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Late-Onset Pathological Gambling: Clinical Correlates and Gender Differences

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Abstract

Age at illness onset has significant clinical implications for psychiatric disorders. Prior research has not systematically examined age at illness onset and its relationship to the clinical characteristics of pathological gambling (PG). Among a sample of 322 consecutive subjects with current DSM-IV PG, those with late-onset (at or after age 55 years) PG were compared to those with earlier onsets (at or prior to age 25, 26-54 years old) on measures of PG severity, co-occurring disorders, social and legal problems, and family history. Forty-two (13.4%) subjects reported onset of PG at or after age 55 years, 63 (19.6%) reported onset prior to age 25 years, and the majority (n=217; 67.4%) reported onset between the ages of 26 and 54 years. The late-onset group were less likely to declare bankruptcy (p=.029) or have credit card debt attributable to gambling (p=.006). Late-onset PG subjects were significantly more likely to have an anxiety disorder (p<.001) and significantly less likely to have a father (p=.025) or a mother (p=.048) with a gambling problem. Exploratory analyses identified an age-by-gender interaction with respect to treatment-seeking, with more pronounced age-related shortening in the duration between problem onset and treatment seeking observed in men. Age at onset of PG is associated with multiple important clinical features. Long durations of PG prior to treatment-seeking indicate the need for improved prevention efforts among individuals with early PG onset. Late-onset PG is relatively common and has distinct clinical characteristics suggesting that this population might benefit from unique prevention and treatment strategies.

Keywords

pathological gambling; age; onset; impulse control disorders; addiction

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Suck Won Kim: Dr. Kim designed and conducted the study, undertook statistical analyses and wrote the manuscript.
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Introduction

Pathological gambling (PG) is a heterogeneous disorder with suggested phenotypical differences (Ledgerwood & Petry, 2006; Ledgerwood et al., 2007). Complex neurobiological, psychosocial, and genetic influences most likely influence the age of disease onset in individuals with PG, yet these factors have yet to be fully delineated (Lynch et al., 2004). Age of disease onset in PG varies significantly, with many individuals having onset during childhood and adolescence and others in various stages of adulthood (Lynch et al., 2004; Burge et al., 2006; Kessler et al., 2008). Studies of other psychiatric disorders (e.g., those in obsessive compulsive disorder and alcohol dependence) (Rosario-Campos et al., 2001; De Bellis et al., 2005; Hingson et al., 2006) underlie the importance of age of onset in defining emerging phenotypes. However, no study to date has examined the influence of age at illness onset with respect to clinical measures of PG.

Evidence from the obsessive compulsive disorder (OCD) literature suggests that differences in age of onset may be associated with distinct phenotypical differences in disease severity and comorbidity. For example, patients with onset of OCD symptoms during childhood have been found to be predominantly male, have higher scores on the Yale-Brown Obsessive Compulsive Scale, suffer from higher rates of co-morbid tic disorders, and higher familial rates of OCD (Swedo et al., 1989; Geller et al., 1998; Sobin et al., 2000; Rosario-Campos et al., 2001). Research on late-onset OCD has found that individuals with late-onset OCD have significantly shorter durations of illness prior to receiving treatment and less severe obsessionality (Grant et al., 2007).

Because many late-onset pathological gamblers are older adults, the gambling literature on older adult gamblers provides some context for examining age of onset. Older individuals with PG have been found to be predominantly female, married, and have more serious employment problems (Petry, 2002). Older gamblers also appear to gamble less frequently (Grant et al., 2001; Petry, 2002). Studies suggest that elderly subjects with PG are less likely to report anxiety due to gambling, less likely to report daily tobacco use, and less likely to have a lifetime drug problem (Potenza et al., 2006). These previous studies of older individuals, however, have not examined age of PG onset as it relates to clinical presentation. Instead, studies of older adults have largely focused on the age of the individual when seeking treatment (McNeilly & Burke, 2000; Grant et al., 2001; Petry, 2002; Burge et al., 2004; Erickson et al., 2005; Lucke & Wallace, 2006; Pietrzak & Petry, 2006). No previous study has examined the age when individuals meet full criteria for PG and how the age of onset of PG influences clinical presentation.

Significant sex differences exist in the clinical presentation of PG as well, with men more likely to be young, single, living alone without children compared to their female counterparts (Crisp et al., 2004). In addition, men with PG tend to have problems with strategic forms of gambling such as sports and card gambling (Potenza et al., 2006) and incur larger gambling debts than women. One of the most replicated findings with respect to differences between male and female pathological gamblers has been that the course of illness seems to differ between men and women. The interval between the age of starting to gamble and of developing a problem with gambling seems to be longer for men (Tavares et al., 2001; Grant & Kim, 2001; Ladd & Petry, 2002; Ibanez et al., 2003; Potenza et al., 2006). These findings suggest a “telescoping” progression of the disorder in women as compared with men, although gender differences in patterns of treatment-seeking may also contribute to these findings. Male pathological gamblers appear to be more likely to suffer from a current alcohol use disorder, but less likely to suffer from a comorbid mood disorder (Ibanez et al., 2001), and are less likely than women with gambling problems to report anxiety due to their gambling (Potenza et al., 2006). Although

sex differences in PG have been examined, these differences have not been studied in relation to age of PG onset.

The National Council on Problem Gambling recently identified older adult problem gambling as needing additional research, prevention and treatment efforts (NCPG, 2003). Toward that end, we examined the clinical characteristics of a cohort of subjects with an age of PG onset in later life (onset after age 55) in the hopes of further defining the clinical characteristics of this complex disorder. We had three hypotheses based on the PG literature (Petry, 2002; Potenza et al., 2006): first, late-onset PG subjects would have a less severe form of the disorder; second, late-onset PG subjects would be less likely to have co-occurring anxiety or substance use disorders; and third, individuals with late-onset PG, specifically older men, would report longer duration of illness prior to seeking treatment after the development of PG.

Objectives of the Study

The objective of the current study was to examine clinical features of PG based on age of disorder onset and to examine whether age of onset was associated with differences in clinical presentation. In addition, the study sought to examine the association of gender with clinical features based on age of onset of PG.

Materials and Methods

Subjects

Participants included 322 adult outpatients aged ≥18 years meeting current (past-year) DSM-IV criteria for PG. Participants were recruited by advertisements and referrals for a cognitive-behavioral study, pharmacological studies, or for outpatient treatment at either a private or a public hospital. Subjects were recruited over a 5-year period (2002-2007). All subjects who contacted us for treatment were included in this database if they met the general inclusion criteria: 1) primary diagnosis of current DSM-IV PG; 2) age 18 or older; and 3) able to be interviewed in person. The only exclusion criterion was the presence of an organic mental disorder or inability to understand and consent to the study. The investigation was carried out in accordance with the Declaration of Helsinki. The Institutional Review Boards of the University of Minnesota and Butler Hospital approved the studies and the consent statements. All study participants provided voluntary written informed consent.

Assessments

At the intake interview, raters assessed each subject using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First et al., 1995) and the Structured Clinical Interview for Pathological Gambling (SCI-PG), a valid and reliable diagnostic instrument (Grant et al., 2004). The SCI-PG was used to examine the 12-month time period during which the subject first reported symptoms consistent with PG.

A semi-structured rater-administered questionnaire was used to collect detailed information on demographic and clinical features of PG (e.g., types of gambling, amount of money lost, triggers to gambling, legal and financial problems related to gambling) as well as treatment history.

PG symptom severity was assessed with three measures:

Yale Brown Obsessive Compulsive Scale Modified for Pathological Gambling (PG-YBOCS). The PG-YBOCS is a reliable and valid, 10-item, clinician-administered scale, rates gambling symptoms within the last seven days (Pallanti et al., 2005). The first five items of the PG-YBOCS comprise the gambling urge/thought subscale (time occupied

with urges/thoughts; interference and distress due to urges/thoughts; resistance against and control over urges/thoughts), and items 6-10 comprise the gambling behavior subscale (time spent gambling and amount of gambling; interference and distress due to gambling; ability to resist and control gambling). Items are rated from 0 to 4, with higher scores reflecting greater severity, and total scores ranging from 0 to 40.

South Oaks Gambling Screen (SOGS). The SOGS is a valid and reliable, 20-item, self-report screening instrument. It assesses gambling symptoms over a person's lifetime (Lesieur & Blume, 1987). A score of 5 or more on the SOGS indicates probable pathological gambling.

Clinical Global Impression-Severity scale (CGI). The CGI Severity scale is a reliable and valid, 7-item scale assessing severity of PG symptoms at the baseline visit. The scale ranges from 1 = “not ill at all” to 7 = “among the most severely ill” (Guy, 1976).

Family history assessment was performed using a semi-structured interview that asked PG probands about each parent's history of alcohol use/misuse and gambling behaviors.

Statistical analysis

In the present study we defined “age of onset” as the age at which PG symptoms first met DSM-IV criteria. There is no agreement in the literature as to what ages define either “late-onset” or “early-onset.” We selected age 55 years and older for “late-onset PG” because it represents the most extreme 10% of our sample and has been previously used as a cut-off in studies examining older aged gamblers at the time they present for treatment (6, 8). We selected age 25 years or younger as a threshold for early-onset PG as this age appears to correlate with neurobiological data regarding when the adolescent brain has generally completed development (Giedd, 2004; Lenroot & Giedd, 2006).

The percentage of subjects who reported onset of PG symptoms at or after the age of 55 years (late-onset) was determined and compared to those with early onset (age 25 years or younger) and those with onset during middle age (ages 26-54). Subjects with late-onset PG were compared to these two groups on demographic and clinical variables. Differences between the three groups were tested using Pearson's chi-square for dichotomous variables or analysis of variance with Duncan post-hoc tests or Kruskal-Wallis chi-square statistic for continuous variables. All comparison tests were two-tailed and an alpha level of .05 was used to determine statistical significance.

Results

322 adults (186 [57.8%] females; mean age at intake interview = 48.3 ± 11.1 [range 19–72]) with DSM-IV PG participated in the studies. The majority of subjects were white, non-Hispanic (*n*=306; 95%). Ninety-four (29.2%) subjects were single, 146 (45.3%) were married, and 82 (25.5%) were divorced, separated, or widowed. 213 (66.1%) had at least some college education.

Forty-two (13.0%) of the 322 subjects with PG reported onset of PG symptoms on or after the age of 55 years (“late onset”) with mean age of PG onset of 58.5 (± 3.1) years. Although late-onset PG subjects were significantly more likely to be divorced or widowed, this group did not significantly differ from those with earlier onset PG on most demographic features (Table 1).

In terms of PG severity, the late-onset group had significantly lower SOGS scores (10.0 ± 2.76 compared to 13.6 ± 5.04 in the 25 or younger group and 13.8 ± 3.34 in the 26-54 year-old group; p=.004) but did not differ in terms of hours spent gambling per week, percentage of income lost to gambling in the past year, CGI-severity scores, or PG-YBOCS scores.

Late-onset gamblers were significantly less likely to play strategic games (21.4% compared to 66.7% in the 25 or younger group and 47.0% in the 36-54 year old group; chi-square=20.75; p<.001), were less likely to declare bankruptcy due to gambling (7.1% compared to 28.6% for 25 or younger group and 22.6% for the 26-54 year-old group; chi-square=7.08; p=.029), have credit card debt attributable to gambling (33.3% compared to 54.0% in the 25 or younger group and 59.9% in the 26-54 year-old group; chi-square=10.11; p=.006), or borrow money (14.3% compared to 42.9% in the 25 or younger group and 36.4% in the 26-54 years age group; chi-square=9.84; p=.007) or pawn possessions (0% compared to 20.6% in the 25 or younger group and 11.1% in the 26-54 years group; chi-square=10.67; p=.005) to pay for gambling (Table 2).

In terms of self-help or treatment history, late-onset PG subjects were significantly less likely to have ever attended Gamblers Anonymous (16.7% compared to 47.6% in the 25 or younger group and 40.6% in the 26-54 years group; chi-square=11.01; p=.004).

Although lifetime rates of most Axis I co-occurring disorders did not significantly differ between groups, late-onset PG subjects were significantly more likely to have an anxiety disorder (38.1% compared to 11.1% in the 25 or younger group and 14.7% in the 26-54 year group; chi-square=15.5; p<.001). There were no differences in lifetime rates of substance use disorders among groups based on age of onset.

Late-onset PG subjects were significantly less likely to have a father (7.1% compared to 29.0% in the 25 or younger group and 23.7% in the 26-54 year old group; chi-square=7.36; p=.025) or a mother (9.5% compared to 29.0% in the 25 or younger group and 19.5% in the 26-54 year old group; chi-square=6.06; p=.048) with a history of a gambling problem. There were no other differences in parental history of alcohol problems among groups.

Late-onset subjects sought treatment significantly faster after the onset of PG compared to the younger aged groups (3.9 ± 3.7 years compared to 17.6 ± 11.6 years for the 25 or younger group and 8.4 ± 5.7 years for the 26-54 group; F=56.4; p<.001). Exploratory analyses identified an age-by-gender interaction with respect to treatment-seeking, with a more pronounced age-related shortening in the duration between problem onset and treatment seeking observed in men as compared with women (Table 3). For each age group, women had greater severity of PG symptoms as measured by the CGI (gender effect; F=7.532; df=2,316; p=.006).

Discussion

In this study, we determined the rates and clinical correlates of late-onset illness in 322 individuals with current DSM-IV PG. To our knowledge, this is the largest and broadest sample of individuals with primary PG that has been studied. Approximately one-eighth (13%) of PG subjects in this study had illness onset after the age of 55 years.

In this study, PG subjects with late-onset illness were similar to PG subjects with an earlier age of onset with respect to most clinical variables assessing gambling severity. Although financial repercussions of gambling were not as severe in late-onset PG subjects, no differences were found in terms of hours spent gambling per week, amount of money lost to gambling in the past year, PG-YBOCS total scores or the subscale scores of urges and behavior, or the CGI severity scores. This research builds upon prior studies that have suggested that elderly individuals may be at considerable risk for developing gambling problems (Zaranek & Lichtenberg, 2008) and suggests that the problems of those with late-onset PG are generally as severe as younger-onset PG. As such, prevention efforts and treatment targeting older adults should be no less intense than those for younger individuals.

Although gambling severity appears similar across age of onset groups, the late-onset group had significantly fewer problems secondary to gambling, such as bankruptcy, credit card debt,

borrowing money, writing bad checks, or pawning items to pay off gambling debt. One reason might be that the late-onset PG group sought treatment much sooner and therefore prevented the financial problems of the earlier age groups. Another explanation might be that as adults who did not struggle with PG until later life, they had more savings to assist them financially when gambling became a problem. Further investigation is needed to clarify these and other potential reasons.

The late-onset gamblers were more likely to report symptoms consistent with an anxiety disorder compared to other age groups. The rate of lifetime anxiety (38%) disorders among late-onset PG subjects is consistent with previous research examining PG subjects of all ages (28% to 40%) (Linden et al., 1986; Black & Moyer, 1998). Anxious individuals may engage in gambling to distract themselves from life stressors and unpleasant cognitions. Persons who are anxious may also view gambling winnings as a means of significant symptom relief and the risk of debt as a relatively minor setback. Ironically, problems resulting directly from PG (e.g., financial distress, relationship problems, criminal activity, etc.) may, in turn, lead to even more gambling behavior as a misguided attempt of symptom management.

Clinical Implications

The finding that late-onset pathological gamblers had different clinical and comorbidity issues has significant clinical implications. First, the findings suggest that it might be more difficult to identify late-onset PG as they are less likely to have financial or legal difficulties due to gambling. Because older gamblers may have greater overall health problems (Pietrzak et al., 2007), primary clinicians should screen all older patients for potential gambling problems. An encouraging finding from this study was that men with late-onset PG were quicker to seek treatment for PG. This is in sharp contrast to previous research suggesting that older adults generally seek treatment less frequently for mental health disorders (Shapiro et al., 1984). Alternatively, the results show that individuals with younger-onset PG may take 14-20 years to seek treatment. Thus, there is a significant need to enhance screening and prevention efforts related to all ages of PG onset. Second, late-onset pathological gamblers were significantly more likely to have a co-occurring anxiety disorder. Given that anxiety may play a pivotal role in maintaining gambling behavior in some individuals or possibly contribute to relapse, clinicians should screen for and treat anxiety disorders in this age group. Third, because late-onset pathological gamblers appear less likely to attend Gamblers Anonymous, clinicians should be aware of an array of treatment options and referral sources that may be more comfortable for this age group.

Limitations

This study has several limitations. First, although multiple significant life changes occur as we age (e.g., retirement, increase focus on leisure activities, etc.), individuals may encounter these changes at different times. This complicates the use of 55 years as a cut-point for defining “late onset.” Our choice of 55 years or older to define late onset is, however, consistent with prior research (Petry, 2002; Potenza et al., 2006), but subgroups within this age cohort may exist (e.g., 65 and older may differ from 55-64 year olds) and future research should explore the possible heterogeneity of this late-onset group. Second, onset of PG was retrospectively assigned in this study based on subjects' recollections. Because some of our subjects may not have been good historians, the reported age of onset found in this study may not accurately reflect true onset of the disorder. Since a treatment-seeking sample was used, it is unclear how generalizable our results are to non-treatment seeking individuals with PG. In addition, lack of diversity in our sample may suggest that these findings will not generalize to members of different ethnic and cultural groups. Nonetheless, our sample may generalize better than previous studies of clinical PG in that the study inclusion/exclusion criteria were broad and the

sample is large. The study also used both self-report and interviewer-administered measures with strong psychometric properties and established norms.

In conclusion, these results suggest that PG onset after age 55 is fairly common in subjects with PG and may have important clinical implications. Additional research on this topic is needed, including larger prevalence studies, replication studies of clinical correlates of age of onset in PG. Future research should also be directed at potential factors that may contribute to the etiology and pathophysiology of late onset PG. Also greatly needed are treatment studies to identify whether treatments should be specially tailored for individuals with late-onset PG.

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Table 1

Demographics of 322 Subjects Grouped by Age of Pathological Gambling Onset

	Age of Pathological Gambling Onset				
	25 and younger	**26-54**	**55 and older**	**Statistic**	**p-value**
	N = 63	**N = 217**	**N = 42**		
Age, in years, mean (± SD)	**37.8** (11.3)	**48.7** (8.1)	**62.4** (6.8)	101.163f	**<.001 a,b,c**
Gender, n (%)					
Female	24 (**38.1**)	137 (**63.1**)	25 (**59.5**)	12.608c	**.002**
Marital Status, n (%)					
Single	34 (**54.8**)	59 (**23.1**)	13 (**31.0**)	26.904c	**<.001**
Married	22 (**35.5**)	111 (**51.4**)	15 (**35.7**)		
Separated/Divorced/Widowed	6 (**9.7**)	55 (**25.5**)	14 (**33.3**)		
Education, n (%)					
Less than high school	3 (4.8)	9 (4.4)	2 (6.3)	6.627c	.577
High school diploma	17 (27.0)	66 (32.2)	13 (40.6)		
Some college	26 (41.3)	71 (34.6)	7 (21.9)		
College graduate	16 (25.4)	48 (23.4)	7 (21.9)		
Post graduate schooling	1 (1.6)	11 (5.4)	3 (9.4)		
Ethnicity, n (%)					
Caucasian	60 (95.2)	202 (94.4)	42 (100)	f	.371
Other	3 (4.8)	15 (5.6)	0 (0)		

f F-statistic from analysis of variance; df=2,319

Bonferroni ad-hoc pairwise comparisons
a (26 and younger) vs (26-54) p<.05
b (26 and younger) vs (55 and older) p<.05
c (26-54) vs (55 and older) p<.05

kw Kruskal-Wallis test (chi-square statistic); df=2

Table 2

Clinical Characteristics of Pathological Gamblers (n=322) Based on Age of Pathological Gambling Onset

	Age of Pathological Gambling Onset				
	25 and younger	**26-54**	**55 and older**	**Statistic**	**p-value**
	N = 63	**N = 217**	**N = 42**		
Duration of pathological gambling from onset to time of study, years, mean (± SD)	**17.6** (11.6)	**8.4** (5.7)	**3.9** (3.7)	56.400F	**<.001 a,b,c**
Type of gambling, n (%)					
Strategic	42 (**66.7**)	102 (**47.0**)	9 (**21.4**)	20.749c	**<.001**
Non-strategic	40 (**63.5**)	178 (**82.0**)	41 (**97.6**)	19.722c	**<.001**
Percent of income lost to gambling (past year), mean (± SD)	43.3 (75.1)	43.2 (57.7)	39.3 (35.0)	0.692kw	.708
Legal problems due to gambling, n (%)					
Any legal	27 (42.9)	66 (30.4)	5 (11.9)	11.4c	**.003**
Bankruptcy	18 (28.6)	49 (22.6)	3 (7.1)	7.078c	**.029**
Bad checks	15 (23.8)	35 (16.1)	1 (2.4)	8.723c	**.013**
Prostitution	0 (0)	1 (0.5)	0 (0)	f	1.0
Embezzled	1 (1.6)	5 (2.3)	1 (2.4)	f	1.0
Theft	3 (4.8)	7 (3.2)	0 (0)	f	.477
Tax issues	1 (1.6)	7 (3.2)	0 (0)	f	.644
Other problems, n (%)					
Credit cards	34 (54.0)	130 (59.9)	14 (33.3)	10.107c	**.006**
Loss of savings	12 (19.0)	57 (26.3)	6 (14.3)	3.617c	.164
Loss of inheritance	1 (1.6)	2 (0.9)	0 (0)	f	.695
Loss of house	5 (7.9)	20 (9.2)	1 (2.4)	2.217c	.330
Loss of car	3 (4.8)	8 (3.7)	0 (0)	f	.455
Loss of retirement	2 (3.2)	14 (6.5)	5 (11.9)	f	.238
Borrowing from family/friends	27 (42.9)	79 (36.4)	6 (14.3)	9.841c	**.007**

Age of Pathological Gambling Onset

	25 and younger	26-54	55 and older	Statistic	p-value
	N = 63	**N = 217**	**N = 42**		
Work related problems	6 (9.5)	37 (17.1)	4 (9.5)	3.216c	.200
Pawn	13 (20.6)	24 (11.1)	0 (0)	10.672c	**.005**
Steals from family/friends	1 (1.6)	11 (5.1)	0 (0)	f	.223
Marital problems	13 (20.6)	40 (18.4)	2 (4.8)	5.342c	.069
Loans	11 (17.5)	46 (21.2)	3 (7.1)	4.656c	.097
Previous Gambling Self-Help/Treatment, n (%)					
Gamblers Anonymous	30 (**47.6**)	88 (**40.6**)	7 (**16.7**)	11.007c	**.004**
Any professional treatment	12 (19.1)	47 (21.6)	6 (14.3)	1.072c	.585
Lifetime Diagnostic History, n (%)					
Any Mood Disorder	24 (38.1)	81 (37.3)	12 (28.6)	1.27c	.530
Any Anxiety Disorder	7 (11.1)	32 (14.7)	16 (38.1)	15.5c	**<.001**
Any Substance Use Disorder	19 (30.2)	53 (24.4)	9 (21.4)	1.209c	.546
Family history of alcohol problems, n (%)					
Father	29 (46.8)	90 (41.9)	13 (31.0)	2.647c	.266
Mother	6 (9.7)	32 (14.9)	3 (7.1)	2.572c	.276
Family history of gambling problems, n (%)					
Father	18 (**29.0**)	51 (**23.7**)	3 (**7.1**)	7.364c	**.025**
Mother	18 (**29.0**)	42 (**19.5**)	4 (**9.5**)	6.056c	**.048**

F-statistic from analysis of variance

Bonferroni ad-hoc pairwise comparisons
a (26 and younger) vs (26-54) p<.05
b (26 and younger) vs (55 and older) p<.05
c (26-54) vs (55 and older) p<.05

c Chi-Square, df=2

f Fisher's Exact Test

kw Kruskal-Wallis, df=2

Table 3

Comparison of Women (n=186) and Men (n=136) on Measures of Pathological Gambling Severity Based on Age of Pathological Gambling Onset

		Age of Pathological Gambling Onset					
		25 and younger	**26-54**	**55 and older**	**Age Effect[a]**	**Gender Effect[g]**	**Age by Gender Interaction[x]**
Years after pathological gambling onset when first sought treatment, mean (± SD) *1	Female	14.1 (9.99)	8.57 (5.70)	4.20 (3.48)	**48.806**	2.164	**4.463**
	Male	19.7 (12.1)	8.16 (5.70)	3.50 (4.08)	**p<.001**	p=.142	**p=.012**
Hours spent gambling per week, mean (± SD)	Female	15.8 (10.7)	15.1 (12.0)	14.3 (13.0)	0.372	0.055	0.130
	Male	16.8 (12.8)	13.9 (8.90)	12.6 (3.21)	p=.690	p=.816	p=.878
Yearly income lost to gambling (in thousands), mean (± SD) *2	Female	25.2 (11.5)	42.2 (33.0)	29.1 (14.8)	1.799	**5.965**	0.428
	Male	50.4 (35.8)	55.4 (40.4)	46.6 (28.4)	p=.168	**p=.016**	p=.653
Clinical Global Impression – Severity Scale, mean (± SD) *3	Female	5.04 (.751)	4.94 (.861)	4.79 (.779)	1.888	**7.532**	0.150
	Male	4.80 (.833)	4.59 (.876)	4.38 (.619)	p=.153	**p=.006**	p=.861
South Oaks Gambling Screen, mean (± SD)	Female	14.1 (4.58)	13.7 (3.45)	9.40 (2.19)	**5.838**	0.056	0.343
	Male	13.3 (5.34)	14.1 (3.14)	10.43(3.21)	**p=.004**	p=.813	p=.710
PG-YBOCS urge, mean (± SD)	Female	8.50 (3.72)	7.77 (3.42)	8.45 (2.67)	2.765	0.003	0.864
	Male	7.82 (3.48)	7.42 (2.68)	9.56 (3.52)	p=.065	p=.958	p=.423
PG-YBOCS behavior, mean (± SD)	Female	8.75 (2.06)	9.69 (4.52)	11.88(3.81)	0.701	0.296	0.894
	Male	9.56 (3.13)	9.58 (4.28)	9.42 (5.16)	p=.499	p=.588	p=.412
PG-YBOCS overall, mean (± SD)	Female	19.3 (0.96)	19.7 (5.23)	20.4 (4.34)	0.405	0.092	0.053
	Male	19.2 (4.52)	18.9 (4.72)	20.2 (7.06)	p=.668	p=.763	p=.949

F-statistic from analysis of variance a=age became a problem (df=2,316), g=gender df=1,316), x=age by gender interaction (df=2,316)

*1 Males & females differ for 25 and younger (p=.002) but there is no difference between males and females for the other 2 age categories (p=.677 and p=.755) using Bonferroni adjusted ad-hoc paired comparisons.

*2 Females mean=$38,933; s.d.=$30,491 Males mean=$45,065; s.d.=$34,506

*3 Females mean=4.94; s.d.=0.834 Males mean=4.62; s.d.=0.839

PG-YBOCS=Yale Brown Obsessive Compulsive Scale Modified for Pathological Gambling