



Published in final edited form as:

Psychol Addict Behav. 2011 June ; 25(2): 372–379. doi:10.1037/a0023240.

Predictors of Engaging in Problem Gambling Treatment: Data from the West Virginia Problem Gamblers Help Network

Jeremiah Weinstock, Ph.D.^{a,b,*}, Steve Burton, M.S.W.^c, Carla J. Rash, Ph.D.^a, Sheila Moran, M.S.W.^c, Warren Biller, B.S.^c, Norman Krudelbach, Ph.D.^c, Natalie Phoenix, B.A.^a, and Benjamin J. Morasco, Ph.D.^d

^aUniversity of Connecticut Health Center, Farmington, CT

^bSaint Louis University, St. Louis, MO

^cProblem Gamblers Help Network of West Virginia, Charleston, WV

^dPortland Veterans Affairs Medical Center, and Oregon Health & Science University, Portland, OR

Abstract

Gambling help-lines are an essential access point, or frontline resource, for treatment seeking. This study investigated treatment engagement after calling a gambling help-line. From 2000 - 2007 over 2,900 unique callers were offered an in-person assessment appointment. Logistic regression analyses assessed predictors of (1) accepting the referral to the in-person assessment appointment and (2) attending the in-person assessment appointment. Over 76% of callers accepted the referral and 55% of all callers attended the in-person assessment appointment. This treatment engagement rate is higher than typically found for other help-lines. Demographic factors and clinical factors such as gender, severity of gambling problems, amount of gambling debt, and coercion by legal and social networks predicted engagement in treatment. Programmatic factors such as offering an appointment within 72-hours also aided treatment engagement. Results suggest gambling help-lines can be a convenient and confidential way for many individuals with gambling problems to access gambling-specific treatment. Alternative services such as telephone counseling may be beneficial for those who do not engage in treatment.

Keywords

gambling; treatment; initiation

Pathological gambling is an impulse-control disorder characterized as maladaptive gambling behavior that persists despite its many adverse consequences (American Psychiatric Association, 2000). Individuals endorse with pathological gambling endorse at least 5 of 10 symptoms related to preoccupation, tolerance, withdrawal, and negative financial and social consequences of gambling. The prevalence of the disorder is approximately 1% of the general population (Petry, Stinson, & Grant, 2005). Individuals with sub-clinical

To whom all correspondence should be addressed. Dr. Weinstock is now affiliated with Department of Psychology, Saint Louis University, 3511 Laclede Avenue, St. Louis, MO, 63103-2010; Phone 314-977-2137; Fax 314-977-1014; jweinsto@slu.edu.

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pathological gambling who endorse three or four symptoms are often called problem gamblers and account for an additional 2-3% of the general population (Shaffer, Hall, & Vander Bilt, 1999). Unfortunately, the vast majority of individuals (80% to 95%) with gambling problems never seek professional help (Slutske, 2006; Suurvali, Hodgins, Toneatto, & Cunningham, 2008). While a proportion of those untreated will recover naturally without professional intervention (Slutske, 2006; Cunningham, Hodgins, & Toneatto, 2009), many continue gambling problematically despite the availability of empirically supported interventions. Engaging problem and pathological gamblers in treatment can reduce the adverse consequences of the disorder.

The treatment options for gambling problems are expanding, and range from brief interventions and internet chat-lines to inpatient and residential treatment (Pallesen et al., 2005; Westphal, 2008). Gambling help-lines are an essential access point, or frontline resource, for those seeking help, as they are advertised widely and accessible. Moreover, this medium overcomes some perceived barriers via convenience and anonymity. While several studies have investigated the demographic characteristics and the relationship between gambling severity and psychiatric comorbidity of help-line callers (Griffiths, Scarfe, & Bellringer, 1999; Ledgerwood, Steinberg, Wu, & Potenza, 2005; Potenza et al., 2004; Potenza, Steinberg, & Wu, 2005), little is known about treatment engagement via gambling help-lines. Two studies have found that the proportion of callers agreeing to a referral to in-person treatment from a gambling help-line vary from less than 50% to as high as 75% (Dickerson, 2004; Shandley & Moore, 2008), and approximately two-thirds of those offered a referral make an appointment. The likelihood that individuals will follow through and attend the appointment is not known.

The decision to seek treatment for gambling problems is multi-faceted and often hindered by perceived barriers. Many problem and pathological gamblers cite financial, social and legal pressures as the reasons why they seek treatment (Pulford et al., 2009). Attitudinal factors (i.e., stigma, shame, desire to handle a problem without professional intervention) and environmental barriers (i.e., availability, costs) are common barriers reported by problem and pathological gamblers (Clarke, Abbott, DeSouza, & Bellringer, 2007; Hodgins & el-Guebaly, 2000; Suurvali, Cordingley, Hodgins, & Cunningham, 2009). Demographic characteristics, including male gender, younger age, and less formal education are also identified as barriers to gambling treatment (Clarke et al., 2007). Evans and Delfabbro (2005) describe the process of help-seeking as “crisis driven,” indicating that individuals seek help when the situation is perceived as dire and treatment is seen as a last resort. Although these factors are associated with treatment attendance and engagement in prior studies, they have not been systematically examined in the context of referral from a gambling help-line. Understanding factors related to treatment engagement from a gambling-helpline is paramount, as help-lines become more prevalent and a primary access point for treatment; a call to a gambling help-line is a unique opportunity to provide services to an individual in need that should not be squandered.

The aim of the present study is to investigate treatment engagement of problem and pathological gamblers following an initial gambling help-line call. Treatment engagement in the context of this study is defined as a two-stage process of (1) agreeing to the referral, and (2) accessing the referred services. Using a sample of gambling help-line callers, this study examines demographic, clinical, and contextual characteristics associated with acceptance and attendance of gambling treatment referrals. Based on research concerning perceived barriers of gambling treatment and studies of help-line initiated referrals for other health-related problems (Curry, Grothaus, McAfee, & Pabiniak, 1998; De Coster, Quan, Elford, Li, Mazzei, & Zimmer, 2010; Gould, Kalafat, Munfakh, & Kleinman, 2007; McAfee, 2007), we expect older individuals, females, and those with higher education to accept and follow-

through on referrals more often than younger individuals, males, and those with less education. Additionally, we hypothesize that greater problem severity and a history of gambling treatment will predict treatment engagement (Pulford et al., 2009).

Methods

Participants

Data used in this study were from a total of 3,453 unique callers to the Problem Gamblers Help Network of West Virginia (PGHN) from August 2000 until October 2007¹. Only data from individuals offered an in-person assessment ($N = 2,912$; 84.3%) were analyzed. Callers offered an in-person assessment were predominately those with a gambling problem (98.5%; $n = 2,865$) or a significant other, spouse, or family member of a person with a gambling problem (1.3%; $n = 39$). In-person assessments were not offered if (1) the caller was not a West Virginia resident, (2) it was deemed an inappropriate call (e.g., prank) by PGHN staff, or (3) the caller ended the contact prematurely without providing any contact information.

Procedure

The PGHN operates a 24-hour toll-free telephone help-line staffed by trained, licensed clinicians. All help-line staff is credentialed at either the national or international gambling counselor level. The number is advertised throughout West Virginia at various gambling venues, via billboards, lottery website, public service announcements, and by stickers placed on slot machines. Callers completed a standardized telephone interview with a clinician. If appropriate, a two-hour in-person diagnostic assessment with a licensed counselor trained specifically to work with gambling problems was offered². For those accepting the referral, a “warm transfer” procedure was used. A local clinician was selected by the caller from a list of PGHN providers, and while the caller was holding help-line staff called the clinician to schedule an appointment. Attempts were made to schedule the in-person assessment appointment within 72-hours of the call to the help-line. In most cases, the caller had an appointment time and directions before the call ended. Help-line staff made a pre-appointment reminder call 24 hours before the scheduled appointment. All callers were offered information about local Gamblers Anonymous meetings, the Consumers Credit Counsel, and an information packet about problem gambling.

Individuals accepting the referral to the in-person assessment provided a release of information such that the help-line could track their attendance to the in-person assessment appointment and could gather follow-up information resulting from the in-person assessment. The help-line reimbursed the provider for the in-person assessment, which was provided at no cost to the caller. Use of de-identified data for this study was reviewed and approved by the lead author's university IRB.

Measures

A standardized telephone interview assessed demographic information, pathological gambling diagnostic criteria, current gambling behavior and debt, history of prior problem gambling help-seeking, current suicidal ideation, and psychiatric history. Information collected was not collected in the same order for all callers, but responses were primarily coded in a fixed format response (e.g., yes/no, ordinal categories for levels of debt) and used to provide callers with appropriate referrals. The PGHN performs quality assurance assessments on its counselors to ensure help-line staff is following guidelines and collecting accurate information.

¹Gambling is widely available in West Virginia with lottery, slot machines (casino and non-casino based), horse and racing

²The PGHN maintains an extensive network of licensed counselors in order to offer referrals in a caller's local area.

Data Analysis Plan

Univariate analyses examined differences between the groups on demographic and clinical characteristics using chi-square tests for categorical data and ANOVA for continuous data. Two separate binary logistic regression analyses assessed predictors of referral (1) acceptance (coded 0,1; 1 = accepted referral), and (2) attendance (coded 0,1; 1 = attended session). As the analyses were exploratory, all independent variables (IVs) were included in the logistic regressions. We used a hierarchical approach for the binary logistic regression. Block 1 contained demographic characteristics and Block 2 contained gambling and clinical characteristics, as outlined in Tables 1 and 2.

The data had a high percentage of missing data, with only 22% (650 of 2,912) of cases having complete data from all 15 IVs. Ninety percent of the sample (2,621 of 2,912) had missing data on 5 out of the 15 IVs under consideration. Percent of missing data on each IVs ranged from 0-35% (with 9 variables missing < 10%): gender (0.3%), age (8%), marital status (5%), employment (7%), annual income (35%), education (32%), gambling frequency (7%), preferred gambling activity (3%), gambling debt (22%), precipitating problem (5%), prior problem gambling help-seeking (14%), recent suicidal ideation (0%), history of comorbid psychiatric disorders (22%), DSM-IV symptoms (5%), and assessment within 72-hours following call (27%). Dependent variables were 100% observed. The main reason for missing data was the clinician failing to ask the item, which is assumed to be missing at random (MAR; Donders, van der Heijden, Stijnen, & Moons, 2006). We examined the data for differences among callers in terms of missing data for each variable; with the exception of a significant association between missingness status and number of DSM-IV pathological gambling symptoms endorsed, no other significant differences were present between the missing data groups on demographic and clinical variables. Rates of missingness were higher for those refusing referral versus those accepting the referral, and for those who did not attend the in-person assessment versus those who did. That missing data status can be predicted by other measured variables indicates that MAR is a reasonable assumption for this dataset.

A multiple imputation procedure was implemented in which missing values for any variable are estimated using existing values from other variables. This method assumes data are MAR, an assumption that is not directly testable (Allison, 2003). Multiple imputation using five more imputations produces less biased estimates than single imputation strategies or complete case analysis under the MAR mechanism (Schafer & Graham, 2002). Additionally, we note that multiple imputation may produce more accurate estimates than complete case analyses even when data do not satisfy MAR assumptions (Graham, 2009). Finally, we considered imputing more than five datasets similar to that recommended by Graham and colleagues (2007). However, given our large sample size and amount of missing data, estimates suggest little efficiency is gained with additional imputations as power would increase only by 0.003 by doubling the number of imputed datasets.

AMELIA II version 1.2-12 (Honaker, King, & Blackwell, 2009) with R version 2.9.1 (R Development Core Team, 2009) was used for the imputation, with all demographic, clinical, and dependent variables included. In order to ensure a high rate of relative efficiency based upon the amount of missing data (Newgard & Haukoos, 2007), five separate imputed datasets were created using a 9% ridge prior. Ridge priors of 10% are considered reasonable (Honaker et al., 2009). Nominal variables and most ordinal variables were restricted to integer values; however, ordinal variables that represented a continuous variable (e.g., income, gambling debt) were imputed as continuous variables (Honaker et al., 2009). Diagnostics on the imputed datasets suggested imputations were plausible and stable. Logistic regressions were run separately in the imputed datasets and values from each imputed dataset were combined according to Rubin (1987) as outlined by Newgard and

Haukoos (2007), resulting in a single set of regression coefficients, standard errors, and confidence intervals. Model fit statistics, combining across the five imputed datasets, were calculated according to Allison's (2001) formulas.

Two separate logistic regression analyses were conducted to evaluate predictors of (1) accepting the referral and (2) attending the in-person assessment. For these analyses, the following demographic variables were entered in Block 1: gender, age, marital status, annual income employment status, and education. Block 2 contained the clinical variables gambling frequency, preferred gambling activity, gambling-related debt, precipitating problem, prior gambling treatment, suicidal ideation, history of psychiatric comorbidity, and number of DSM-IV pathological gambling symptoms. Pathological gambling diagnostic status was not included in the model as number of DSM-IV pathological gambling symptoms is more informative. All data analysis, aside from the multiple imputation procedure, was completed using SPSS (v.15.0).

Results

Demographic and Clinical Characteristics

Approximately 81.5% ($n = 2,256$) of the sample endorsed five or more DSM-IV symptoms of pathological gambling, indicating a likely diagnosis of pathological gambling, 15.1% ($n = 417$) of the sample endorsed three or four symptoms indicating problem gambling, and 3.4% ($n = 95$) endorsed zero to two symptoms. About three-quarters of callers to the help-line ($n = 2,215$) accepted the referral to the in-person assessment and 24% declined ($n = 697$). For those accepting the referral, 57.1% ($n = 1,220$) were scheduled within 72-hours of calling the help-line. As noted in Table 1, univariate analyses found significant demographic and clinical differences between those declining, accepting but not attending, and accepting and attending the referral for the in-person assessment, $p < .05$.

Referral Acceptance

Table 3 displays the final model for predictors of referral acceptance. Both blocks and the overall model were significant, $p < .001$. After controlling for all other variables in the model (final block), callers whose preferred gambling activity was categorized as "other" had a significantly decreased likelihood of referral acceptance compared with slot machine players. Individuals who had previously sought help for gambling problems were significantly less likely to accept a referral compared to those who had not previously sought gambling treatment. Married or cohabitating individuals and divorced or separated individuals were significantly more likely to accept the referral compared to individuals with single marital status. Similarly, those whose precipitating problem involved legal or spousal pressures were more likely to accept the referral compared to those whose calls were motivated by financial concerns. History of comorbid psychiatric disorders, greater gambling debt, and greater severity of pathological gambling symptoms were positively and significantly related to referral acceptance.

Appointment Attendance

Of the 2,215 callers who accepted the in-person assessment referral, 72.1% attended the appointment ($n = 1,595$), 26.3% did not attend the appointment ($n = 582$), and for 38 individuals it is unknown whether they attended the appointment (1.7%; excluded from subsequent analyses). Logistic regression assessed the relationship between demographic and clinical characteristics and attendance at the in-person assessment. Table 4 displays the final model for predictors of attending the in-person assessment appointment from the logistic regression analysis. Both blocks and the overall model were significant, $p < .001$. After controlling for all variables in the analysis (Block 2), females were less likely to attend

the in-person assessment. Factors associated with an increased likelihood of attending the in-person assessment included age, education, prior gambling treatment, greater severity of pathological gambling symptoms, and in-person assessments scheduled within 72 hours of the call. Additionally, all precipitating problems with the exception of problem recognition were associated with increased odds of appointment attendance compared to those whose call was precipitated by finances.

Discussion

Overall, the WV PGHN was able to facilitate engagement in treatment for about 55% of all calls to the help-line. Over 75% of callers accepted the referral, and of those, 72% attended the in-person assessment. These utilization rates are similar or exceed those typically found for other help-line services and attendance rates of initial appointments for other mental health services, which generally range from 35% to 77% (De Coster et al., 2010; Gould et al., 2007; Hser, Maglione, Polinsky, & Anglin, 1998; McKay, & Bannon, 2004; Sherman, Barnum, Nyberg, & Buhman-Wiggs, 2008).

Administrative aspects of the help-line may have facilitated the attendance rate. The help-line staff is specifically trained in the arena of pathological gambling and in help-line intervention techniques that build rapport while collecting all the pertinent information from the caller. “Warm transfer” procedures were used to facilitate the referral to an extensive list of gambling-specific providers across the state, thereby lowering the barrier of knowing where to get professional help and reducing some constraints of travel and geographic limitations. Other help-lines that use warm transfer procedures have seen increases in referral attendance rates (e.g., Curry et al., 1998; Sherman et al., 2008). Additionally, as demonstrated by this study and others (e.g., Compton, Rudisch, Craw, Thompson, & Owens, 2006), scheduling the appointments within 72-hours of the telephone call greatly increased the likelihood of the individual attending the in-person assessment. Finally, the foot-in-the-door technique of a small request (i.e., attend a single session at no cost) may be associated with increased likelihood of compliance (Dillard, 1991). Overall, the way in which a help-line interacts with its callers impacts referral utilization.

Demographic and clinical characteristics were associated with referral acceptance and attendance. Callers with more severe problems and possibly experiencing coercion, such as legal problems or being compelled to call by a family member, were significantly more likely to accept and attend the referral to an in-person assessment. While coercion is a common factor for seeking treatment (Pescosolido et al., 1998), it does not appear to negatively affect clinical outcome (Snyder & Anderson, 2009; Wild, Cunningham, & Ryan, 2006). Another factor associated with the likelihood of attending the in-person assessment was gender. While more women than men called the gambling help-line and more women than men accepted the referral, women were significantly less likely to attend the in-person assessment. Female pathological gamblers tend to have more disruptive and unstable home environments in comparison to male pathological gamblers (Ladd & Petry, 2002), and certain barriers, such as lack of childcare and transportation, may have more of an impact on women than men, therefore contributing to the lower attendance rate (de Figueiredo Boerstler, & Doros, 2009).

Unfortunately, the help-line was not able to capitalize on the opportunity presented all callers. Individuals who declined a referral to services tended to have less severe problems in terms of diagnostic symptoms, debt, and psychiatric comorbidity. These individuals may not recognize their gambling as a problem (i.e., pre-contemplative stage of change) or desire professional help. Brief telephone interventions or mailed self-help materials may still be appropriate and beneficial for these individuals (Hodgins, Currie, Currie, & Fick, 2009)³.

Overall, 45% of callers did not engage in treatment via the help-line. Smoking cessation quitlines offer a successful model of telephone-based counseling (McAfee, 2007) that gambling help-lines could adopt for those who refuse the referral or do not attend the appointment. Quitlines deliver counseling immediately over the telephone when motivation for help is high, and obstacles for treatment such as the delay in getting an appointment and transportation are removed.

Interestingly, individuals who had previously sought help for gambling problems were less likely to accept the referral, but those who did were more likely to attend the in-person assessment than individuals who had not previously sought gambling help. Potential reasons for declining the referral may have to do with prior treatment experiences with a specific provider and/or feeling as if treatment does not work. Conversely, experience with gambling treatment and previously acknowledging the need for help to overcome their gambling problems may reduce or remove these barriers that first-time help-seekers may still experience.

Unfortunately, this investigation provides only a static or episodic view of help-seeking from the perspective of the gambling help-line rather than a dynamic or pathways view. Individuals may have called the help-line and then decided to seek help elsewhere through other resources. It is not known how often this occurred and how successful individuals were in utilizing other resources. Another potential limitation of this study included missing data. We used multiple imputation to overcome this limitation. The use of multiple imputed datasets reduced uncertainty in our logistic regression analyses and allowed full use of the dataset (Donders et al., 2006). All reports of prior help-seeking and psychiatric comorbidity were based upon self-report. No objective or verified reports were obtained in regards to these variables, and either under- or over-reporting of these events may have occurred. Lastly, barriers such as distance to the clinic and scheduling availability were not assessed and are potential barriers that impact follow-through with the referral.

In summary, a large percentage of the sample accepted and then attended a gambling treatment referral from a help-line; both demographic and clinical characteristics predicted these outcomes. Understanding factors related to not following through with formal treatment has important implications for the field since a significant portion of treatment seekers first make contact through help-lines. Women were less likely to attend the in-person assessment indicating additional barriers for these individuals. Conversely, gambling problem severity, coercion, and administrative procedures positively influenced referral acceptance and attendance. Additional research is needed to evaluate whether the factors identified in this study generalize to other settings (e.g., help-lines lacking warm transfer procedures), are associated with long-term treatment adherence, and have an impact on treatment outcomes.

Acknowledgments

We thank the First Choice Health Systems, Inc., West Virginia Problem Gamblers Help Network and their callers for sharing the data that made this manuscript possible. The following grants also supported work on this manuscript: R21-AA017717 (J.W.); T32-AA07290 (C.R.), K23-DA023467 (B.J.M.).

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³In 2001, a self-help workbook was incorporated into the help-line's information packet mailed to callers.

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Table 1
Demographic Characteristics of Gambling Helpline Callers by Referral Status

Variable	Declined Referral n (%)	Did Not Attend Referral n (%)	Attended Referral n (%)	Statistic, p-value
Gender				$\chi^2(2) = 10.1^{**}$
Female	358 (51.9%)	371 (59.8%)	847 (53.2%)	
Male	332 (48.1%)	249 (40.2%)	746 (46.8%)	
Age (years)				$\chi^2(10) = 49.5^{***}$
25	52 (10.1%)	49 (8.2%)	80 (5.1%)	
26 - 35	100 (19.4%)	153 (25.8%)	315 (20.2%)	
36 - 45	118 (22.9%)	180 (30.3%)	412 (26.4%)	
46 - 55	163 (31.7%)	136 (22.9%)	464 (29.7%)	
56 - 65	59 (11.5%)	62 (10.4%)	223 (14.3%)	
> 65	23 (4.5%)	14 (2.4%)	68 (4.4%)	
Marital Status				$\chi^2(6) = 59.1^{***}$
Single	183 (32.0%)	127 (20.7%)	271 (17.0%)	
Married/Cohabiting	281 (49.1%)	353 (57.6%)	956 (60.1%)	
Divorced/Separated	86 (15.0%)	109 (17.8%)	311 (19.5%)	
Widowed	22 (3.8%)	24 (3.9%)	54 (3.4%)	
Employment				$\chi^2(8) = 13.4$
Full-time	325 (60.6%)	337 (54.6%)	895 (57.0%)	
Part-time	31 (5.8%)	56 (9.1%)	105 (6.7%)	
Unemployed	41 (7.6%)	63 (10.2%)	143 (9.1%)	
Retired	63 (11.8%)	54 (8.8%)	160 (10.2%)	
Disabled	64 (11.9%)	87 (14.1%)	212 (13.5%)	
Other	12 (2.2%)	20 (3.2%)	55 (3.5%)	
Annual Income				$\chi^2(10) = 25.8^{**}$
\$10,000	47 (15.6%)	62 (16.0%)	112 (9.2%)	
\$10,001 - \$20,000	48 (15.9%)	83 (21.4%)	257 (21.2%)	
\$20,001 - \$30,000	59 (19.6%)	72 (18.6%)	220 (18.1%)	
\$30,001 - \$40,000	37 (12.3%)	51 (13.2%)	159 (13.1%)	
\$40,001 - \$50,000	24 (8.0%)	26 (6.7%)	115 (9.5%)	
> \$50,000	86 (28.6%)	93 (24.0%)	350 (28.9%)	
Education				$\chi^2(8) = 29.4^{***}$
< High School Diploma	38 (11.3%)	72 (16.3%)	115 (9.6%)	
High School Diploma	161 (47.8%)	205 (46.5%)	539 (45.0%)	
Some College	72 (21.4%)	115 (26.1%)	354 (29.6%)	
College Degree	54 (16.0%)	41 (9.3%)	154 (12.9%)	
Graduate Degree	12 (3.6%)	8 (1.8%)	35 (2.9%)	

Note. Data presented in tables is prior to multiple imputation. Numbers do not always add up to group size due to missing data.

* $p < .05$;

**
 $p < .01$;

 $p < .001$

Table 2
Clinical Characteristics of Gambling Helpline Callers by Referral Status

Variable	Declined Referral n (%)	Did Not Attend Referral n (%)	Attended Referral n (%)	Statistic, p-value
Gambling Frequency				$\chi^2(4)=27.2^{***}$
Daily	335 (61.1%)	418 (69.3%)	1,125 (72.5%)	
Weekly	178 (32.5%)	153 (25.4%)	337 (21.7%)	
Less than Weekly	35 (6.4%)	32 (5.3%)	90 (5.8%)	
Preferred Gambling				$\chi^2(8)=21.1^{**}$
Activity				
Slot Machines	503 (80.6%)	542 (87.6%)	1,392 (87.4%)	
Scratch Tickets	25 (4.0%)	17 (2.7%)	40 (2.5%)	
Betting on Animals	18 (2.9%)	8 (1.3%)	24 (1.5%)	
Sports Wagering	10 (1.6%)	10 (1.6%)	20 (1.3%)	
Other	68 (10.9%)	42 (6.8%)	117 (7.3%)	
Gambling Related Debt				$\chi^2(10)=75.9^{***}$
\$0	159 (41.3%)	133 (26.6%)	321 (23.0%)	
\$1 - \$1,000	46 (11.9%)	74 (14.8%)	208 (14.9%)	
\$1,001 - \$5,000	72 (18.7%)	139 (27.8%)	294 (21.1%)	
\$5,001 - \$25,000	79 (20.5%)	100 (20.0%)	354 (25.4%)	
\$25,001 - \$50,000	23 (6.0%)	33 (6.6%)	125 (9.0%)	
>\$50,000	6 (1.6%)	21 (4.2%)	91 (6.5%)	
Precipitating Problem				$\chi^2(10)=73.6^{***}$
Finances	264 (45.9%)	268 (43.7%)	585 (37.2%)	
Problem Recognition	228 (39.7%)	229 (37.4%)	532 (33.9%)	
Forced by Spouse	36 (6.3%)	57 (9.3%)	229 (14.6%)	
Forced by Family	23 (4.0%)	23 (3.8%)	85 (5.4%)	
Legal Problems	2 (0.3%)	22 (3.6%)	75 (4.8%)	
Other	22 (3.8%)	14 (2.3%)	65 (4.1%)	
Sought Prior Gambling Help				$\chi^2(2)=27.8^{***}$
Yes	50 (12.3%)	43 (7.6%)	252 (16.5%)	
No	355 (87.7%)	520 (92.4%)	1278 (83.5%)	
Suicidal Ideation				$\chi^2(2)=2.2$
Yes	66 (9.5%)	69 (11.1%)	185 (11.6%)	
No	630 (90.5%)	551 (88.9%)	1411 (88.4%)	
Psychiatric Comorbidity				$\chi^2(4)=587.0^{***}$
Yes	139 (21.9%)	274 (50.7%)	734 (50.2%)	
No	222 (35.0%)	241 (44.6%)	650 (44.5%)	
	Mean (SD)	Mean (SD)	Mean (SD)	
DSM-IV PG Symptoms	5.05 ^a (2.07)	6.16 ^b (1.91)	6.86 ^c (1.94)	$F(2, 2765)=181.1^{***}$

Note. Data presented in tables is prior to multiple imputation. Numbers do not always add up to group size due to missing data. PG = Pathological Gambling.

*
 $p < .05$;

**
 $p < .01$;

 $p < .001$

Table 3
Odds ratios of demographic and clinical characteristics on accepting referral to in-person assessment

Variable	OR	95% CI	p-value
Gender	0.89	0.67 - 1.10	.262
Age	1.02	0.92 - 1.13	.617
Marital Status			
Married/Cohabiting	1.73	1.46 - 1.99	.001
Divorced/Separated	1.70	1.38 - 2.03	.001
Widowed	1.43	0.90 - 1.97	.174
Employment			
Part-time	0.94	0.54 - 1.34	.738
Unemployed	0.78	0.39 - 1.17	.188
Retired	0.89	0.30 - 1.48	.520
Disabled	0.84	0.42 - 1.27	.397
Other	0.64	0.20 - 1.08	.049
Income	0.98	0.90 - 1.07	.599
Education	1.02	0.90 - 1.14	.511
Gambling Frequency			
Weekly	0.84	0.61 - 1.07	.138
Less than Weekly	1.01	0.59 - 1.43	.755
Preferred Gambling Activity			
Scratch Tickets	0.64	0.13 - 1.16	.092
Betting on Animals	0.54	0.21 - 1.28	.087
Sports Wagering	0.66	0.16 - 1.49	.310
Other	0.63	0.31 - 0.96	.005
Gambling Related Debt	1.13	1.04 - 1.22	.003
Precipitating Problem			
Problem Recognition	1.19	0.94 - 1.44	.149
Forced by Spouse	1.71	1.30 - 2.13	.006
Forced by Family	0.98	0.51 - 1.44	.825
Legal Problems	2.72	1.57 - 3.87	.021
Other	1.11	0.50 - 1.71	.641
Sought Prior Gambling Help	0.73	0.44 - 1.03	.028
Suicidal Ideation	1.16	0.85 - 1.47	.349
History of Psychiatric Comorbidity	1.52	1.30 - 1.74	.001
DSM-IV PG Symptoms	1.46	1.39 - 1.52	.001

Note: Reference groups are: Male, Single, Full-time, Daily Gambling, Slot Machines, Finances, No Prior Gambling Help, and No Psychiatric History. PG = Pathological gambling.

Table 4
Odds ratios of demographic and clinical characteristics on attending in-person assessment

Variable	OR	95% CI	p-value
Gender	0.74	0.52 - 0.96	.008
Age	1.31	1.21 - 1.41	.001
Marital Status			
Married/Cohabiting	0.96	0.65 - 1.26	.556
Divorced/Separated	1.05	0.72 - 1.39	.724
Widowed	0.71	0.11 - 1.31	.260
Employment			
Part-time	0.76	0.37 - 1.14	.151
Unemployed	0.87	0.50 - 1.23	.430
Retired	1.04	0.49 - 1.58	.845
Disabled	0.80	0.46 - 1.14	.195
Other	0.92	0.49 - 1.35	.706
Income	1.07	0.98 - 1.16	.135
Education	1.22	1.08 - 1.36	.001
Gambling Frequency			
Weekly	0.83	0.59 - 1.07	.119
Less than Weekly	1.20	0.74 - 1.66	.441
Preferred Gambling Activity			
Scratch Tickets	0.97	0.35 - 1.60	.934
Betting on Animals	1.30	0.34 - 2.27	.586
Sports Wagering	0.64	0.23 - 1.52	.321
Other	1.15	0.76 - 1.54	.494
Gambling Related Debt	1.04	0.96 - 1.13	.337
Precipitating Problem			
Problem Recognition	1.05	0.82 - 1.29	.666
Forced by Spouse	1.72	1.37 - 2.08	.003
Forced by Family	1.83	1.33 - 2.34	.019
Legal Problems	1.93	1.36 - 2.49	.021
Other	2.39	1.75 - 3.02	.007
Sought Prior Gambling Help	1.75	1.39 - 2.12	.001
Suicidal Ideation	0.98	0.67 - 1.29	.902
History of Psychiatric Comorbidity	1.07	0.84 - 1.30	.533
DSM-IV PG Symptoms	1.08	1.03 - 1.14	.005
Time to Appointment	1.58	1.37 - 1.78	.001

Note: Reference groups are: Male, Single, Full-time, Daily Gambling, Slot Machines, Finances, No Prior Gambling Help, and No Psychiatric History. PG = Pathological gambling.