

Internet Gambling Behavior in a Sample of Online Gamblers

Jessica McBride · Jeffrey Derevensky

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Abstract The present study examined Internet gambling behavior in a sample of online gamblers. Participants ($N=563$; 382 male; ages 18–over 65) were recruited from a banner placed in an online newsletter. Questionnaires were completed online and assessed demographic information, game-play patterns (e.g., frequency, duration, wagering), preferred type of play, and problem gambling (using the DSM-IV). In addition, participation in gambling-type games without money was also examined. Seventy-seven percent of respondents reported playing gambling-type games without money and 42% reported gambling on the Internet. Twenty-three percent of participants were identified as problem gamblers. Problem gamblers were significantly more likely than social gamblers to spend more time gambling per session, gamble alone, from school, or with a cell phone, gamble with more money, wager online while consuming alcohol or illicit drugs, and lose more money gambling online. These results hint at a disturbing and difficult relationship between the Internet and individuals with gambling problems.

Keywords Internet gambling · Problem gambling · Practice sites

Introduction

In 1994, Netscape's Mosaic browser was made available free of charge for the first time (Pew Internet and American Life Project 2005). Fourteen years later the Internet has expanded into—and in some cases, reshaped—almost every realm of modern life. Gambling is no different. The relatively low cost of setting up a virtual casino and the large potential for profit have resulted in a cyberspace flooded with gambling sites (Clarke and Dempsey 2001). Accordingly, companies representing the media and entertainment industry have combined and targeted online gambling as a growth sector (Media and Entertainment Consulting Network 2006). Even so, the legal issues surrounding Internet

J. McBride (✉) · J. Derevensky
International Centre for Youth Gambling Problems and High-Risk Behaviors,
McGill University, Montreal, Canada
e-mail: jessica.mcbride@mail.mcgill.ca

gambling are intricate, ever-changing, vary depending on the jurisdiction, and are often unenforceable (Kelly 2000; Rose 2006a, b). Despite this, legislation targeting Internet gambling has had little success in preventing people from gambling online (Rose 2008). Internet gambling sites remain widely accessible and promisingly profitable (in 2005, gross revenue was estimated to have approached US\$11.9 billion, and has been projected to double by 2010) (Christiansen Capital Advisors 2005). Less than 3 years ago, the amount wagered on poker websites worldwide was estimated to have been more than US\$60 billion, with commission revenues approaching US\$3 billion (Media and Entertainment Consulting Network 2005). Upwards of 23 million people worldwide reportedly gambled on the Internet in 2005 (American Gaming Association 2006a).

In addition to offering Internet gambling, companies offer “practice” sessions where individuals may engage in gambling-type games without wagering real money with no age restrictions. Incentives such as “free” chips, along with prizes and bonuses for sign-up, entice players to engage in card playing and casino-type games. These practice sites post messages to the players, inciting them to play for money and focusing on their wins during the practice sessions. Some also offer “cash” prizes in tournaments to be redeemed on the company for-money site.

Empirical research has not been able to match the accelerated pace of Internet gambling (Parke et al. 2007). Preliminary studies report between 0.1% and 8.1% of community samples reported gambling online (American Gaming Association 2006b; Azmier 2000; Griffiths 2001; Ialomiteanu and Adlaf 2001; Kelley et al. 2001; Ladd and Petry 2002; Patton et al. 2002; Petry 2006; Petry and Mallya 2004; Smith and Wynne 2002; Weibe et al. 2006; Welte et al. 2002). Prevalence rates for Internet gambling appear to increase when samples consist of gamblers, ranging from 6.7% to 36.5%, suggesting gambling online may be more likely to be initiated by those who have already tried more traditional forms of gambling (GamCare 2006; Ialomiteanu and Adlaf 2001; Woodruff and Gregory 2003). What emerges strikingly from these early studies is the indication that problem gamblers are overrepresented among Internet gamblers. Ladd and Petry (2002) reported that individuals with Internet gambling experience comprised 74.2% of those who were classified as Level 2 or Level 3 gamblers, whereas only 21.6% of those with no Internet gambling experience were Level 2 or 3 gamblers.

A few studies exist which examine Internet wagering among Internet gamblers themselves (Parke et al. 2006, 2007; Wood et al. 2007; Wood and Williams 2007a; Woolley 2003). These preliminary studies attempted to gather information about the demographic characteristics of online gamblers and their attitudes toward Internet gambling. This early research suggests that problem gambling rates among those who have gambled on the Internet are nearly ten times higher than rates found in the general population, hinting at Internet gambling as an emerging and likely problematic behaviour (Parke et al. 2006; Wood and Williams 2007a; Wood et al. 2007).

Preliminary research indicates Internet gambling participation is increasing (Woolley 2003), yet game-play patterns (e.g., frequency, duration, preferred type of play) remain “one of the more under-researched issues” (Wood and Williams 2007b). The aim of the present study was to examine the demographics of Internet gamblers, their attitudes towards Internet gambling, their Internet wagering behavior, and the relationship between Internet gambling and problem gambling. This study also researched the phenomenon of free or “practice” sites. As such, it represents a comprehensive glimpse at Internet gambling among a sample of individuals who have gambled online, either with or without money.

Method

Participants

Participants were recruited via an advertisement placed in an online newsletter through casinocity.com. The link led to an online questionnaire. Participants were eligible for a draw to receive \$50 gift certificates at Amazon.com. The descriptive information for the sample ($N=563$) and for the respondents identified as problem gamblers ($N=131$) is presented in Table 1. Sixty-eight percent of respondents are male and the ages range from 18 to over 65. Sixty-nine percent of respondents reside in the U.S., 10.1% reside in Canada, 16.0% reside in Ireland or the U.K., and 4.4% reside in other countries. Over half (56.0%) of the sample are married, 30.0% are single or common law, 10.1% are separated or divorced, and 3.9% are widowed. Nine percent of respondents reported they were currently in school. Among non-students ($N=510$), 40.4% have a university degree, 22.7% have a high school diploma, 16.5% attended trade or technical school, 16.5% have a graduate or post-doctoral degree, 3.5% have a post-secondary diploma of some kind, and 0.4% did not complete high school. Of those not in school, 60% work full-time, 7.5% are unemployed, 8.6% work part-time, and 23.9% are retired.

Measures

Demographic Information Questions were asked concerning age, gender, country of residence, marital status, occupational status, and education level.

Internet Gambling A questionnaire developed for a previous study assessed Internet gambling behavior, both with and without money. Respondents indicated the frequency with which they either gambled on the Internet or played Internet gambling-type games without money in the previous year (e.g., roulette, blackjack, cards, etc). For each type of gambling (with or without money) questions assessed on how many sites respondents typically gamble/play, the age at which respondents first initiated this behaviour, their frequency and duration of play each session, their usual gambling partners, their usual gambling location, and why they elected to gamble on the Internet (with or without money). Respondents also indicated the average amount of money they spent gambling per session (if applicable), the most money wagered in one session, the most money lost gambling on the Internet, and their typical methods of payment. Participants also indicated whether or not they have consumed alcohol, smoked tobacco, or used marijuana or other illicit drugs while gambling on the Internet.

Problem Gambling Screen Respondents completed the checklist of DSM-IV criteria for problem gambling (American Psychiatric Association 1994). The checklist contains ten items, and respondents are typically classified as social gamblers if they have gambled in the past year and endorsed zero to two items on the checklist, as at-risk for developing a gambling problem if they endorsed three to four items, and as probable pathological gamblers (PPGs) if they endorsed five or more items. The use of the DSM-IV as an index for pathological gambling has been well established in research (Derevensky and Gupta 2000; Lesieur and Klein 1987; Lesieur and Rosenthal 1991; Petry 2005; Wood and Griffiths 1998).

Table 1 Demographic Characteristics

Category	Percentage of sample (N=563)	Percentage of problem gamblers ^a (N=131)
Gender		
Male	67.9	67.2
Female	32.1	32.8
Age		
18–20	4.3	6.9
21–24	7.1	9.2
25–34	14.7	19.1
35–44	14.9	18.3
45–54	23.6	27.5
55–64	23.4	13.7
65 and over	11.9	5.3
Nationality		
Canada	10.1	6.9
US	69.3	69.5
Ireland/UK	16.0	16.0
Other	4.6	7.7
Marital status		
Single	30.0	35.9
Married/common law	56.0	52.7
Separated/divorced	10.1	7.6
Widowed	3.9	3.8
Currently in school		
Yes	9.4	13.0
Grade level		
Trade/technical school	5.7	5.9
University	79.2	88.2
Graduate/post doctoral	15.1	5.9
Education (non students)		
Less than high school	0.4	0.9
High school	22.7	25.4
Trade/technical school	16.5	18.4
Post-secondary diploma	3.5	3.5
University	40.4	43.9
Graduate/post doctoral	16.5	7.9
Employment (non students)		
Work full-time	60.0	68.4
Work part-time	8.6	7.9
Retired	23.9	14.0
Unemployed	7.5	9.6

^a DSM-IV score ≥ 3

Results

Problem Gambling

The descriptive data for gambling severity by gender and age are presented in Table 2. Using DSM-IV criteria, 76.7% of the sample were identified as social gamblers, 12.3% as at-risk for gambling problems, and 11.0% as probable pathological gamblers. As at-risk

Table 2 Gambling Severity, by Gender and Age Group

	<i>N</i>	Gambling severity ^a	
		Social ^b (<i>N</i> =432)	Problem ^c (<i>N</i> =131)
Gender			
Male	382	77.0	23.0
Female	181	76.2	23.8
Age group			
18–24**	64	67.2	32.8
25–54	300	71.7	28.3
55 and over**	199	87.4	12.6
Total	563	76.7	23.3

^a Percentage^b DSM-IV score (0–2)^c DSM-IV score (≥ 3)** $p < 0.01$

gamblers exhibit at least some level of problem gambling behaviour, for statistical considerations at-risk and PPG categories were merged (Wood and Williams 2007a). Thus, 23.3% of the sample were identified as problem gamblers. Males and females did not differ significantly with respect to problem gambling status. The sample was divided into three age groups; 18–24 ($N=64$), 25–24 ($N=300$), and 55 and over ($N=199$). There was a significant difference between age groups based on gambling severity [$\chi^2(2, N=563)=20.35, p < 0.01$], with younger participants (both ages 18–24 and 25 and over) more likely than older participants (55 and over) to be identified as problem gamblers. There was no statistical difference in gambling severity among those aged 18–24 and 25–54.

Table 3 Gambling Participation in Past 12 Months, by Gender, Age Group, and Severity

	<i>N</i>	Gambling participation ^a		
		Land-based (<i>N</i> =556)	Internet (without money) (<i>N</i> =434)	Internet (with money) (<i>N</i> =238)
Gender				
Male	382	98.2	74.6*	52.9**
Female	181	100.0	82.3*	19.9**
Age group				
18–24	64	93.8**	70.3	90.6**
25–54	300	99.7**	76.7	45.3**
Over 55	199	99.0**	79.9	22.1**
Gambling severity				
Social ^b	432	98.6	77.3	39.1**
Problem ^c	131	99.2	76.3	52.7**
Total	563	98.8	77.1	42.3

^a Percentage^b DSM-IV score (0–2)^c DSM-IV score (≥ 3)* $p < 0.05$; ** $p < 0.01$

Past Year Gambling Participation

The information for past-year gambling participation is presented in Table 3. Ninety-nine percent of the sample reported land-based gambling in the previous year, 77.1% reported playing gambling-type games on the Internet without money, and 42.3% reported gambling online. Males were significantly more likely to gamble online than females [$\chi^2(1, N=563)=54.77, p<0.01$], whereas females were significantly more likely to play gambling-type games for free [$\chi^2(1, N=563)=4.14, p<0.05$]. Significantly more problem gamblers (52.7%) than social gamblers (39.1%) reported gambling online in the past 12 months [$\chi^2(1, N=563)=7.56, p<0.01$]. There were statistically significant differences among age groups for participation in past-year land-based gambling [$\chi^2(2, N=563)=15.18, p<0.01$]. Whereas those 55 and older and 25–54 year-olds were equally likely to have gambled on land in the past year, both groups were significantly more likely to have gambled on land than 18–24 year-olds, though the difference is marginal (~5%). With respect to online gambling, participation decreased significantly as age increased [$\chi^2(2, N=563)=95.62, p<0.01$].

Playing Behavior

The playing behavior of respondents who participated in gambling-type games on the Internet, without money (referred to as practice sites), in the past year can be seen in Table 4. Not all respondents replied to every question, resulting in numbers reported in parentheses. Overall, 41.5% of respondents played on one site, 58.0% played on two to five sites, and 0.5% played on more than six sites. There were no statistically significant differences with respect to gender or gambling severity for the number of sites visited. Overall, 43.5% of respondents reported playing for less than 1 h each session (a session was defined as each time they signed on to the Internet), 33.3% reported playing 1–2 h, 0.4% reported playing 2–4 h, and 22.8% reported playing over 4 h. Respondents also reported with whom they typically played gambling games. Ninety-three percent reported playing alone, 33.8% reported usually playing with strangers, 17.7% with friends, 6.2% with siblings or relatives, 5.0% with coworkers, and 2.0% with parents (Table 4).

The reasons endorsed for playing on practice sites were fun (92.3%), entertainment (89.8%), relaxation (78.4%), relieve boredom (66.4%), excitement (63.7%), relieve anxiety or depression (29.6%), escape from problems (26.4%), be with friends or to make new friends (13.4%), learn strategies or to practice (6.5%), feel older (1.7%), and miscellaneous reasons (i.e., curiosity, to not waste money, lack of risk) (4.2%) (see Table 4). Social gamblers were significantly more likely than problem gamblers to endorse playing on practice sites for fun [$\chi^2(1, N=402)=5.82, p<0.05$], whereas problem gamblers were significantly more likely to endorse playing to relieve boredom [$\chi^2(1, N=402)=6.81, p<0.01$], to relieve or minimize anxiety/depression [$\chi^2(1, N=402)=17.29, p<0.01$], and to escape from problems [$\chi^2(1, N=402)=23.75, p<0.01$].

Types of Gambling-Type Games Played on the Internet

The information concerning practice activities, both past year and weekly, is presented in Table 5. The most popular game was cards, with 68.4% of respondents ($N=434$) reporting they had played card games in the past year. Slot or electronic gaming machines were the second-most popular option, with 63.8% of respondents reporting playing this game in the past year. Other frequently-reported games include blackjack (58.8%), roulette (27.0%), dice (20.0%), keno (17.5%), the stock market (14.5%), and sports betting (12.0%). The

Table 4 Percentage of Players Participating in Internet Gambling-Type Games Without Money, by Gambling Severity

	Social gambler ^a	Problem gambler ^b	Total
Number of practice sites	(<i>N</i> =294)	(<i>N</i> =87)	(<i>N</i> =381)
1	43.5	34.5	41.5
2–5	56.1	64.4	58.0
≥6	0.3	1.1	0.5
Time spent playing (h)	(<i>N</i> =177)	(<i>N</i> =60)	(<i>N</i> =237)
<1	45.2	38.3	43.5
1.1–2	33.9	31.7	33.3
2.1–4	0.6	–	0.4
Over 4	20.3	30.0	22.8
Usual playing partners	(<i>N</i> =305)	(<i>N</i> =97)	(<i>N</i> =402)
Alone	92.1	93.8	92.5
Strangers	31.8	40.2	33.8
Friends	17.7	17.5	17.7
Siblings/other relatives	6.6	5.2	6.2
Co-workers	5.6	3.1	5.0
Parents	2.3	1.0	2.0
Reasons to play	(<i>N</i> =305)	(<i>N</i> =97)	(<i>N</i> =402)
Fun*	94.1	86.6	92.3
Entertainment	90.5	87.6	89.8
Relaxation	80.3	72.2	78.4
Relieve boredom**	63.0	77.3	66.4
Excitement	61.6	70.1	63.7
Relieve anxiety/depression**	24.3	46.4	29.6
Escape from problems**	20.3	45.4	26.4
Be with/make new friends	14.1	11.3	13.4
Learn strategy/practice	6.0	8.0	6.5
Feel older	1.6	2.1	1.7
Other	4.9	2.1	4.2

^a DSM-IV score (0–2)^b DSM-IV score (≥3)**p*<0.05; ***p*<0.01

only significant difference between problem and social gamblers was regarding practice spread betting sites [$\chi^2(1, N=434)=20.32, p<0.01$].

As with past-year games, the most popular weekly activity was cards (29.3%), followed by slot/electronic gaming machines (19.6%), and blackjack (11.8%). Significantly more problem gamblers than social gamblers reported playing weekly on practice slot/electronic gaming machines [$\chi^2(1, N=434)=4.54, p<0.05$], keno [$\chi^2(1, N=434)=6.32, p<0.05$], and spread betting [$\chi^2(1, N=434)=10.09, p<0.01$] (see Table 5).

Online Gambling Behavior

Overall, 32.8% of respondents reported regularly gambling on one site, 65.2% on two to five sites, and 2.0% on more than six sites (see Table 6). With respect to time, 13.3% of respondents reported gambling for less than 1 h per session, 59.3% reported gambling 1–2 h each session, 0.7% reported gambling 2–4 h per session, and 26.7% reported gambling

Table 5 Past Year Playing Behaviour for Gambling-Type Games Without Money, by Gambling Severity

	Percentage ever played (N=434)		
	Social gamblers ^a	Problem gamblers ^b	Total
Cards	66.5	75.0	68.4
Weekly cards	27.8	34.0	29.3
Slot/electronic gaming machines	62.0	70.0	63.8
Weekly slot machines*	17.4	27.0	19.6
Blackjack	57.8	62.0	58.8
Weekly blackjack	10.8	15.0	11.8
Roulette	24.9	34.0	27.0
Weekly roulette	2.7	6.0	3.5
Dice	18.9	24.0	20.0
Weekly dice	3.0	3.0	3.0
Keno	15.6	24.0	17.5
Weekly keno*	1.5	6.0	2.5
Stock market	13.8	17.0	14.5
Weekly stock market	2.7	4.0	3.0
Sports betting	10.8	16.0	12.0
Weekly sports betting	2.1	5.0	2.8
Baccarat	9.9	15.0	11.1
Weekly baccarat	1.5	1.0	1.4
Horse racing	10.5	12.0	10.8
Weekly horse racing	1.5	2.0	1.6
Mahjong	8.1	13.0	9.2
Weekly mahjong	2.7	4.0	3.0
Jai alai	1.2	2.0	1.4
Weekly Jai alai	0.3	–	0.2
Spread betting**	–	6.0	1.4
Weekly spread betting**	–	3.0	0.7

^a DSM-IV score (0–2)^b DSM-IV score (≥ 3)* $p < 0.05$; ** $p < 0.01$

in excess of 4 h. Problem and social gamblers differed significantly in the amount of reported time spent gambling per session [$\chi^2(3, N=135)=8.36, p < 0.05$].

Eighty-six percent of the sample reported typically gambling alone, 44.1% with strangers, 26.1% with friends, 8.4% with co-workers, 7.6% with siblings or relatives, and 2.9% with parents (see Table 6). Significantly more problem gamblers than social gamblers reported gambling alone [$\chi^2(1, N=238)=4.88, p < 0.05$]. With respect to location, nearly all respondents (96.6%) gambled from home, 13.9% from a friend's home, 12.6% from work, 10.1% from an Internet café, 4.6% from school, 2.9% from a cellular telephone, and 2.1% from other locations (i.e., casino, race track, hotel) (see Table 6). Problem gamblers were significantly more likely than social gamblers to have gambled from school [$\chi^2(1, N=238)=10.72, p < 0.01$] and from a cell phone [$\chi^2(1, N=238)=6.31, p < 0.05$].

The most endorsed reasons for gambling online were its convenience (93.3%), not having to leave the house to play (86.1%), and 24-h accessibility (89.1%) (see Table 6). Other reasons included bonuses (65.1%), high-speed play (62.6%), and privacy (61.8%). Significantly more problem gamblers (29.0%) than social gamblers (4.7%) selected "easier to hide gambling from others" as a reason to gamble online [$\chi^2(1, N=238)=27.76, p < 0.01$].

Table 6 Percentage of Gamblers Participating in Online Gambling, by Gambling Severity

	Social gambler ^a	Problem gambler ^b	Total
Number of gambling sites	(N=140)	(N=58)	(N=198)
1	34.3	29.3	32.8
2–5	65.0	65.5	65.2
≥6	0.7	5.2	2.0
Time spent gambling* (h)	(N=96)	(N=39)	(N=135)
<1	16.7	5.1	13.3
1–2	61.5	53.8	59.3
2.1–4	–	2.6	0.7
Over 4	21.9	38.5	26.7
Usual gambling partners	(N=169)	(N=69)	(N=238)
Alone*	83.4	94.2	86.6
Strangers	45.6	40.6	44.1
Friends	27.2	23.2	26.1
Co-workers	7.7	10.1	8.4
Siblings/relatives	7.7	7.2	7.6
Parents	3.6	1.4	2.9
Online gambling location	(N=169)	(N=69)	(N=238)
Home	95.9	98.6	96.6
Friend's home	12.4	17.4	13.9
Work	11.8	14.5	12.6
Internet café	9.5	11.6	10.1
School**	1.8	11.6	4.6
Cell phone*	1.2	7.2	2.9
Other	1.2	4.3	2.1
Reasons to gamble	(N=169)	(N=69)	(N=238)
Convenience	94.1	91.3	93.3
24-h accessibility	87.0	94.2	89.1
Don't need to leave house to play	84.0	91.3	86.1
Bonuses (e.g., sign up, free cash)	65.7	63.8	65.1
High-speed play	59.2	71.0	62.6
Privacy	59.8	66.7	61.8
Competition (person–person gambling)	60.9	56.5	59.7
Fair/reliable payouts	57.4	50.7	55.5
Anonymity	50.3	63.8	54.2
Game diversity	50.3	47.8	49.6
Good odds	39.6	43.5	40.8
Less intimidating than real casino	27.2	36.2	29.8
Realistic looking games	24.9	29.0	26.1
Graphics	23.1	29.0	24.8
Easier to hide gambling from others**	4.7	29.0	11.8
Average amount of money wagered per session**	(N=87)	(N=28)	(N=115)
Under \$25	64.4	25.0	54.8
\$26–\$50	2.3	–	1.7
\$51–\$100	1.1	3.6	1.7
\$101–\$500	1.1	10.7	3.5
\$501–\$1,000	–	–	–
Over \$1,000	8.0	25.0	12.2
None	23.0	35.7	26.1
Most money wagered in one session**	(N=66)	(N=32)	(N=98)
Under \$25	43.9	9.4	32.7
\$26–\$50	1.5	–	1.0

Table 6 (continued)

	Social gambler ^a	Problem gambler ^b	Total
\$51–\$100	3.0	–	2.0
\$101–\$500	1.5	12.5	5.1
\$501–\$1,000	–	–	–
Over \$1,000	40.9	65.6	49.0
None	9.1	12.5	10.2
Most money lost in one Internet session**	(N=60)	(N=30)	(N=90)
Under \$25	51.7	6.7	36.7
\$26–\$50	1.7	3.3	2.2
\$51–\$100	3.3	–	2.2
\$101–\$500	–	13.3	4.4
\$501–\$1,000	1.7	–	1.1
Over \$1,000	31.7	66.7	43.3
None	10.0	10.1	10.0
Methods of payment	(N=169)	(N=69)	(N=238)
Personal credit card	52.1	52.2	52.1
Debit card**	24.3	42.0	29.4
Bank transfer	24.9	31.9	26.9
Neteller*	20.1	8.7	16.8
Personal cheque**	6.5	17.4	9.7
Family credit card (with permission)	3.0	2.9	2.9
Family credit card (w/out permission)**	–	4.3	1.3
Other	7.1	5.8	6.7
Substance use while gambling online	(N=169)	(N=69)	(N=238)
Alcohol**	39.6	59.4	45.4
Tobacco	33.7	31.9	33.2
Marijuana	7.7	11.6	8.8
Other illicit drugs**	1.2	10.1	3.8
Returning to recoup losses**	(N=169)	(N=69)	(N=238)
Never	56.2	15.9	44.5
Less than half the time	29.0	40.6	32.4
More than half the time	5.3	15.9	8.4
All the time	9.5	27.5	14.7

^a DSM-IV score (0–2)^b DSM-IV score (≥ 3)* $p < 0.05$; ** $p < 0.01$

Regarding the average amount of money spent per session, 54.8% wagered under \$25, 1.7% wagered \$26–\$50, 1.7% wagered \$51–\$100, 3.5% wagered \$101–\$500, 12.2% wagered on average over \$1,000, and 26.0% reported wagering no money (no respondents reported \$501–\$1,000) (see Table 6). This last result is bizarre, but as many free sites offer “real” money redeemable on paying sites for winning tournaments, it could be speculated that gamblers are wagering money they won on practice sites. Significant differences were found between problem and social gamblers for the average amount of money spent per session [$\chi^2(5, N=115)=19.24, p < 0.01$]. With regards to the most money wagered in one Internet session, over \$1,000 was reported by nearly half of all online gamblers (49.0%), with 32.7% wagering at most under \$25 (see Table 6). Significant differences were found between social and problem gamblers concerning the most money wagered in one session [$\chi^2(5, N=98)=17.37, p < 0.01$]. In contrast, 43.3% of respondents report the most money

they have ever lost is over \$1,000 and 36.7% report it as under \$25 (see Table 6). Significant differences were also found between social and problem gamblers with respect to the most money lost in one session [$\chi^2(6, N=90)=26.45, p<0.01$].

In terms of preferred payment method, 52.1% of respondents typically gamble online using a personal credit card, 29.4% use a debit card, 26.9% use bank transfers, 16.8% use Neteller, 9.7% use a personal cheque, 2.9% use a family credit card with permission, 1.3% use a family credit card without permission, and 6.7% selected other methods of payment (see Table 6). Problem gamblers were significantly more likely to use a credit card belonging to a family member without permission [$\chi^2(1, N=238)=7.44, p<0.01$], debit card [$\chi^2(1, N=238)=7.45, p<0.01$], and a personal cheque [$\chi^2(1, N=238)=6.65, p=0.01$] and social gamblers were more likely to use Neteller [$\chi^2(1, N=238)=4.57, p<0.05$].

One concern with Internet gambling is the lack of protection for vulnerable players, such as those under the influence of alcohol or drugs. Forty-five percent of respondents reported consuming alcohol while gambling online, 33.2% reported using tobacco, 8.8% reported using marijuana or hashish, and 3.8% reported using other illicit drugs (e.g., cocaine) (see Table 6). Problem gamblers were significantly more likely than social gamblers to use alcohol [$\chi^2(1, N=238)=7.73, p<0.01$] or other drugs [$\chi^2(1, N=238)=10.81, p<0.01$] while gambling online.

Another concern is the ease with which the Internet may enable gamblers to “chase” losses. Respecting returning the next day to try and win money back, 44.5% of respondents reported never returning, 32.4% returned less than half the time, 8.4% returned more than half the time, and 14.7% returned every time they lost (see Table 6). There was a significant difference between problem and social gamblers for reporting how often they returned to try and win back their losses [$\chi^2(3, N=238)=37.32, p<0.01$].

Internet Gambling Activity

The information concerning online gambling activities, both past year and weekly, is shown in Table 7. As seen with the practice sites, the most popular activity was cards, with 74.8% of respondents ($N=238$) reporting they had gambled at card games online in the past year. Blackjack was the second-most popular game, with 35.7% of respondents reporting gambling on this game. Other frequently-reported activities include sports betting (29.8%), slot or electronic gaming machines (28.6%), horse racing (21.8%), the stock market (16.4%), and roulette (15.1%). Problem gamblers were significantly more likely than social gamblers to report online blackjack [$\chi^2(1, N=238)=7.78, p<0.01$], dice [$\chi^2(1, N=238)=6.12, p<0.05$], spread betting [$\chi^2(1, N=238)=12.99, p<0.01$], mahjong [$\chi^2(1, N=238)=6.31, p<0.05$], and Jai alai [$\chi^2(1, N=238)=4.94, p<0.05$].

Not surprisingly, cards was the most popular weekly activity (55%) followed by slot/electronic gaming machines (9.7%), sports betting (8.0%), and the stock market (5.0%) (Table 7). Problem gamblers were significantly more likely than social gamblers to report weekly online gambling on spread betting [$\chi^2(1, N=238)=4.24, p<0.05$], keno [$\chi^2(1, N=238)=4.24, p<0.05$], roulette [$\chi^2(1, N=238)=4.18, p<0.05$], and slot/electronic gaming machines [$\chi^2(1, N=238)=6.65, p=0.01$].

Online Gamblers

In order to generate a sketch of online gamblers, participants who reported gambling on the Internet ($N=238$) were compared on a number of variables with those who had not (see Table 8). Significant differences were found for gender [$\chi^2(1, N=563)=54.77, p<0.01$], age

Table 7 Participation in Internet Gambling, by Gambling Severity

	Percentage ever played (N=238)		
	Social gamblers ^a	Problem gamblers ^b	Total
Cards	72.8	79.7	74.8
Weekly cards	52.1	62.3	55.0
Blackjack**	30.2	49.3	35.7
Weekly blackjack	3.0	7.2	4.2
Sports betting	28.4	33.3	29.8
Weekly sports betting	6.5	11.6	8.0
Slot/electronic gaming machines	26.0	34.8	28.6
Weekly slot machines**	6.5	17.4	9.7
Horse racing	20.7	24.6	21.8
Weekly horse racing	3.6	4.3	3.8
Stock market	13.6	23.2	16.4
Weekly stock market	4.7	5.8	5.0
Roulette	12.4	21.7	15.1
Weekly roulette*	0.6	4.3	1.7
Dice*	5.9	15.9	8.8
Weekly dice	1.2	1.4	1.3
Keno	4.7	11.6	6.7
Weekly keno*	1.2	5.8	2.5
Baccarat	4.1	8.7	5.5
Weekly baccarat	1.2	2.9	1.7
Spread betting**	1.8	13.0	5.0
Weekly spread betting*	1.2	5.8	2.5
Mahjong*	1.2	7.2	2.9
Weekly mahjong	–	1.4	0.4
Jai alai*	–	2.9	0.8
Weekly jai alai	–	1.4	0.4

^a DSM-IV score (0–2) (N=169)

^b DSM-IV score (≥3) (N=69)

* $p < 0.05$; ** $p < 0.01$

$[\chi^2(2, N=563)=95.62, p < 0.01]$, gambling severity $[\chi^2(1, N=563)=7.56, p < 0.01]$, country of residence $[\chi^2(4, N=563)=125.06, p < 0.01]$, marital status $[\chi^2(3, N=563)=67.99, p < 0.01]$, being a student $[\chi^2(1, N=563)=20.76, p < 0.01]$, level of education for non students $[\chi^2(5, N=510)=13.81, p < 0.05]$, and occupational status $[\chi^2(3, N=510)=25.77, p < 0.01]$. Thus, a profile emerges; of those who report gambling online 84.9% are male, 57.1% are 25–54 years old, 47.9% are single, 48% are university-educated, and 70% are employed full-time. In addition, the rate of problem gambling among Internet gamblers is nearly 15 times higher than that of a community sample. Although 50.4% of the sample is living in the U.S., this may be a function of those who subscribe to casinocity.com.

Discussion

The present study examined the online gambling behavior in a diverse sample of adult online gamblers (N=563). Overall, 42% of respondents report having gambled online in the past year, and 77% report having played on practice, or free, sites. These rates are higher

Table 8 Description of Respondents Who Report Past-Year Internet Gambling

	<i>N</i>	Percentage of those who report online gambling (<i>N</i> = 238)
Gender**		
Male	382	84.9
Female	181	15.1
Age**		
18–24	64	24.4
25–54	300	57.1
Over 55	199	18.5
Gambling severity**		
Social gamblers	432	71.0
Problem gamblers	131	29.0
Country of residence**		
USA	57	50.4
Canada	390	8.0
Ireland/UK	90	35.7
China/Hong Kong	3	0.8
Other	23	5.0
Marital status**		
Single	169	47.9
Married/common law	315	42.4
Separated/divorced	57	8.8
Widowed	22	0.8
Currently in school**		
Yes	53	16.0
No	510	84.0
Highest level of education completed (not in school)*		
Less than high school	2	-
High school	116	17.5
Post-secondary diploma	18	5.0
Trade/technical school	84	13.5
University	206	48.0
Graduate/post doctoral	84	16.0
Occupational status (not in school)**		
Work full-time	306	70.0
Work part-time	44	7.0
Unemployed	38	10.0
Retired	122	13.0

* $p < 0.05$; ** $p < 0.01$

than those found in studies of community samples (American Gaming Association 2006b; Azmier 2000; Griffiths 2001; Ialomiteanu and Adlaf 2001; Kelley et al. 2001; Ladd and Petry 2002; Patton et al. 2002; Petry 2006; Petry and Mallya 2004; Smith and Wynne 2002; Weibe et al. 2006; Welte et al. 2002), but are in keeping with the 36.5% rate found in a sample of gamblers (Woodruff and Gregory 2003), indicating Internet gambling may be more popular among those who have already tried land-based gambling (in this sample, 99% report land-based gambling in the past year). That not every respondent gambled online for money may seem counterintuitive, given that individuals were recruited via an Internet gambling website, but has a number of possible explanations. One, a banner was

placed not on an Internet gambling website per se, but as part of a casinocity.com newsletter. Recipients of the newsletter include, but may not be limited to, online gamblers, as online businesses often share “mailing lists”. Two, more respondents reported playing on the practice sites than gambling online. These sites may attract those who wish to play gambling-type games without actually risking any money. Previous studies of online gamblers did not investigate these sites and, given the high participation rates, clearly more research is needed into this phenomenon.

This study found significant age differences in gambling participation. Regarding the entire sample, more older participants had gambled on land, but twice as many 18–24 year-olds than 25–54 year-olds and four times as many 18–24 year-olds than those 55 and over have gambled on the Internet. Older participants may be partial to land-based gambling, whereas younger participants, accustomed to spending time on the computer for other aspects of their lives, may be choosing the Internet primarily as a gambling venue. However, participants 25–54 years old comprise the majority of those who reported online gambling. This finding is consistent with research examining Internet gamblers, whose profile reflects older participants (i.e., 26–54) (GamCare 2006; Woolley 2003). It is noteworthy, given that younger individuals may be more computer-savvy, and it reflects how pervasive the Internet may have become across all age groups. Nevertheless, the age ratio among online gamblers may change in years to come, as seen by the large number of young people reporting having gambled on the Internet in this study, along with the high profile of poker in the media.

Problem Gambling

Prevalence rates for problem gamblers found in this study are higher than those found in previous research on land-based gamblers (Cox et al. 2005; National Research Council 1999; Shaffer and Hall 2001; Shaffer et al. 1999; Slutske 2006; Volberg 2002; Welte et al. 2002). Among the entire sample, 23% were identified as problem gamblers; when the online gamblers are considered specifically the rate is 29%. The current rates are consistent with Wood and Williams’ (2007a) research and imply the rate of problem gambling among Internet gamblers may be higher than the rate among the general population. Compared to social gamblers, in this study problem gamblers spend more time gambling per session, are more likely to gamble alone, from school, or with a cell phone, gamble with more money, and lose more money gambling online. Problem gamblers are significantly more likely than social gamblers to choose to gamble on the Internet because it is easier to hide their gambling from others. This result makes it particularly important that online sites have measures in place to help those with gambling problems. Problem gamblers are also more likely to wager online while consuming alcohol or illicit drugs. This latter finding is troubling, as the use of substances may cause distorted decision-making with respect to setting limits on gambling behavior. In addition, 84% of problem gamblers attempt at some point to recoup their losses. These results hint at a disturbing and difficult relationship between the Internet and individuals with gambling problems. Internet gambling sites provide little in the way of “gatekeeping” to protect those who with land-based gambling may be identified as vulnerable (i.e., problem gamblers or intoxicated individuals) by responsible members of the gambling industry (Griffiths 2003).

With respect to payment, only half of respondents gambled online using credit cards, which may be a result of the Unlawful Internet Gambling Enforcement Act in the U.S. (Rose 2006b; Sullivan and Cromwell Law Firm 2006). Debit cards and bank transfers were the second and third most popular payment options. Problem gamblers, compared to social

gamblers, were more likely to gamble with debit cards, personal cheques, or family credit cards without permission, whereas social gamblers were more likely to wager using Neteller. The findings may connote that social gamblers are more cautious with their funds or budget, while problem gamblers gamble by any means necessary. The accessibility of the Internet may make it difficult to walk away when the money has run out.

Playing/Gambling Behavior

For both practice and money sites, the most popular online activities were cards, followed by (to different degrees based on whether or not money is involved) blackjack, roulette, and slot/electronic gaming machines. Sports betting and horse racing were more popular for the money sites than for the practice sites. Few participants played or gambled online weekly, however, for those who did cards was overwhelmingly the game chosen, with over half of all participants gambling for money with cards. In addition to card gambling, upwards of one quarter of respondents reported gambling once a week or more on blackjack, sports betting, slot machines, and horse racing.

Problem gamblers were significantly more likely, relative to social gamblers, to choose to gamble on blackjack, dice, spread betting (both practice and money), mahjong, and Jai alai (although for the last two no social gamblers endorsed participation). Problem gamblers were also more likely to gamble weekly on slot machines, roulette, keno, and spread betting. It may be noteworthy that many of the games significantly preferred by problem gamblers all have rapid event frequencies (i.e., blackjack, dice, roulette, slot machines). Griffiths (1999) hypothesized that gambling activities that offer outcomes every minute, as an example, would probably cause greater problems than activities that offer outcomes less frequently. The idea is that lack of constraints on repeated gambling are an inducement to continue (Griffiths 1999). The preference by problem gamblers for dice, blackjack, roulette, and slot machines lends credence to this theory. The nature of the present study does not allow conclusions that playing games with rapid event frequencies has caused problems for Internet gamblers, but results add evidence to the theory that the Internet may be a particularly attractive medium for individuals with gambling problems (Griffiths 1996, 2003; Turner et al. 2006; Wood and Williams 2007b). In addition, problem gamblers endorsed high speed play as a reason to choose online gambling. It may be especially important for Internet gambling websites to have in place measures that slow games down, delay opportunities to immediately re-gamble winnings, and place time limits or reminders on an individual gambler's gambling session.

Internet Gambling-Type Games Without Money

When asked why they chose to play on Internet practice sites, respondents' top five reasons were fun, entertainment, relaxation, to relieve boredom, and excitement. Problem gamblers were more likely than social gamblers to report playing to relieve boredom, to relieve anxiety or depression, and to escape from problems. Higher levels of depression among problem gamblers, compared to social gamblers and controls, have been found for adolescents (Gupta and Derevensky 1998a, b; Marget et al. 1999; Nower et al. 2004b), adults (Blaszczynski and McConaghy 1988; Farrelly et al. 2007; Linden et al. 1986; Turner et al. 2006), college students (Moodie and Finnigan 2006; Stuhldreher et al. 2007), young adults (Feigelman et al. 2006), and GA members (Getty et al. 2000). Relationships between problematic gambling and anxiety are equivocal and have been reported by some (e.g., Turner et al. 2006) but not others (e.g., Blaszczynski et al. 1986). Gambling to escape

problems has been tied to poor coping skills, and the relationship between maladaptive coping skills and gambling problems has been seen in adolescents (Gupta and Derevensky 1998a; Marget et al. 1999; Nower et al. 2004a, b), young adults (Nower et al. 2004a, b), GA members (Getty et al. 2000), college students (Lightsey and Hulsey 2002), and adults (Farrelly et al. 2007; McCormick 1994; Turner et al. 2006). A link between boredom and problem gambling has also been established (Bonnaire et al. 2004; Dickerson et al. 1987; Parke et al. 2007; Gupta et al. 2006; Kuley and Jacobs 1988). An inability to cope with boredom has been referred to as a powerful trigger for problem gambling (GamCare 2006). The use of gambling by problem gamblers as an escape mechanism or to relieve boredom, anxiety, or depression and the accessibility on the Internet is troubling and needs to be investigated further.

Online Wagers

Half of the participants wagered on average less than \$25 per session. Nevertheless, relative to social gamblers, significantly more problem gamblers are wagering, both on average and in one session, over \$1,000 and report losing over \$1,000. The virtual nature of cash and “chips” may facilitate wagering larger amounts of money. It would bode well for Internet sites to have in place measures that allow gamblers to limit their spending. Interestingly, one quarter of online gamblers reported wagering no money. If indeed players are wagering money they won from the practice tournaments on paying sites, then practice sites may be opening doors to online gambling. The role of practice sites in initiating gambling for money is unclear, and it may be warranted investigating the factor the “Play for free, win for real” options¹ have in decisions to gamble for money.

When examined as a unique subsample, a picture of online gamblers emerged. In this study, those who had gambled online were male, primarily social gamblers (though there was a high prevalence of problem gamblers), single, university educated, and working full-time. This is consistent with what has been found previously (Wood et al. 2007; Woodruff and Gregory 2003; Woolley 2003). Familiarity with and access to personal computers may be a limiting factor in Internet gambling participation. Nonetheless, as larger groups of individuals become more computer savvy and as technology becomes increasingly accessible the role of the Internet with respect to gambling needs to be monitored.

One limitation of this study is the correlational nature of the data makes it impossible to determine if Internet gambling is more likely than land-based gambling to lead to a gambling problem, or if problem gamblers are using the Internet as an accessible opportunity to gamble. Another limitation is that due to the sampling procedure, the data may be more reflective of the respondents in particular than of Internet gamblers in general, though this is always a risk with self-report. Nonetheless, it is clear certain aspects of the Internet, such as the 24-h accessibility, the sheer number of sites, the high-speed play, the lack of safeguards for individuals who have been drinking or using drugs, and the ease with which one can hide a gambling problem, make it a risk factor for gambling problems. Further research into Internet gambling and its relationship to problem gambling is needed in order to more fully understand and minimise the harm posed by this ubiquitous gambling opportunity.

⁰ Seen at <http://www.partypoker.net>.

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