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## research

### Gambling and problem gambling in a sample of university students

Robert J. Williams, Alberta Gaming Research Institute,  
University of Lethbridge, Lethbridge, Alberta, Canada.  
E-mail: [robert.williams@uleth.ca](mailto:robert.williams@uleth.ca)

Dennis Connolly, Department of Mathematics &  
Computer Science, University of Lethbridge

Robert T. Wood, Department of Sociology, University of  
Lethbridge

Nadine Nowatzki, School of Health Sciences, University  
of Lethbridge

### Abstract

University students from southern Alberta ( $n = 585$ ) were administered a questionnaire to assess their gambling behaviour. Seventy-two percent reported gambling in the past 6 months, with the most common types being lotteries and instant win tickets (44%) and games of skill against other people (34%). Most students who gambled spent very little time and money doing so (median time spent = 1.5 hrs; median amount of money spent = \$0). While gambling is an innocuous activity for most, a significant minority of students are heavy gamblers who experience adverse consequences from it. Seven and one-half percent of students were classified as problem or pathological gamblers, a rate significantly higher than in the general Alberta adult population. The characteristics that best differentiated problem gamblers from non-problem gamblers were more positive attitudes toward gambling, ethnicity (41% of Asian gamblers were problem gamblers), university major (kinesiology, education, management), superior ability to calculate gambling odds, and older age. **Key words:** gambling, problem gambling, university, students

### Introduction

The impact of the extensive availability, advertising, and

sanctioning of legalized gambling is of concern in the fields of public health and addictions. Among adults, the prevalence of disordered gambling has increased significantly from 1977 to 1993 (Shaffer, Hall, & VanderBilt, 1997). It was estimated in a 2001 meta-analysis that 4.0% of adults in North America met criteria for either problem or pathological gambling in the past year (Shaffer & Hall, 2001).

Of even greater concern is the impact of gambling on the current generation of youth, as they are the first to have been raised in an environment of extensive legalized and government-sanctioned gambling. Indeed, there appears to be reason for concern. Several surveys have found the prevalence rates of gambling to be highest in young adults. Young adults typically have the highest rates of involvement in most risky behaviours (substance use, reckless driving, unsafe sex, etc.) (e.g., Douglas et al., 1997). Gambling appears no different. The lifetime rates of gambling in college and university students typically range from 70% to 94%, with males consistently having higher rates than females (Adebayo, 1998; Devlin & Peppard, 1996; Engwall, Hunter, & Steinberg, 2002; Kang & Hsu, 2001; Ladouceur, Dube, & Bujold, 1994; Lesieur et al., 1991; Oster & Knapp, 1998). A recent nationally representative study of college students in the United States (LaBrie, Shaffer, LaPlante, & Wechsler, 2003) found a lower prevalence, but this study was limited by low response rates and a lack of questions about all forms of gambling.

National studies have consistently found that the rates of problem gambling also peak in the age group 18 to 24 (Gerstein et al. (1999) in the United States, Productivity Commission (1999) in Australia, and Rönnerberg et al. (1999) in Sweden). Similarly, the meta-analysis of all North American prevalence studies found that the 19 study samples of college students had higher overall lifetime rates of problem and pathological gambling (16.4%) than either adolescents (11.8%) or adults (6.1%) (Shaffer & Hall, 2001).

While many studies have documented that college and university students have the highest prevalence rates of gambling and problem gambling, much less is known about the nature of gambling in this group. Specifically, little is known about the amount of time and money spent on gambling, the types of gambling being played, and the characteristics differentiating nongamblers from gamblers and gamblers from problem gamblers. The above topics form the basis for the present study.

## **Method**

The sample consisted of students from the University of Lethbridge, in Lethbridge, Alberta, Canada. Alberta has one of the

widest arrays of gaming entertainment options available to its citizenry of any jurisdiction in North America (Wynne, 2000), and the city of Lethbridge has all of these options available. The University of Lethbridge is a primarily undergraduate institution with a student body mostly from western Canada. Students were recruited from 10 different introductory courses in statistics, history, and sociology between September 2001 and April 2003. A 30-minute gambling questionnaire was administered at the beginning of each course. Students were told that the questionnaire was designed to assess their general gambling knowledge, attitudes, and behaviour and that completion of the questionnaire was optional. The questionnaire collected and assessed

1. demographic information concerning age, gender, race/ethnicity, current university major, and current university year;
2. attitude toward gambling as measured by the Gambling Attitudes Scale (see below);
3. knowledge of gambling and problem gambling as measured by the Gambling Knowledge Scale;
4. gambling fallacies as measured by the Gambling Fallacies Scale;
5. knowledge and ability to calculate gambling odds as assessed by the Gambling Odds Scale;
6. gambling behaviour, i.e., type of gambling engaged in, time spent gambling, and amount of money spent gambling in the past 6 months;
7. problem gambling as measured by the nine-item Canadian Problem Gambling Index (CPGI) (Ferris & Wynne, 2001).

The Gambling Attitudes Scale is a three-item scale that measures people's belief about the morality of gambling and its harm versus benefit. It has good 1-month test-retest reliability as well as excellent concurrent and predictive validity. This scale was developed along with the Gambling Knowledge Scale, the Gambling Fallacies Scale, and the Gambling Odds Scale to study gambling in adult populations (Williams, 2003).

The Gambling Knowledge Scale is a 10-item scale assessing whether people are aware of the legalities of gambling, the different forms of gambling, the prevalence of problem gambling, the risk factors for developing problem gambling, where to get help for problem gambling, etc. It has very good test-retest reliability as well

as internal consistency (Williams, 2003).

The Gambling Fallacies Scale is a 10-item scale measuring awareness of and resistance to common gambling fallacies (e.g., "to win at gambling you need to think positively"). It has very good 1-month test-retest reliability, good internal consistency, and very good concurrent and predictive validity (Williams, 2003).

The Gambling Odds Scale is a 10-item scale with excellent 1-month test-retest reliability, internal consistency, and concurrent and predictive validity (Williams, 2003).

## **Results**

### **Sample**

Over 95% of the students completed the questionnaire. The final sample consisted of 585 students. Their average age was 21.7 (3.7 SD), and 61% were female. Racial/ethnic background was 81% European-Canadian, 8% Asian-Canadian, 4% Aboriginal, 4% other, 2% African-Canadian, and 1% Hispanic-Canadian. Thirty-four percent were management majors, 26% were science majors, 21% were social science majors, 9% were humanities majors, 5% were kinesiology/physical education majors, and 4% were education majors. Forty percent of students were in their first year, 22% in second year, 25% in third year, and 12% in fourth year. This is a very representative sample of the general student body with the exception of university year, where the sample contained a greater portion of first-year students.

### **Gambling behaviour**

As seen in Table 1, 72.1% of the sample reported gambling in the past 6 months. The most common types of gambling engaged in were lotteries and instant win tickets (44%), followed by games of skill against other people (34%), video lottery terminals (VLTs) or slot machines (29%), and casino table games (26%). The average number of different types of gambling engaged in was 1.7 (median = 1; mode = 0).

**Table 1**  
**Gambling behaviour in the past 6 months**

	Percentage of students involved	Average time spent	Average money spent
Any gambling	72	33.7 h	-\$25.93
Lottery or instant win tickets	44	7.0 h (76 SD)	-\$4.33 (34.4 SD)
Skill games against others	34	17.3 h (104 SD)	+\$0.39 (29.5 SD)
VLTs or slot machines	29	7.3 h (87 SD)	-\$5.23 (31.9 SD)
Casino table games	26	15.3 h (113 SD)	-\$4.84 (39.1 SD)
Sports betting	17	7.1 h (86 SD)	-\$1.88 (29.4 SD)
Bingo	8	3.8 h (63 SD)	-\$2.54 (23.1 SD)
Horse racing	7	2.2 h (38 SD)	-\$1.21 (21.7 SD)
Stock market	7	8.7 h (93 SD)	-\$4.87 (41.1 SD)
Other	1	0.4 h (8 SD)	-\$1.72 (22.4 SD)

Table 1 also reports the average total time spent on different gambling activities in the past 6 months (reported frequency multiplied by the average time spent per occasion). The average time spent was 33.7 total hours (1.5 hours median) for all types of gambling combined. Seven percent of students spent 40 hours or more gambling. The types of gambling that students spent the most time at were games of skill against other people (17.3 hours), casino table games (15.3 hours), the stock market (8.7 hours), and VLTs or slot machines (7.3 hours). In all cases, the averages are much higher than the medians due to a small percentage of gamblers with very high involvement in the activity. Median and modal time spent was zero for each activity.

The average total amount of money reported lost on all types of gambling in the past 6 months was \$25.93 (\$0 median). Eleven percent of students reported losing more than \$100, and 1% reporting losing more than \$1000. The types of gambling that students spent the most money on were VLTs or slot machines (\$5.23), the stock market (\$4.87), casino table games (\$4.84), and lotteries or instant win tickets (\$4.33). In all cases the median amount of money spent was zero. The average losses are low

partly because they are offset by small numbers of people reporting significant winnings on these activities.

### **Problem gambling**

Using the CPGI, 1.4% of the total sample met criteria for severe problem gambling (CPGI 8+; roughly equivalent to pathological gambling) and another 6.2% met criteria for moderate-risk gambling (CPGI 3–7; equivalent to problem gambling). A further 16.9% were low-risk gamblers (CPGI 1–2), 47.4% were non-problem gamblers (CPGI 0), and 27.9% were nongamblers.

### **Characteristics differentiating gamblers from nongamblers**

A direct logistic regression investigated characteristics differentiating the gamblers from the nongamblers. Eight predictor variables were used: age, sex, ethnicity, university major, university year, attitudes toward gambling, number of gambling fallacies, and skill at calculating gambling odds. The 12 cases with missing values for age and the 7 cases with missing values for university year were imputed using linear trend at point. To reduce the impact of outliers, students older than 27 were recoded as age 27. There were 352 gamblers and 142 nongamblers available for the analysis.

A test of the full model with all eight predictors against a constant-only model was statistically reliable ( $\chi^2(19, N = 494) = 104.4, p < .0001$ ), indicating that the eight predictors, as a set, reliably distinguished between gamblers and nongamblers. The variance accounted for was modest, with Nagelkerke  $R$  squared = .27. Overall prediction success was 75.5%. Table 2 shows regression coefficients, Wald statistics, and odds ratios for each of the eight predictors. According to the Wald criterion, only three variables reliably predicted gambling: more positive attitudes toward gambling ( $z = 47.5, p < .001$ ), university major ( $z = 10.5, p < .05$ ), and superior ability to calculate gambling odds ( $z = 4.7, p < .05$ ). The percentage of students who were gamblers as a function of university major was as follows: kinesiology/physical education (82%), management (82%), education (74%), social science (72%), science (66%), and humanities (56%).

**Table 2**  
**Logistic regression of characteristics differentiating gamblers from nongamblers**

Variable	Regression coefficients ( <i>B</i> )	Wald statistics	Odds ratios
Age	.03	0.2	1.0
Ethnicity (European = reference)			
Asian	–	6.7	–
Aboriginal			
Other			
Major (science = reference)			
Management			
Social science	–	10.5*	–
Humanities			
Kinesiology			
Education			
University year	–	7.3	–
Gender	–.46	3.3	0.6
Gambling attitudes	.51	47.5**	1.7
Gambling fallacies	.03	0.2	1.0
Gambling math skill	.20	4.7*	1.2
CONSTANT	4.30	3.2	70.1

\* $p < .05$ ; \*\* $p < .01$

### **Characteristics differentiating problem gamblers from non-problem gamblers**

A direct logistic regression investigated characteristics differentiating problem and pathological gamblers from gamblers who had not experienced any adverse consequences. Eight predictor variables were used: age, sex, ethnicity, university major, university year, attitudes toward gambling, number of gambling fallacies, and skill at calculating gambling odds. The 12 cases with missing values for age and the 7 cases with missing values for university year were imputed using linear trend at point. To reduce the impact of outliers, the students older than 27 were recoded as age 27.

A test of the full model with all eight predictors against a constant-

only model was statistically reliable ( $\chi^2 (18, N = 352) = 79.9, p < .001$ ), indicating that the eight predictors, as a set, reliably distinguished between problem gamblers and non-problem gamblers. The variance accounted for was moderate, with Nagelkerke  $R$  squared = .40. Overall prediction success was 91.2%. Table 3 shows regression coefficients, Wald statistics, and odds ratios for each of the eight predictors. According to the Wald criterion, five variables reliably predicted problem gambling: more positive attitudes toward gambling ( $z = 23.7, p < .001$ ), ethnicity (41% of Asian gamblers were problem gamblers) ( $z = 15.4, p < .01$ ), university major (18% of kinesiology majors, 18% of education majors, and 14% of management majors were problem gamblers) ( $z = 14.6, p < .05$ ), superior ability to calculate gambling odds ( $z = 6.2, p < .05$ ), and older age ( $z = 4.1, p < .05$ ).

**Table 3**  
**Logistic regression of characteristics differentiating problem gamblers from non-problem gamblers**

Variable	Regression coefficients ( <i>B</i> )	Wald statistics	Odds ratios
Age	.19	4.1*	1.2
Ethnicity (European = reference)			
Asian	–	15.4**	–
Aboriginal			
Other			
Major (science = reference)			
Management			
Social science	–	14.6*	–
Humanities			
Kinesiology			
Education			
University year	–	6.8	–
Gender	–.86	3.0	0.4
Gambling attitudes	.56	23.7**	1.7
Gambling fallacies	–.01	0	1.0
Gambling math skill	.33	6.2*	1.4
CONSTANT	–7.60	0.1	0.001

\* $p < .05$ ; \*\* $p < .01$

## Discussion

Gambling is a common activity among university students, with 72% having done so in the past 6 months. The most common types of gambling were lotteries and instant win tickets, followed by games of skill against other people. However, most students who gambled indicated that they spent very little time and money doing so. The types of gambling that occupied the most time were games of skill against other people and casino table games. The types of gambling associated with the greatest spending were VLTs and slot machines, the stock market, and casino table games. Consistent with prior research, it would appear that for most students gambling is a fairly innocuous activity, done primarily for entertainment purposes (Neighbors, Lostutter, Crounce, & Larimer, 2002; Kang & Hsu, 2001).

The overall percentage of gamblers in the present study is slightly lower than that found in most other studies. This between-jurisdiction difference potentially reflects a variety of different factors, including (1) the number and type of easily available gambling opportunities, (2) the demographics of the gambling population, (3) the nature of local gambling legislation and its impact upon gambling behaviour, and (4) the respective cultural and ethnic composition of the groups of university students being surveyed. With respect to this last factor, the University of Lethbridge is situated in a region with lower rates of gambling compared to the rest of the province (Smith & Wynne, 2002, 2004). A significant minority of the student body and the population of southern Alberta are members of the Latter Day Saints, a religious group that strongly proscribes gambling behaviour.

The preferred forms of gambling in the present study are consistent with what has been found previously. The most popular gambling activity for college and university students as well as adults appears to be lotteries (Engwall et al., 2002; Kang & Hsu, 2001; Ladouceur et al., 1994). The five most common gambling activities in the studies mentioned above were lotteries, casinos, playing cards, slot/poker machines, and skill games, but these did vary somewhat in order of preference between studies. It is more difficult to make comparisons to other studies regarding time and money spent, as extant studies on these issues address mostly casino gambling (e.g., Bailey et al., 1997; Kang & Hsu, 2001). Nonetheless, consistent with the present research, it does not appear that a great deal of time and money is being lost to gambling.

While gambling is innocuous for most, it is apparent that a significant minority of students are heavy gamblers who experience adverse consequences from it. Seven and one-half percent of

students were classified as problem or pathological gamblers. Similar to prior research, the rate of problem/pathological gambling in university students is higher than in the general population. Despite being in a region with less gambling, University of Lethbridge students have a rate of problem/pathological gambling 2.3% higher than the 5.2% rate for Albertan adults (Smith & Wynne, 2002). The rates of problem/pathological gambling in the present study are lower than reported in other studies of college and university students. The reasons are undoubtedly the same reasons that the rate of gambling is somewhat lower. The other difference is that most other studies have used the South Oaks Gambling Screen (Lesieur & Blume, 1987) or variations thereof, while this is the only study that has used the newly created CPGI.

There has been very little prior research concerning variables that discriminate between college/university gamblers and nongamblers or problem gamblers and non-problem gamblers. In the present study, having a more positive attitude toward gambling was the best predictor of both being a gambler and being a problem gambler. This is not an unexpected finding, although it is interesting that people experiencing problems still maintain a more positive attitude than people not experiencing problems.

The higher rates of gambling and problem gambling for kinesiology and management majors is an interesting finding that has not been reported in previous research. However, what have been previously reported are higher rates of problem gambling in student athletes, presumably due to a greater propensity for risk taking (Engwall et al., 2002; Rockey, Beason, & Gilbert, 2002). It is not unreasonable to anticipate that a significant portion of students pursuing a kinesiology/physical education degree are also student athletes. Risk taking might also characterize people interested in business management degrees. Alternatively, the relationship between gambling and business management interests may be due to a common interest in making money.

The relationship between superior ability to calculate gambling odds and both gambling and problem gambling is a puzzling one. It is possible that mathematically skilled individuals feel they possess the necessary competence to gamble relatively successfully. However, one would think that more mathematically knowledgeable students would also be more cognizant of the negative mathematical expectation for most forms of gambling. The link between older age and problem gambling could be because it takes some time for gambling to develop into a problem. Alternatively, older students may have either higher incomes or higher debt loads, which might create a greater predilection to gamble. The link between Asian heritage and problem gambling is something that has been previously found in the literature (Lesieur et al., 1991), as well as in general population surveys.

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For correspondence: Dr. Robert Williams  
Alberta Gaming Research Institute, 102 Anderson Hall, University of Lethbridge, Lethbridge, Alberta, Canada, T1K 3M4. E-mail: [Robert.williams@uleth.ca](mailto:Robert.williams@uleth.ca)

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Dr. Robert Williams, PhD, School of Health Sciences & Alberta Gaming Research Institute, University of Lethbridge, Lethbridge, Alberta T1K 3M4 Canada. Phone: 403-382-7128, fax: 403-329-2668, e-mail: [robert.williams@uleth.ca](mailto:robert.williams@uleth.ca)

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Dennis Connolly, PhD is an associate professor in the Department of Mathematics & Computer Science at the University of Lethbridge.

Robert Wood, PhD is an assistant professor in the Department of Sociology at the University of Lethbridge.

Nadine Nowatzki, MA is a research associate in the School of Health Sciences at the University of Lethbridge.

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