slot players were more likely to be part time (OR=1.708, p=0.05), not looking for a job (OR=1.566, p=0.028) or retired (OR=5.177, p=0.028), but less likely to be looking for a job (OR=0.566, p=0.004). Comparing video poker to card players, video poker players were less likely to be looking for a job (OR=0.713, p=0.029).





Income of clients varies very considerably. Overall, there was no statistical difference between card players and clients with other game preferences (p=0.869 for video poker vs. card, p=0.743 for slot vs. card, and p=0.157 for other preference vs. card).





Debt of clients varies considerably. Comparing video poker to card players, video poker players appeared to have more debt (OR slightly > 1, p=0.026)

Table 16: Venue of gambling and game preference

		Game preference					
		Video poker	Slot	Card	Other	Total	
Venue of	Bar	3388	43	9	81	3521	
gambling		94.6%	6.8%	3.0%	22.6%	72.3%	
	Internet	8	10	11	27	56	
		.2%	1.6%	3.6%	7.5%	1.1%	
	Other	65	23	91	203	382	
		1.8%	3.7%	30.0%	56.5%	7.8%	
	Casino	119	553	192	48	912	
		3.3%	87.9%	63.4%	13.4%	18.7%	
	Total	3580	629	303	359	4871	
		100.0%	100.0%	100.0%	100.0%	100.0%	

Compared to card players, video poker players were more likely to play at a bar than a casino (OR=607.373, p<0.001). Compared to card players, slot players were less likely to play on the Internet (OR=0.316, p=0.01) or at other venues (OR=0.088, p<0.001) than casino. Compared to card players, clients of other game preferences were more likely to play at a bar (OR=36, p<0.001), on the Internet (OR=9.818, p<0.001) or at other venues (OR=8.923, p<0.001) than casino.

Since all variables except income were at least partially associated with game preference (p < 0.1) when considered individually, all variables except income were included in a preliminary model. A multinomial regression (multivariate model) was performed to eliminate variables that were no longer statistically significant after adjustment, and select factors that still had significant association with game preference (p < 0.05). The following table summarizes the results:

Game preference		Video poker vs. card		Slot vs. card		Other vs. card	
		OR	р	OR	р	OR	р
Gender	Female vs. male	3.494	0	5.814	0	1.889	0.008
Age	1 year older	1.01	0.444	1.026	0.033	1.038	0.005
Race	Black vs. White	0.619	0.444	0.674	0.577	1.444	0.509
	Native vs. White	0.372	0.15	0.993	0.99	0.443	0.269
	Asian vs. White	0.171	0	0.219	0	0.118	0
	Hispanic vs. White	1.763	0.442	5.866	0.008	1.909	0.397
	Other vs. White	0.102	0.005	0.171	0.025	0.228	0.122
DSM criteria	Preoccupation	0.11	0	0.237	0.01	0.142	0.001
	Tolerance	0.974	0.924	0.891	0.663	0.698	0.178
	Stop/control	0.906	0.734	0.841	0.53	1.146	0.644
	Restlessness	1.439	0.163	1.614	0.067	1.514	0.122
	Escape	2.074	0.016	1.721	0.065	0.927	0.799
	Chasing	1.95	0.039	1.697	0.086	1.187	0.604
	Lying	0.997	0.992	0.971	0.917	1.198	0.552
	Illegal acts	1	0.999	0.776	0.228	1.077	0.741
	Risk relationship	0.874	0.535	0.713	0.098	1.066	0.78
	Bailout	0.935	0.768	0.786	0.262	0.786	0.309
Year of admission	2003 vs. 2002	0.825	0.486	1.097	0.732	0.634	0.112
	2004 vs. 2002	0.934	0.812	1.056	0.845	0.884	0.677
	2005 vs. 2002	0.656	0.127	0.957	0.867	0.5	0.016
Marital status	Never married vs. Married	0.957	0.869	0.772	0.323	1.445	0.178
	Widowed vs. Married	0.398	0.092	0.199	0.002	0.302	0.04
	Divorced vs. Married	0.952	0.853	1.028	0.913	0.895	0.694
	Separated vs. Married	0.607	0.208	0.454	0.039	1.036	0.931
	Living as married vs. Married	1.146	0.758	0.666	0.352	0.708	0.493
Education level	1 year higher	0.917	0.029	0.924	0.035	0.957	0.277
Employment status	Part time vs. Full time	0.731	0.401	0.764	0.442	0.704	0.391
	Irregular vs. Full time	0.65	0.487	0.677	0.518	0.676	0.552
	Looking for job vs. Full time	1.04	0.883	0.686	0.154	0.774	0.364
	Not looking for job vs. Full time	0.732	0.284	0.669	0.146	1.165	0.599
	Retired vs. Full time	0.68	0.674	2.812	0.238	1.626	0.588
	Disabled vs. Full time	0.6	0.439	0.64	0.458	1.449	0.571
Debt	\$1 more debt	1	0.375	1	0.415	1	0.077
enue of gambling	Bar vs. Casino	780.156	0	2.294	0.048	42.04	0
	Internet vs. Casino	1.649	0.36	0.546	0.255	16.299	0
	Other vs. Casino	1.161	0.552	0.075	0	10.302	0
ge first gambled	l year older	1.035	0.001	1.026	0.01	1.016	0.159
ge when problem ambling was diagnosed	1 year older	1.018	0.184	1.031	0.015	1.007	0.617

Gender, age, race, year of admission, marital status, education level, venue of gambling, age first gambled, and age when problem gambling was diagnosed were still at least partially associated with game preference (p < 0.05). Only some but not all of the 10 DSM criteria were associated with game preference. Those at least partially associated with game preference included preoccupation, escape and chasing (p < 0.05). Only those variables were included in the final model. Employment status and debt were not associated with game preference (p > 0.05).

Those factors with statistically significant association with game preference were included in the final model (multivariate model), and another multinomial regression was performed to determine the odds ratios. The following table summarizes the results:

Game preference		Video poke	Video poker vs. card		Slot vs. card		Other vs. card	
	11	OR	р	OR	р	OR	р	
Gender	Female vs. male	3.338	0	5.237	0	1.758	0.013	
Age	1 year older	1.011	0.401	1.029	0.016	1.043	0.001	
Race	Black vs. White	0.676	0.524	0.79	0.738	1.58	0.398	
	Native vs. White	0.466	0.26	0.994	0.992	0.535	0.388	
	Asian vs. White	0.183	0	0.258	0	0.125	0	
	Hispanic vs. White	1.877	0.388	6.854	0.004	1.824	0.424	
	Other vs. White	0.1	0.006	0.18	0.03	0.242	0.141	
DSM criteria	Preoccupation	0.129	0	0.263	0.013	0.166	0.001	
	Escape	2.103	0.011	1.646	0.079	0.994	0.984	
	Chasing	2.13	0.013	1.616	0.095	1.34	0.34	
Year of admission	2003 vs. 2002	0.807	0.427	1.147	0.602	0.602	0.069	
	2004 vs. 2002	0.864	0.598	1.057	0.837	0.859	0.594	
N. C. S.	2005 vs. 2002	0.624	0.077	1.051	0.847	0.531	0.021	
Marital status	Never married vs. Married	0.941	0.813	0.776	0.312	1.253	0.385	
	Widowed vs. Married	0.395	0.082	0.226	0.003	0.309	0.038	
	Divorced vs. Married	0.965	0.891	1.015	0.952	0.865	0.599	
	Separated vs. Married	0.607	0.199	0.418	0.021	0.962	0.921	
	Living as married vs. Married	1.104	0.821	0.676	0.363	0.796	0.64	
ducation level	1 year higher	0.923	0.037	0.93	0.045	0.955	0.245	
enue of gambling	Bar vs. Casino	729.327	0	2.267	0.048	37.617	0	
	Internet vs. Casino	1.491	0.453	0.49	0.166	13.394	0	
G	Other vs. Casino	1.166	0.53	0.076	0	9.205	0	
age first gambled	1 year older	1.034	0.001	1.026	0.007	1.017	0.119	
age when problem ambling was diagnosed	1 year older	1.015	0.264	1.034	0.007	1.003	0.843	

At significance level of 0.05, the following factors have statistically significant association with game preference: gender; age; Asian (Caucasian as the reference), Hispanic (Caucasian as the reference); DSM criteria preoccupation, escape and chasing; being widowed (married as the reference); being separated (married as the reference); education level; gaming at a bar (casino as the reference); age when the client first gambled; and age when problem gambling was diagnosed.

Most factors have positive association with video poker or slot rather than card games (OR>=1). Compared to card games, female clients tended to have problem with video poker (OR=3.338) or slot (OR=5.237); older clients tended to have problem with slot (OR=1.029); Hispanics (Caucasians as the reference) tended to prefer slot (OR=6.854); clients who endorsed escape (OR=2.103) or chasing (OR=2.13) tended to prefer video poker; clients tended to go to a bar rather than a casino to play video poker (OR=729.327) or slot (OR=2.267); clients who first gambled at an older age tended to have problems with video poker (OR=1.034) or slot (OR=1.026); clients who were diagnosed with problem gambling at an older age tended to have problem with slot (OR=1.034).

However, some factors have negative association with video poker or slot rather than card games (OR<1). In other words, those factors have positive association with card games rather than video poker or slot. Compared to card games, Asians (Caucasians as the reference) seemed to be less interested in video poker (OR=0.183) or slot (OR=0.258); clients who endorsed preoccupation seemed to have less problem with video poker (OR=0.129) or slot (OR=0.263); clients who were widowed (OR=0.226) or separated (OR=0.418) rather than married tended to have less problem with slot; clients who had higher level of education tended to be less interested in video poker (OR=0.923) or slot (OR=0.93).

### **Discussions**

The primary objective of this study was to determine if game preference has any association with the characteristics of treatment-seeking problem gamblers, especially

gender, age, race, and the DSM criteria endorsed. This study found results that were very consistent with past research regarding explanatory variables gender, age, education level, age when first gambled, income, and employment status. Gamblers who are male, younger, were younger when they first gambled, and with higher education level tend to prefer card games; gamblers who are female, older, were older when they first gambled, and with lower education level tend to prefer slot and/or video poker. This finding is consistent with theories that card players tend to be higher risk takers, predominately male and younger players. It is also logical to believe that card games require more strategic skills, and thus are more popular among players with higher education level. No statistically significant association between game preference and income or marital status was found.

This study also demonstrated association between game preference and variables that were not formally studied in the past: race and DSM IV criteria. There were previous observations that different ethnic minority groups have different game preference (e.g., Asians tend to report a preference for card games) and this study confirmed the observations statistically. The race difference may have implications for prevention strategies. For example, there are already signs about problem gambling prevention and helpline in many gambling facilities. Responsible gambling tools such as pop-up messages on VLT screens to reduce the strength of erroneous beliefs have also been studied (Cloutier et al., 2006). When designing signs and pop-up messages, ethnic differences should be taken into account (e.g. include information in Spanish at slot machine venues and Asian languages at card game facilities).

No past studies investigated the association between the DSM IV criteria and game preference. This study found very significant association between card games and the criterion preoccupation and between video poker and the criteria escape and chasing. One application is that based on the game preference, therapists may more effectively treat their clients by focusing on the most dominant symptoms (preoccupation, chasing, or escape).

Another strength of this study was it used clinical data rather than epidemiological or self-report survey data. The clinicians were able to ensure accurate recording of data by asking follow-up questions and clarifying the DSM IV criteria and other explanatory variables. Moreover, the sample size (4871) of this study was much larger than the sample sizes of other game preference studies in the past.

The major limitation of this study was there were insufficient data on psychiatric comorbidity to be included in data analysis. Many studies have suggested the association between pathological gambling and psychiatric comobidity such as alcohol and other substance abuse disorders, mood disorders, anxiety disorders, or impulse control disorders. Furthermore, some studies suggested there might be association between psychiatric comorbidity and game preference. Another limitation of the study was that only cross-sectional data were available. The data were taken at the point when clients were admitted to a gambling treatment program. Therefore, temporal relationships between the dependent and independent variables could not be investigated. Another

limitation was that the subjects were from Oregon and they were predominantly

Caucasians. This population may not represent populations from other geographical

areas. So the results may not be generalized to other areas in the nation. Another

concern about generalizability is that this population represents clients in treatment

programs, who may be quite different from subjects in the community (Volberg, 1994).

As noted above, most subjects in this study have very high DSM scores and endorsed

many DSM criteria, whereas most subjects in past studies that used epidemiological

surveys had low DSM scores. However, the results from this study were very consistent

with those from many previous studies that used epidemiological data.

Therefore, the author recommends further studies should include psychiatric comorbidity as a variable in order to detect potential confounders and make adjustments to obtain accurate odds ratios. Further studies in other populations (e.g., in other geographic locations, in a community setting, etc.) should also be done to verify consistency.

#### References

American Psychiatric Association., & American Psychiatric Association. Task Force on DSM-IV. (1994). Diagnostic and statistical manual of mental disorders: DSM-IV (4th ed.). Washington, DC: American Psychiatric Association.

American Psychiatric Association. Task Force on Nomenclature and Statistics., & American Psychiatric Association. Committee on Nomenclature and Statistics. (1980).

Diagnostic and statistical manual of mental disorders (3d ed.). Washington, D.C.: American Psychiatric Association.

Banks, G., & Fitzgerald, R. (1999). Productivity Commission. Australia's gambling industries: inquiry report. Melbourne: Australia Productivity Commission.

Cloutier, M., Ladouceur, R., & Sévigny, S. (2006). Responsible gambling tools: pop-up messages and pauses on video lottery terminals. J Psychol, 140(5), 434-438.

Cox, B. J., Yu, N., Afifi, T. O., & Ladouceur, R. (2005). A national survey of gambling problems in Canada. Can J Psychiatry, 50(4), 213-217.

Gerstein, D. R., Volberg, R. A., Toce, M. T., Harwood, H., Johnson, R. A., Buie, T., et al.. (1999). Gambling Impact and Behavior Study. Report to the National Gambling Impact Study Commission.: NORC at the University of Chicago [the NORC final report can be permanently accessed at: http://cloud9.norc.uchicago.edu/dlib/ngis.htm].

Grant, J. E., & Kim, S. W. (2001). Demographic and clinical features of 131 adult pathological gamblers. J Clin Psychiatry, 62(12), 957-962.

Grant, J. E., & Kim, S. W. (2002). Gender differences in pathological gamblers seeking medication treatment. Compr Psychiatry, 43(1), 56-62.

Grant, J. E., Kim, S. W., & Brown, E. (2001). Characteristics of geriatric patients seeking medication treatment for pathologic gambling disorder. J Geriatr Psychiatry Neurol, 14(3), 125-129.

Gray, P. (2004). Evolutionary and cross-cultural perspectives on gambling. J Gambl Stud, 20(4), 347-371.

Ibanez, A., Blanco, C., Moreryra, P., & Saiz-Ruiz, J. (2003). Gender differences in pathological gambling. J Clin Psychiatry, 64(3), 295-301.

Kessler, R., Hwang, I., Labrie, R., Petukhova, M., Sampson, N., Winters, K., et al.. (2008). DSM-IV pathological gambling in the National Comorbidity Survey Replication. Psychol Med, 1-10.

Petry, N., Stinson, F., & Grant, B. (2005). Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. J Clin Psychiatry, 66(5), 564-574.

Petry, N. M. (2003). A comparison of treatment-seeking pathological gamblers based on preferred gambling activity. Addiction, 98(5), 645-655.

Potenza, M. N., Steinberg, M. A., McLaughlin, S. D., Wu, R., Rounsaville, B. J., & O'Malley, S. S. (2001). Gender-related differences in the characteristics of problem gamblers using a gambling helpline. Am J Psychiatry, 158(9), 1500-1505.

Potenza, M. N., Steinberg, M. A., Wu, R., Rounsaville, B. J., & O'Malley S, S. (2006). Characteristics of Older Adult Problem Gamblers Calling a Gambling Helpline. J Gambl Stud.

Shaffer, H., Hall, M., & Vander Bilt, J. (1999). Estimating the prevalence of disordered gambling behavior in the United States and Canada: a research synthesis. Am J Public Health, 89(9), 1369-1376.

Stinchfield, R., Govoni, R., & Frisch, G. (2005). DSM-IV diagnostic criteria for pathological gambling: reliability, validity, and classification accuracy. Am J Addict, 14(1), 73-82.

Tavares, H., Martins, S. S., Lobo, D. S., Silveira, C. M., Gentil, V., & Hodgins, D. C. (2003). Factors at play in faster progression for female pathological gamblers: an exploratory analysis. J Clin Psychiatry, 64(4), 433-438.

Toce-Gerstein, M., Gerstein, D., & Volberg, R. (2003). A hierarchy of gambling disorders in the community. Addiction, 98(12), 1661-1672.

Volberg, R. (1994). The prevalence and demographics of pathological gamblers: implications for public health. Am J Public Health, 84(2), 237-241.

## **Appendices**

## REFER TO DATA COLLECTION PROTOCOL BEFORE COMPLETING

# LEAVE NO BLANK FIELDS – REFER TO MANUAL: UK-Unknown, NA-Does Not Apply, NC-Not Collected, CR-Client Refused

1	Clinic/Provider ID: Client Case ID:
2	Client Tracking ID:  Gender: Ethnicity: County: Zip Code:  Access Source: Referral Source:
3	First Contact Date: First Available Date: Enrollment Date: Reason:
4	Education: Marital Status: Living Arrangement: Dependents: Housing:  0-5 6-17 18-64 65+
5	Health Insurance: Employment: Employability: Income Source: Monthly Household Income:
6	Gambling Debt: Daily Expenditure: Days Gambled: Gambling Pattern:  Type: Venue: Jurisdiction: Distance: Event Time (hrs):  Primary Gambling Activity: Type: Venue: Jurisdiction: Distance: Event Time (hrs):  Secondary Gambling Activity: Length Total Quit Assisted Gambled: Age Onset: Current Episode: Episodes: Attempts: Quits:  Yrs: Mos

PAGE 1 OF 2

#### GAMBLING CLIENT ENROLLMENT FORM Page 2 7 Diagnostic Impression: Specifier: Substance Abuse: Primary: Secondary: Pathological Gambling Specifier: DSM-IV Pathological Gambling: 1 Preoccupation 4 Restlessness 7 Lying 10 Bailouts 8 Antisocial Behavior for \$ 2 Tolerance 5 Escape 3 Stop/Control 6 Chasing 9 Lost Relationships Suicide: Other Harm Harm to Harm to to Self: Others: Property: Commute Time to Treatment: 8 Hrs: Min: Last Type Term Date Concurrently Self Help Treatment History: Times: Treatment Type: Completed: Enrolled: 12-Step Gambling: Alcohol/Drug: Mental Health: Relationship Job/School Lost Time Physical Bankruptcy: Legal: 9 Problems: Problems: From Job: Aggression: 10 COMPLETE THIS BOX ONLY WITH RELEASE Client Name (Last, First, M -separate names with a comma): Mailing Address: City: State: Zip: Home Phone: Release Attached:

PRINT	Completed By:	Date:	Phone: