Beyond description:
Understanding gender differences in problem gambling

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Background and aims: Though women make up roughly one third of all problem gamblers, research has typically focused on male problem gamblers. Recent research has started to shift its attention toward the importance of gender. However, studies rarely attempt to understand gender differences in problem gambling or subject these differences to thorough multivariate analyses. To address some of the gaps in our knowledge of gender differences, we examine whether patterns of gambling behavior and psychological factors mediate the relationship between gender and problem gambling. *Methods:* We use logistic multiple regression to analyze two large Canadian datasets – the 2005 Ontario Prevalence Survey and the 2007 Canadian Community Health Survey. *Results:* Variables found to mediate the relationship between gender and problem gambling are the type(s) of game(s) played (in the 2005 Ontario Prevalence Survey) and the number of games played (in the 2007 Canadian Community Health Survey). *Conclusions:* Men are more likely to be problem gamblers than women, and this gender difference is understandable in terms of differences in patterns of gambling behavior. We conclude that men experience problems because they play riskier games and women experience problems because they prefer chance-based games, which are associated with significantly higher odds of problem gambling. We specify the three main ways that women's reasons for gambling – to escape or for empowerment – translate into chance-based games.

Keywords: problem gambling, women, patterns of gambling behavior

INTRODUCTION

While women make up roughly one third of all problem gamblers, research has typically focused on the experience of male problem gamblers. This narrow focus ignores how causes and consequences differ by gender. Recent research has started to shift toward assessing the importance of gender, describing demographic, behavioral and psychological differences among male and female problem gamblers. However, these studies ignore an important question: How do we *explain* gender differences in problem gambling? We use two large Canadian datasets to look at whether differences in patterns of gambling behavior and psychological factors help explain gender differences in problem gambling.

Problem gambling is defined as "'persistent and recurrent maladaptive gambling behaviour' characterized by an inability to control gambling, leading to significant deleterious psychosocial consequences: personal, familial, financial, professional and legal" (Blaszczynski & Nower, 2002). For this paper, we use the term problem gambling to encompass both pathological (clinical) and problem gambling (subclinical).

The rate of problem gambling in the general population is between 2.5 and 7% (Afifi, Cox, Martens, Sareen & Enns, 2010b; Blanco, Hasin, Petry, Stinson & Grant, 2006; Marshall & Wynne, 2004); yet, studies have reported gender differences in this rate. Blanco et al. (2006), using the National Epidemiological Survey of Alcoholism and Related Conditions (NESARC, *n* = 43,093), determined that the lifetime prevalence of problem gambling was 3.26% for women and

6.79% for men. Another representative sample of American adults (*n* = 2,630) reflected similar findings: 2.9% for females and 4.2% for males (Welte, Barnes, Wieczorek, Tidwell & Parker, 2002). Despite some variability, the male to female prevalence ratio tends to remain slightly under two to one. This is consistent with estimates from the early 1990s that claimed that although Gamblers Anonymous (GA) members were 94–98% male, females still represented one third of problem gamblers (Lesieur & Blume, 1991; Volberg, 2004).

THE GENDERED FOCUS OF PROBLEM GAMBLING RESEARCH

Our understanding of male problem gamblers is more extensive than of female gambling. This seems reasonable given that male problem gamblers are more numerous. However, one estimate suggests that up to 95% of the literature on problem gambling is based on sample populations made up of 98% men (Boughton, 1999). Even researchers who intend to investigate gender differences contribute to the bias because male problem gamblers are more accessible. In the past, researchers most frequently obtained their samples from male-dominated gambling venues and outpatient treat-

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ment programs like GA, in which females make up only 2–6% of the population (Mark & Lesieur, 1992). Research has typically considered the male experience as the benchmark, assuming that what is true for a male problem gambler is also true for a female (Mark & Lesieur, 1992).

Recent literature acknowledges that there is a shortage of gender-specific research in problem gambling (Boughton & Falenchuk, 2007; Lesieur & Blume, 1991; Mark & Lesieur, 1992), and the research that exists is 'woefully inadequate' (Piquette & Stevens, 2012). Differences in prevalence across genders are likely reflective of differences in the experience of problem gambling and the broader framework of gendered health experiences and outcomes. For example, it is widely understood that men and women experience stress differently; similarly, "women experience gambling and gambling problems differently than men" (Brown & Coventry, 1997, p. 25).

DESCRIBING GENDER DIFFERENCES AMONG PROBLEM GAMBLERS

Some research has looked at the characteristics of female problem gamblers compared to male problem gamblers. These differences can be grouped demographically, by patterns of gambling behavior and by psychological factors. Female problem gamblers are less likely to be employed full time, and as a result, tend to have incomes below $20,000 (Blanco et al., 2006; Walker, Hinch & Weighill, 2005). They are more likely to be middle aged (30–49 years), typically have less than a high school education, and are often part of a minority population (Ladd & Petry, 2002; Potenza et al., 2001; Tavares et al., 2003). Female problem gamblers are typically single, divorced or widowed (Blanco et al., 2006; Echeburua, Gonzalez-Ortega, de Corral & Polo-Lopez, 2010).

Female problem gamblers also tend to begin gambling later in life and progress toward disordered gambling quickly (Echeburua et al., 2010; Ladd & Petry, 2002). They prefer a narrow range of games that are non-strategic and chance-based, like slot machines and bingo (Grant, Kushner & Kim, 2002; Hing & Breen, 2001; Nower & Blaszczynksi, 2006). Finally, they tend to have similar reasons for gambling: they resort to gambling to escape negative emotions and the stresses of everyday life (Afifi, Cox, Martens, Sareen & Enns, 2010a; Grant et al., 2002; Li, 2007).

Lastly, female problem gamblers tend to share certain psychological characteristics, such as higher concurrent rates of internalizing and/or affective disorders (Desai & Potenza, 2008; Ibanez, Blanco, Moreryra & Saiz-Ruiz, 2003). Often, they experience instability or trauma during childhood, abusive or troublesome relationships in adulthood, and low (real or perceived) social status (Boughton & Falenchuk, 2007; Bunkle, 2009; Petry & Steinberg, 2005; Specker, Carlson, Edmonson, Johnson & Marcotte, 1996). As a result, another reason women often turn to gambling is for a temporary sense of empowerment (Bunkle, 2009; Casey, 2008). Male gamblers score significantly higher on impulsivity and sensation seeking scales, which correlate with their higher prevalence of externalizing disorders, their tendency to place higher wagers, and their participation in more exhilarating gambling activities like horse racing and sports betting (Echeburua et al., 2010; Ibanez et al., 2003).

The existence of descriptive research on gender differences is encouraging, but lacking in several areas. The number of recent (1990–2011) studies with a sample of at least one third females that touch on gender differences is minimal; only 40 studies meet this criterion (Afifi et al., 2010a; Boughton & Falenchuk, 2007; Crisp et al., 2000). Of these, some are large-scale population studies that solely report one-dimensional descriptives of gender differences (Blanco et al., 2006; Desai & Potenza, 2008; Welte et al., 2002). Many of the others use smaller samples and record gender differences only as a by-product of looking at correlations with other mental illnesses (Barry, Steinberg & Potenza, 2009; Hodgins et al., 2010; Perez de Castro, Ibanez, Torres, Saiz-Ruiz & Fernandez-Piqueras, 1997). Only 15 of the 40 studies give more than a passing mention of gender differences (Blanco et al., 2006; Ibanez at al., 2003; Tavares et al., 2003; Walker et al., 2005), and only one offers a potential *explanation* for gender differences (Walker et al., 2005). Gender differences have not been the subject of thorough multivariate analysis, with one exception (Welte, Barnes, Wieczorek, Tidwell & Hoffman, 2007).

AIM OF THE STUDY

This exploratory study uses two large Canadian datasets to find out whether patterns of gambling behavior and psychological factors act as mediators in the relationship between gender and problem gambling.

We hypothesized that problem gambling among men would be related to playing a wider range of games, skill-based games, and compounded by externalizing disorders, such as alcoholism, while problem gambling among women would be related to a narrower range of games, chance-based games, adulthood stress and internalizing disorders, like depression and anxiety. We include demographic variables in our analysis, yet believe that demographic differences do not fully explain gender differences. As a result, we focus on psychological and behavioral factors.

We analyze two datasets that offer the most recent data on gambling in Ontario, Canada – the 2005 Ontario Prevalence Survey (Wiebe, Mun & Kauffman, 2006) and the 2007 Canadian Community Health Survey (CCHS; Statistics Canada, 2008). We examine both because they contain different variables of interest. The 2005 survey asks several questions about patterns of gambling behavior. In contrast, the 2007 CCHS includes numerous psychological factors.

STUDY 1

METHODS

Data source

The 2005 Ontario Prevalence Survey data was collected via telephone survey, using Random Digit Dialing, with a total sample size of 3,604 adults 18 years and older residing in Ontario. Respondents were asked about their past year's participation in 18 gambling activities, how often they participated, and the time and money spent on each activity. Respondents were also asked about their age, gender, income,

education, and ethnicity. Only those who had gambled on at least one activity in the past year were administered the Problem Gambling Severity Index (PGSI) from the Canadian Problem Gambling Index (CPGI). The PGSI examines the severity of gambling-associated problems experienced in the past year (Ferris & Wynne, 2001).

Measurement

Problem gambling

Problem gambling is measured using the CPGI. Nine of the CPGI items represent symptoms of problem gambling and form the Problem Gambling Severity Index (PGSI). The items ask frequency in the past year of: 1) needing to gamble with larger amounts of money to get the same feeling of excitement, 2) going back another day to try to win back money lost, 3) borrowing money or selling anything to get money to gamble, 4) feeling that they might have a problem with gambling, 5) gambling causing health problems, including stress or anxiety, 6) people criticizing their betting or telling them they have a gambling problem, regardless of whether or not they thought it was true, 7) gambling causing financial problems for them or their family, 8) feeling guilty about the way they gamble or what happens when they gamble, and 9) betting more than they could afford to lose. Responses are Never (0), Sometimes (1), Most of the time (2) and Almost always (3).

We sum responses across all 9 questions to create a problem gambling severity score that ranges between 0 and 27. A score of 0 is indicative of non-problem gambling, 1–2 represents a low level of problems, 3–7 indicates moderate problems, and 8 or more represents problem gambling (Ferris & Wynne, 2001). We use a problem gambling dichotomy, where scores of 0 to 2 indicate non-problem gambling and scores 3 or above represent problem gambling. We combine gamblers with moderate and severe problems into one category because they are more likely to experience negative consequences from their gambling, engage in maladaptive gambling behaviors, and typically have mental health issues (Brooker, Clara & Cox, 2009; Cox, Yu, Affifi & Ladouceur, 2005).

Patterns of gambling behavior

We examine the role played by the type(s) of game(s) played, the number of games played and the percent of income spent on gambling.

Psychological factors

No questions about psychological factors were included in this survey.

Controls

We control for the following demographic variables: age, ethnicity, marital status, employment status, education, and income.

Statistical procedures

To identify mediating variables, we use logistic multiple regression to find the unique contribution of specific variables under conditions of non-normality or non-linearity. We enter variables into the regression analysis using the forced entry method where blocks of variables are added according to how we believe they occur chronologically and how they relate to each other. For example, demographic variables are entered in the first block because variables like age are determined before patterns of gambling behavior or psychological variables. Further, measures of stress are entered in the same block because they tap into a similar concept. In the first model, we control for demographics to verify that gender differences are not spurious. In subsequent models, we add patterns of gambling behavior and psychological factors to determine their role in understanding the relationship between gender and problem gambling.

RESULTS

Descriptive results

Demographics

There are several significant demographic gender differences, which are summarized in Table 1. Male respondents tend to be younger than females. Men are more likely to report being single, while more female respondents are widowed or divorced. Female respondents report far lower personal incomes. More women tend to make $20,000 or less per annum, while more men have personal incomes between $60,000 and $99,999. Men are more likely to be employed full time, while women tend to self-identify as homemakers. Men are more likely to identify as East Asian and European, while women tend to identify as North American. There are no significant gender differences in education.

Patterns of gambling behavior

We found significant gender differences in patterns of gambling behavior – summarized in Tables 2 and 3. Men are more likely to gamble on several games: cards/board games, table games at Ontario casinos, sports betting, horse races, games of skill, arcade/video games, the Internet, speculative investments, out-of-province casinos, and lottery tickets. Women are more likely to play bingo. The games that do not differ by gender are raffle/fundraising tickets, instant-win tickets, and slot machines at Ontario casinos, Ontario racetracks and out-of-province. Men and women spend a significantly different amount of money on only one game: bingo.

Men experience twice as many gambling related problems as women (.58 versus .33, $F = 25.74$, $p < .001$). Men are also significantly more likely to be classified as problem gamblers, as illustrated in Table 4.

Regression results

The full regression results are summarized in Table 5. In the first model, we include the demographics: gender, age, personal income, education, ethnicity, marital status, and employment status. Results show that females are less likely to be problem gamblers (OR = 0.64, $p = 0.05$).

In the second model we add type of gambling activity. This addition renders gender non-significant. The odds ratio for gender is reduced from 0.64 to 0.70 and the significance drops from $p = 0.05$ to $p = 0.15$. The non-significance of

Table 1. Gender differences in demographic variables – 2005 Ontario Prevalence Survey

Demographic variable		Gender						Chi-square tests		
		Male		Female		Total		Value	df	Asymp. sig. (2-sided)
		%	N	%	N	%	N			
Age	18 to 24	15.5%	(264)	9.7%	(169)	12.6%	(433)	33.65	4	< .001
	25 to 34	18.0%	(306)	16.5%	(288)	17.2%	(594)			
	35 to 49	33.9%	(577)	36.0%	(627)	34.9%	(1204)			
	50 to 59	18.6%	(317)	19.8%	(345)	19.2%	(662)			
	60 or over	14.1%	(240)	17.9%	(312)	16.0%	(552)			
	Total	100%	(1704)	100%	(1741)	100%	(3445)			
Marital status	Married/Common law/Living with partner	62.6%	(1083)	62.9%	(1119)	62.7%	(2202)	68.33	3	< .001
	Widowed	2.9%	(50)	6.5%	(115)	4.7%	(165)			
	Divorced/Separated	6.6%	(115)	11.1%	(197)	8.9%	(312)			
	Single/Never married	27.9%	(482)	19.6%	(349)	23.7%	(831)			
	Total	100%	(1730)	100%	(1780)	100%	(3510)			
Education	No high school education	5.2%	(90)	4.7%	(84)	5.0%	(174)	4.59	5	.47
	Some high school	6.9%	(118)	7.0%	(124)	6.9%	(242)			
	Completed high school	20.4%	(351)	21.2%	(378)	20.8%	(729)			
	Some post-secondary	12.3%	(212)	10.7%	(191)	11.5%	(403)			
	Completed post-secondary	45.8%	(788)	48.0%	(855)	46.9%	(1643)			
	Completed post-graduate	9.4%	(161)	8.4%	(149)	8.9%	(310)			
	Total	100%	(1720)	100%	(1781)	100%	(3501)			
Personal income	No income	0.9%	(14)	2.5%	(37)	1.7%	(51)	180.04	5	< .001
	Less than $20,000	21.3%	(315)	33.9%	(510)	27.6%	(825)			
	Between $20,000 and $39,999	22.5%	(333)	30.1%	(453)	26.3%	(786)			
	Between $40,000 and $59,999	21.3%	(316)	17.1%	(257)	19.2%	(573)			
	Between $60,000 and $99,999	23.2%	(343)	13.3%	(200)	18.2%	(543)			
	More than $100,000	10.8%	(160)	3.1%	(47)	6.9%	(207)			
	Total	100%	(1481)	100%	(1504)	100%	(2985)			
Employment status	Employed full-time (30 or more hours/week)	62.9%	(1085)	43.7%	(782)	53.1%	(1867)	251.57	7	< .001
	Employed part-time (less than 30 hours/week)	4.2%	(73)	10.8%	(193)	7.6%	(266)			
	Unemployed	7.0%	(121)	6.7%	(120)	6.9%	(241)			
	Student – Employed part or full time	3.4%	(58)	3.3%	(59)	3.3%	(117)			
	Student – Not employed	4.8%	(82)	4.4%	(79)	4.6%	(161)			
	Retired	14.9%	(258)	20.2%	(362)	17.6%	(620)			
	Homemaker	0.3%	(5)	8.2%	(146)	4.3%	(151)			
	Other	2.5%	(44)	2.6%	(47)	2.6%	(91)			
	Total	100%	(1726)	100%	(1788)	100%	(3514)			
Ethnicity or family's origin	North America	42.8%	(736)	47.5%	(850)	45.2%	(1586)	23.21	12	.03
	South America	1.0%	(17)	0.4%	(7)	0.7%	(24)			
	Africa	1.7%	(30)	1.5%	(26)	1.6%	(56)			
	Caribbean	1.2%	(21)	1.6%	(29)	1.4%	(50)			
	Western Europe	34.5%	(593)	33.7%	(604)	34.1%	(1197)			
	Eastern Europe	5.6%	(96)	4.7%	(85)	5.2%	(181)			
	East Asia	3.8%	(66)	2.0%	(36)	2.9%	(102)			
	Aboriginal	0.8%	(14)	0.8%	(14)	0.8%	(28)			
	South Asia	3.2%	(55)	2.8%	(51)	3.0%	(106)			
	Southeast Asia	2.2%	(37)	2.1%	(37)	2.1%	(74)			
	Middle East	2.2%	(37)	2.0%	(36)	2.1%	(73)			
	Oceania	0.0%	(0)	0.1%	(1)	0.0%	(1)			
	Other	0.9%	(16)	0.8%	(15)	0.9%	(31)			
	Total	100%	(1718)	100%	(1791)	100%	(3509)			

Table 2. Gender differences in type of gambling game – 2005 Ontario Prevalence Survey

Type of game	Gender				Total		Chi-square tests		
	Male		Female						
	%	N	%	N	%	N	Value	df	Asymp. sig. (2-sided)
Lottery tickets	56.6%	(999)	48.3%	(882)	52.4%	(1881)	24.43	1	< .001
Instant win or scratch tickets	23.5%	(415)	26.3%	(480)	24.9%	(895)	3.77	1	.05
Raffles or fundraising tickets	29.2%	(516)	28.2%	(514)	28.7%	(1030)	.49	1	.49
Horse races	5.4%	(95)	2.9%	(52)	4.1%	(147)	14.61	1	< .001
Bingo	3.1%	(54)	6.5%	(119)	4.8%	(173)	23.47	1	< .001
Slot machines in Ontario casino	17.1%	(302)	15.9%	(290)	16.5%	(592)	.96	1	.33
Table games in Ontario casino	11.0%	(194)	2.2%	(41)	6.5%	(235)	111.98	1	< .001
Slot machines at an Ontario racetrack	6.2%	(110)	6.9%	(125)	6.5%	(235)	.57	1	.45
Slot machines or video lottery terminals (VLTs) outside of Ontario	3.5%	(62)	2.7%	(50)	3.1%	(112)	1.76	1	.19
Sport select like Pro line, over/under and point spread	7.8%	(137)	1.0%	(18)	4.3%	(155)	99.57	1	< .001
Sports pools or outcome of sporting events	7.2%	(128)	1.3%	(24)	4.2%	(152)	77.94	1	< .001
Cards or board games with friends or family	13.0%	(230)	4.1%	(75)	8.5%	(305)	91.66	1	< .001
Games of skill such as pool, bowling or darts	6.3%	(112)	1.2%	(22)	3.7%	(134)	65.87	1	< .001
Arcade or video games	2.7%	(47)	.6%	(11)	1.6%	(58)	23.93	1	< .001
Internet which includes day trading, casino table games, VLTs/slot machines, poker and sports betting	2.8%	(50)	.5%	(10)	1.7%	(60)	28.48	1	< .001
Sports with a bookie/bookmaker	.7%	(13)	.1%	(1)	.4%	(14)	10.72	1	.001
Short-term speculative stock or commodity purchases such as day trading	3.3%	(58)	.6%	(11)	1.9%	(69)	34.25	1	< .001
Casinos out of province	6.6%	(117)	3.8%	(70)	5.2%	(187)	14.12	1	< .001

Table 3. Gender differences in money spent in dollars in last month – 2005 Ontario Prevalence Survey

Type of game	Gender								F	Sig.
	Male				Female					
	N	Mean	SE	Median	N	Mean	SE	Median		
Horse races	67	506.52	210.14	37.50	35	19.80	3.70	20.00	2.81	.10
Bingo	53	200.50	71.56	50.00	99	84.70	11.80	40.00	4.48	.04
Ontario casino slots	251	148.54	33.86	40.00	216	94.20	18.11	40.00	1.82	.18
Table games in Ontario casino	168	218.39	44.74	50.00	26	135.37	77.23	20.00	.50	.48
Race track slots	91	115.72	24.19	40.00	94	93.69	25.70	39.70	.39	.53
Internet gambling	40	1687.26	785.10	50.00	6	732.14	767.10	6.02	.22	.65
Sports betting with a bookie	13	506.36	325.62	100.00	1	300.00	.00	300.00	.023	.87
Short-term speculative investments	45	5638.85	1264.74	2000.00	4	3037.50	2580.07	1179.47	.32	.57

Table 4. Gender differences in PGSI category in last 12 months – 2005 Ontario Prevalence Survey

PGSI category	Gender				Total		Chi-square tests		
	Male		Female						
	%	n	%	N	%	n	Value	df	Asymp. sig. (2-sided)
Non-problem gamblers	81.9%	(974)	89.3%	(958)	85.4%	(1932)	25.06	3	< .001
At risk gambling	11.4%	(135)	6.6%	(71)	9.1%	(206)			
Moderate risk gambling	5.0%	(59)	3.3%	(35)	4.2%	(94)			
Problem gambling	1.8%	(21)	.8%	(9)	1.3%	(30)			
Total	100%	(1189)	100%	(1073)	100%	(2262)			

gender indicates that the type of gambling activity accounts for the association between gender and problem gambling. Because the relationship is explained, we do not examine the role played by number of different gambling games or percent of income spent on gambling.

In sum, the variable that mediates the relationship between gender and problem gambling in the 2005 Ontario Prevalence Survey is the type(s) of game(s) played.

Table 5. Odds ratios for logistic multiple regression analysis for problem gambling – 2005 Ontario Prevalence Survey

Variable	Model 1	Model 2
Negalkerke R^2	.04	.16
Gender (Reference: Male)	.64*	.70 (ns)
Age (Reference: 60 or over)		
18 to 24	2.56*	1.26 (ns)
25 to 34	2.73*	1.80 (ns)
35 to 49	2.03 (ns)	1.79 (ns)
50 to 59	1.29 (ns)	1.25 (ns)
Ethnicity (Reference: Self-identified as non-Canadian)	1.08 (ns)	1.20 (ns)
Marital status (Reference: Without partner)	.72 (ns)	.75 (ns)
Employment status (Reference: Unemployed)	–.75 (ns)	.82 (ns)
Education (Reference: Completed post-secondary)		
< Secondary graduation	1.58 (ns)	1.56 (ns)
Secondary graduation	1.29 (ns)	1.27 (ns)
Some post-secondary	1.01 (ns)	.86 (ns)
Personal income (Reference: > 100K)		
< 20K	.94 (ns)	1.54 (ns)
20 to 39.9K	1.20 (ns)	1.37 (ns)
40 to 59.9K	.99 (ns)	1.28 (ns)
60 to 99.9K	.47 (ns)	.57 (ns)
Type of game (Reference: No games)		
Lottery tickets		.90 (ns)
Scratch tickets		1.28 (ns)
Raffle tickets		.71 (ns)
Horse races		1.03 (ns)
Bingo		1.78 (ns)
Ontario slot machines		1.24 (ns)
Ontario casino table games		1.75 (ns)
Slot machines at Ontario race track		4.03*
Slot machines or VLTs outside of Ontario		.89 (ns)
Sports select like Pro Line		1.34 (ns)
Sports pools or outcome of sporting events		1.08 (ns)
Cards or board games with family or friends		2.04*
Games of skill		1.22 (ns)
Casinos out of province		1.59 (ns)

**$p < .001$; *$p < .05$; (ns) = not significant

STUDY 2

METHODS

Data source

The 2007 Canadian Community Health Survey (CCHS, 4.1) had a target population of all Canadians aged 12 and over, excluding individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces and residents of certain remote regions. The CCHS has 4 components: core content, theme content, optional content and rapid response content. We focus on the Ontario sample ($n = 28,288$) who were asked the optional problem gambling component, in addition to the core and theme content. Respondents were asked about the type(s) of game(s) they play; psychosocial variables such as alcohol use, general health status, mental health, and stress; and demographics including age, gender, marital status, education, immigrant status, employment, and income. Only respondents who gambled more than 5 times in the past year were administered the Problem Gambling Severity Index.

Measurement

Problem gambling

Problem gambling is measured in the same way as in the 2005 Ontario Prevalence Survey, using the PGSI.

Patterns of gambling behavior

In this survey, we can only look at number of gambling activities.

Psychological factors

We look at the mediating role played by self-perceived health and mental health, mood and anxiety disorders, life satisfaction, self-perceived life and work stress, sense of belonging to the community and type of drinker.

Controls

We control for the following demographic variables: age, marital status, education, income, and self-identifying as an immigrant.

Statistical procedures

We perform the same statistical procedures with the 2007 CCHS as outlined for the 2005 Ontario Prevalence Survey.

RESULTS

Descriptive results

Demographics

We found several significant demographic gender differences, which are summarized in Table 6. Male respondents tend to be younger and more likely to be married or single. Women are more likely to be widowed, divorced or separated. Men are somewhat more likely to have some or all of their post-secondary education, while women are more likely to have completed their secondary education. Women are more likely to report no personal income in the past year or incomes of less than $20,000. Conversely, men are more likely to report incomes of $40,000 or more. Men are more likely to self-identify as immigrants.

Patterns of gambling behavior

Gender differences in patterns of gambling behavior are summarized in Table 7. Men play significantly more gambling games than women. On average, women score lower on the PGSI than men. Similarly, men are more often problem gamblers, as summarized in Table 8.

Table 6. Gender differences in demographic variables – 2007 Canadian Community Health Survey

Variable	Categories	Male		Female		Total		Chi-square tests		
		%	n	%	n	%	n	Value	df	Asymp sig. (2-sided)
Age	18 to 24	8.4%	(1086)	7.2%	(1069)	7.8%	(2155)	80.37	4	< .001
	25 to 34	13.7%	(1766)	13.9%	(2061)	13.8%	(3827)			
	35 to 49	28.3%	(3655)	24.8%	(3684)	26.4%	(7339)			
	50 to 59	19.3%	(2485)	20.0%	(2970)	19.7%	(5455)			
	60 or more	30.3%	(3905)	34.2%	(5076)	32.4%	(8981)			
	Total	100.0%	(12897)	100.0%	(14860)	100.0%	(27757)			
Marital status	Married	55.4%	(7128)	48.2%	(7153)	51.5%	(14281)	663.71	3	< .001
	Common-law	7.0%	(906)	7.1%	(1054)	7.1%	(1960)			
	Widowed/Separated/Divorced	14.5%	(1864)	26.9%	(3983)	21.1%	(5847)			
	Single/Never married	23.1%	(2976)	17.8%	(2643)	20.3%	(5619)			
	Total	100.0%	(12874)	100.0%	(14833)	100.0%	(27707)			
Education	Less than secondary	16.8%	(2136)	16.6%	(2435)	16.7%	(4571)	15.03	3	.002
	Secondary graduate	17.9%	(2278)	19.6%	(2874)	18.8%	(5152)			
	Some post-secondary	7.6%	(962)	6.9%	(1016)	7.2%	(1978)			
	Post-secondary graduate	57.7%	(7348)	56.9%	(8354)	57.3%	(15702)			
	Total	100.0%	(12724)	100.0%	(14679)	100.0%	(27403)			
Total personal income	No income	1.2%	(135)	4.9%	(623)	3.1%	(758)	2077.9	5	< .001
	Less than $20,000	15.9%	(1839)	32.2%	(4136)	24.5%	(5975)			
	$20,000–$39,999	26.5%	(3064)	31.4%	(4030)	29.1%	(7094)			
	$40,000–$59,999	24.5%	(2831)	18.0%	(2311)	21.1%	(5142)			
	$60,000–$79,999	15.8%	(1830)	8.3%	(1062)	11.9%	(2892)			
	$80,000 or more	16.1%	(1863)	5.3%	(677)	10.4%	(2540)			
	Total	100.0%	(11562)	100.0%	(12839)	100.0%	(24401)			
Self-identified as an immigrant	Yes	20.0%	(2541)	18.7%	(2743)	19.3%	(5284)	7.36	1	.007
	No	80.0%	(10192)	81.3%	(11956)	80.7%	(22148)			
	Total	100.0%	(12733)	100.0%	(14699)	100.0%	(27432)			

Table 7. Gender differences in patterns of gambling behavior – 2007 Canadian Community Health Survey

Patterns of gambling behavior	Male			Female			Total			F	Sig.
	N	Mean	Standard deviation	N	Mean	Standard deviation	N	Mean	Standard deviation		
Number of gambling activities	12750	2.29	1.52	14715	2.10	1.19	27465	2.19	1.36	608.47	< .001
PGSI score	8878	0.22	1.14	10771	0.16	1.01	19649	0.19	1.07	45.97	< .001

Table 8. Gender differences in PGSI category – 2007 Canadian Community Health Survey

PGSI category	Male		Female		Total		Chi-square tests		
	%	N	%	N	%	N	Value	df	Asymp. sig. (2-sided)
Non-problem gambler	63.8%	(8139)	69.2%	(10173)	66.7%	(18312)	105.78	4	< .001
Low risk gambler	3.9%	(503)	2.6%	(388)	3.2%	(891)			
Moderate risk gambler	1.5%	(187)	1.1%	(160)	1.3%	(347)			
Problem gambler	0.4%	(49)	0.3%	(50)	0.4%	(99)			
Not a gambler	30.4%	(3883)	26.8%	(3937)	28.5%	(7820)			
Total	100.0%	(12761)	100.0%	(14708)	100.0%	(27469)			

Psychological factors

Gender differences in psychological factors are summarized in Table 9. Men are significantly more likely to report experiencing no stress in their lives, while women report having a bit or quite a bit of stress. Men are more likely to report that their work is not very or not at all stressful, while women feel that their work causes quite a bit or an extreme level of stress. In contrast, women are more likely to be very satisfied with their lives, while men are more often just satisfied with their lives. Women are also more likely to feel a strong sense of belonging to their local community, while men more often feel a weak sense of belonging.

There are no gender differences in self-perceived health. However, it is more common for men to feel that their mental health is excellent, while women more often report fair or poor mental health. Women are more likely to report an anxiety or mood disorder. Men are more likely to be considered regular drinkers (more than once a month).

Regression results

Full regression results are summarized in Table 10. In the first model we include the demographics: gender, age, personal income, marital status, and education. This model finds that males are more likely to be problem gamblers (OR = 1.43, $p = 0.01$).

In our second model, we add health variables, including self-perceived physical and mental health, mood disorders and anxiety disorders. These variables slightly increase the gender odds ratio in the model. The odds ratio goes from 1.43 to 1.44 and the significance remains at $p = .01$. This suggests that variations in the 4 health variables mask or suppress part of the gender difference in problem gambling in the previous model.

In the third model, we add life satisfaction. This variable reduces the gender odds ratio from 1.44 to 1.39 and the significance remains at $p = 0.01$. However, the addition of life satisfaction does not significantly increase the predictive ability of the model.

In our fourth model, we add self-perceived life and work stress. These variables increase the gender odds ratio from 1.39 to 1.43 and the significance remains at $p = .01$. As in model 2, this suggests that variations in the stress variables suppress part of the gender difference in problem gambling.

In model 5, we include sense of belonging to the community. This variable leaves the gender odds ratio and its significance unchanged. We add self-identifying as an immigrant to Canada in model 6, which also leaves the values for gender largely unchanged.

In model 7, we add type of drinker to the analysis, which leads to an increase in the gender odds ratio from 1.43 to 1.47 and the significance from $p = .007$ to $p = .004$. As in models 2 and 4, variations in type of drinker suppress part of the gender difference in problem gambling.

In our final model, we add our only pattern of gambling behavior: number of gambling activities. This addition reduces the gender odds ratio from 1.47 to 1.17. More importantly, the significance is reduced from $p = .004$ to a non-significant $p = .28$. This shows that number of gambling activities accounts for the gender difference in problem gambling.

In sum, the variable that mediates the relationship between gender and problem gambling in the 2007 CCHS is number of gambling activities. Though the overall effect of life satisfaction is significant ($p = 0.02$), the addition of this variable does not add anything significant to the analysis.

DISCUSSION

Using multivariate analysis, the current study begins to address some oversight in past research. The main contribution of this study is specifying which of the many factors used to describe gender differences actually mediate the relationship between gender and problem gambling. The study began with a belief that patterns of gambling behavior and psychological factors would help explain gender differences in problem gambling, and we have proven the value of that approach. We have found that the type and number of games played are central factors that mediate the gendering of problem gambling. The psychological factors examined here do not significantly mediate the relationship between gender and problem gambling. As a result, our research is ultimately concerned with the reasons men play *different* games than women and *more* games than women; and with how these gender differences translate into different risks of problem gambling for men and women.

The literature review suggests that men play different, more exhilarating games because of greater impulsivity and sensation seeking (Echeburua et al., 2010; Ibanez et al., 2003). This may also be why they tend to play a wider variety of games. In our discussion of the findings, we conclude that the gendered differences in games played translate into higher risks of problem gambling for men because they are indicative of increased involvement in gambling and involve riskier games. Women, by contrast, experience gambling problems because they prefer chance-based games, which have been shown to be associated with significantly higher odds of problem gambling (Afifi et al., 2010b).

Women gamble primarily to escape stress and for empowerment (Afifi et al., 2010a; Bunkle, 2009). Based on past literature, we propose three main reasons these motivations translate into chance-based games, thereby increasing women's risk for problem gambling. First, higher rates of internalizing/affective disorders push women towards non-social games like video lottery terminals (VLTs) (Boughton & Falenchuk, 2007; Grant et al., 2002). Second, the monotony and minimal effort required by VLTs provide an easy and desired dissociative effect in the face of stress and negative emotions (Ibanez et al., 2003; Specker et al., 1996). Third and finally, women who hold lower (real or perceived) status prefer "equal/random chance" games because they can participate on equal terms to the person next to them, regardless of social status or demographics (Bunkle, 2009).

Though this study makes some contributions, it also has limitations. Chief among them are the limitations of the data available to us for secondary analysis. To start, the 2007 CCHS had only one question on patterns of gambling behavior. Also, no questions on psychological factors were asked in the 2005 Ontario Prevalence Survey. Further, questions about age of onset, progression to problem gambling, social motives for gambling, childhood stress, personality traits and impulsivity were not available in either dataset. Finally, we could not address the causal ordering issues involved in studying the mediators in the association between gender and problem gambling. It remains for studies with longitudinal data to determine the causal direction of these relationships.

Table 9. Gender differences in psychological factors – 2007 Canadian Community Health Survey

Variable	Categories	Gender						Chi-square tests		
		Male		Female		Total		Value	df	Asymp. sig. (2-sided)
		%	N	%	N	%	N			
Self-perceived health	Excellent	17.7%	(2281)	18.3%	(2724)	18.1%	(5005)	4.23	4	.38
	Very good	38.5%	(4955)	38.3%	(5684)	38.4%	(10639)			
	Good	30.1%	(3872)	29.2%	(4337)	29.6%	(8209)			
	Fair	10.1%	(1297)	10.4%	(1546)	10.3%	(2843)			
	Poor	3.7%	(473)	3.8%	(558)	3.7%	(1031)			
	Total	100.0%	(12878)	100.0%	(14849)	100.0%	(27727)			
Self-perceived mental health	Excellent	37.7%	(4853)	35.0%	(5188)	36.2%	(10041)	25.37	4	< .001
	Very good	36.4%	(4689)	37.9%	(5623)	37.2%	(10312)			
	Good	20.6%	(2656)	21.5%	(3185)	21.1%	(5841)			
	Fair	4.3%	(547)	4.4%	(660)	4.4%	(1207)			
	Poor	0.9%	(122)	1.2%	(179)	1.1%	(301)			
	Total	100.0%	(12867)	100.0%	(14835)	100.0%	(27702)			
Mood disorder	Yes	5.8%	(742)	10.8%	(1602)	8.5%	(2344)	225.43	1	< .001
	No	94.2%	(12135)	89.2%	(13241)	91.5%	(25376)			
	Total	100.0%	(12877)	100.0%	(14843)	100.0%	(27720)			
Anxiety disorder	Yes	4.2%	(547)	8.2%	(1211)	6.3%	(1758)	178.06	1	< .001
	No	95.8%	(12340)	91.8%	(13630)	93.7%	(25970)			
	Total	100.0%	(12887)	100.0%	(14841)	100.0%	(27728)			
Life satisfaction	Very satisfied	36.3%	(4659)	39.0%	(5765)	37.7%	(10424)	27.70	4	< .001
	Satisfied	54.6%	(7019)	51.6%	(7626)	53.0%	(14645)			
	Neither	5.6%	(714)	5.9%	(878)	5.8%	(1592)			
	Dissatisfied	2.9%	(376)	2.8%	(421)	2.9%	(797)			
	Very dissatisfied	0.6%	(81)	0.7%	(99)	0.7%	(180)			
	Total	100.0%	(12849)	100.0%	(14789)	100.0%	(27638)			
Perceived life stress	Not at all	13.4%	(1722)	9.9%	(1461)	11.5%	(3183)	98.72	4	< .001
	Not very	25.7%	(3292)	25.4%	(3753)	25.5%	(7045)			
	A bit	41.9%	(5376)	43.4%	(6409)	42.7%	(11785)			
	Quite a bit	15.8%	(2028)	18.0%	(2659)	17.0%	(4687)			
	Extremely	3.1%	(399)	3.4%	(496)	3.2%	(895)			
	Total	100.0%	(12817)	100.0%	(14778)	100.0%	(27595)			
Perceived work stress	Not at all	9.2%	(863)	7.3%	(674)	8.3%	(1537)	41.05	4	< .001
	Not very	19.1%	(1798)	18.3%	(1678)	18.7%	(3476)			
	A bit	44.9%	(4216)	44.1%	(4050)	44.5%	(8266)			
	Quite a bit	21.5%	(2023)	24.3%	(2226)	22.9%	(4249)			
	Extremely	5.2%	(492)	6.0%	(549)	5.6%	(1041)			
	Total	100.0%	(9392)	100.0%	(9177)	100.0%	(18569)			
Sense of belonging to local community	Very strong	18.7%	(2381)	19.2%	(2805)	19.0%	(5186)	9.78	3	.02
	Somewhat strong	48.8%	(6192)	49.8%	(7283)	49.3%	(13475)			
	Somewhat weak	24.3%	(3084)	22.7%	(3315)	23.4%	(6399)			
	Very weak	8.2%	(1042)	8.3%	(1209)	8.2%	(2251)			
	Total	100.0%	(12699)	100.0%	(14612)	100.0%	(27311)			
Type of drinker	Regular drinker	77.2%	(9915)	58.5%	(8654)	67.2%	(18569)	1141.74	2	< .001
	Occasional drinker	11.0%	(1410)	23.5%	(3476)	17.7%	(4886)			
	No drink last 12 months	11.9%	(1524)	18.1%	(2674)	15.2%	(4198)			
	Total	100.0%	(12849)	100.0%	(14804)	100.0%	(27653)			

Our results suggest that effective treatment for problem gamblers needs to address the number of games played and the type(s) of game(s). Future research should replicate these studies in other jurisdictions. Studies should also include a wider range of patterns of gambling behavior and psychological factors. Most important, future research should examine social and cultural factors that push men and women towards different kinds of risk-taking. For example, qualitative research may shed further light on women's motivations for gambling. As well, future work should focus on identifying within-gender differences. These differences are important because they have implications for the tailoring of prevention and intervention programs.

Table 10. Odds ratios for logistic multiple regression analysis for problem gambling – 2007 Canadian Community Health Survey

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Negalkerke R^2	.03	.05	.06	.06	.06	.07	.07	.19
Gender (Reference: Female)	1.43*	1.44*	1.39*	1.43*	1.43*	1.43*	1.47*	1.17 (ns)
Age (Reference: 60 or more)								
18 to 24	.54*	.62 (ns)	.65 (ns)	.60 (ns)	.59 (ns)	.63 (ns)	.64 (ns)	.40*
25 to 34	.86 (ns)	.89 (ns)	.88 (ns)	.83 (ns)	.82 (ns)	.87 (ns)	.87 (ns)	.56*
35 to 49	.94 (ns)	.91 (ns)	.88 (ns)	.83 (ns)	.83 (ns)	.86 (ns)	.86 (ns)	.69 (ns)
50 to 59	.89 (ns)	.84 (ns)	.86 (ns)	.79 (ns)	.78 (ns)	.81 (ns)	.81 (ns)	.77 (ns)
Marital status (Reference: Single/Never married)								
Married	.57*	.63*	.69*	.67*	.67*	.65*	.65*	.73 (ns)
Common-law	.81 (ns)	.85 (ns)	.90 (ns)	.87 (ns)	.86 (ns)	.88 (ns)	.88 (ns)	.95 (ns)
Widowed/Separated/Divorced	.87 (ns)	.88 (ns)	.86 (ns)	.84 (ns)	.84 (ns)	-.84 (ns)	.84 (ns)	.93 (ns)
Education (Reference: Post-secondary graduation)								
< Secondary graduation	2.66**	2.38**	2.42**	2.44**	2.45**	2.53**	2.51**	2.60**
Secondary graduation	1.07 (ns)	1.06 (ns)	1.06 (ns)	1.08 (ns)	1.08 (ns)	1.10 (ns)	1.10 (ns)	1.02 (ns)
Some post-secondary	1.60*	1.56*	1.55*	1.55*	1.55*	1.58*	1.58*	1.63*
Personal income (Reference: >80K)								
No income	1.44 (ns)	1.12 (ns)	.96 (ns)	1.01 (ns)	1.03 (ns)	1.02 (ns)	1.00 (ns)	1.14 (ns)
< 20K	1.20 (ns)	.97 (ns)	.89 (ns)	.96 (ns)	.96 (ns)	.94 (ns)	.91 (ns)	1.24 (ns)
20 to 39.9K	1.16 (ns)	1.00 (ns)	.93 (ns)	.99 (ns)	.10 (ns)	.98 (ns)	.95 (ns)	1.12 (ns)
40 to 59.9K	1.00 (ns)	.92 (ns)	.87 (ns)	.93 (ns)	.93 (ns)	.73 (ns)	.91 (ns)	.99 (ns)
60 to 79.9K	.89 (ns)	.85 (ns)	.81 (ns)	.85 (ns)	.85 (ns)	.50 (ns)	.85 (ns)	.89 (ns)
Self-perceived health (Reference: Poor)								
Excellent		.43 (ns)	.51 (ns)	.54 (ns)	.54 (ns)	.52 (ns)	.54 (ns)	.84 (ns)
Very good		.53 (ns)	.60 (ns)	.62 (ns)	.62 (ns)	.61 (ns)	.63 (ns)	.86 (ns)
Good		.77 (ns)	.82 (ns)	.85 (ns)	.85 (ns)	.82 (ns)	.85 (ns)	1.11 (ns)
Fair		1.03 (ns)	1.06 (ns)	1.06 (ns)	1.06 (ns)	1.04 (ns)	1.06 (ns)	1.39 (ns)
Self-perceived mental health (Reference: Poor)								
Excellent		.35*	.55 (ns)	.60 (ns)	.60 (ns)	.60 (ns)	.59 (ns)	.45 (ns)
Very good		.42*	.58 (ns)	.63 (ns)	.62 (ns)	.62 (ns)	.62 (ns)	.48 (ns)
Good		.57 (ns)	.71 (ns)	.76 (ns)	.75 (ns)	.75 (ns)	.75 (ns)	.61 (ns)
Fair		.51 (ns)	.54 (ns)	.57 (ns)	.56 (ns)	.56 (ns)	.56 (ns)	.43 (ns)
Mood disorder (Reference: No)		1.12 (ns)	1.08 (ns)	1.06 (ns)	1.06 (ns)	1.09 (ns)	1.09 (ns)	1.19(ns)
Anxiety disorder (Reference: No)		1.45 (ns)	1.46 (ns)	1.43 (ns)	1.44 (ns)	1.47 (ns)	1.46 (ns)	1.46 (ns)
Life satisfaction (Reference: Very dissatisfied)								
Very satisfied			1.01 (ns)	1.12 (ns)	1.11 (ns)	1.24 (ns)	1.23 (ns)	1.24 (ns)
Satisfied			1.74 (ns)	1.87 (ns)	1.83 (ns)	1.99 (ns)	1.98 (ns)	1.85 (ns)
Neither			2.05 (ns)	2.15 (ns)	2.10 (ns)	2.27 (ns)	2.24 (ns)	2.16 (ns)
Dissatisfied			3.81 (ns)	3.88 (ns)	3.81 (ns)	4.09 (ns)	4.10 (ns)	3.49 (ns)
Self-perceived life stress (Reference: Extremely)								
Not at all				.46 (ns)	.46 (ns)	.45 (ns)	.45 (ns)	.43 (ns)
Not very				.77 (ns)	.75 (ns)	.75 (ns)	.75 (ns)	.73 (ns)
A bit				.81 (ns)	.80 (ns)	.80 (ns)	.79 (ns)	.75 (ns)
Quite a bit				.76 (ns)	.74 (ns)	.75 (ns)	.74 (ns)	.75 (ns)
Self-perceived work stress (Reference: Extremely)								
Not at all				.76 (ns)	.76 (ns)	.75 (ns)	.76 (ns)	.78 (ns)
Not very				.77 (ns)	.76 (ns)	.76 (ns)	.77 (ns)	.79 (ns)
A bit				.62 (ns)	.61 (ns)	.62 (ns)	.62 (ns)	.61 (ns)
Quite a bit				.90 (ns)	.90 (ns)	.89 (ns)	.90 (ns)	.95 (ns)
Sense of belonging to the local community (Reference: Very weak)								
Very strong					1.19 (ns)	1.21 (ns)	1.21 (ns)	1.02 (ns)
Somewhat strong					1.20 (ns)	1.23 (ns)	1.23 (ns)	.97(ns)
Somewhat weak					1.44 (ns)	1.45 (ns)	1.46 (ns)	1.24 (ns)
Self-identified immigrant (Reference: No)						1.50*	1.48*	2.06**
Type of drinker (Reference: No drinks in the last year)								
Regular drinker							.89 (ns)	.71 (ns)
Occasional drinker							1.09 (ns)	1.12 (ns)
Number of gambling activities								1.74**

**$p < .001$; *$p < .05$; (ns) = not significant

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