Adolescent Gambling and Problem Gambling: A New Zealand Study

Dave Clarke and Fiona Rossen
Massey University

The prevalence of gambling and problem gambling among adolescents in New Zealand has not been adequately investigated. Prospective studies of current underage gambling may be unreliable, because respondents may fear self-incrimination. In this retrospective study, a non-representative sample of 68 first year psychology students, between the ages of 15 and 24 years, completed a questionnaire which asked them to recall their gambling activities before the age of 20 years, and which included the South Oaks Gambling Screen (SOGS). In adolescence, the entire sample had gambled for money at least once, and 18% regularly. Participants who played housie (bingo), gambled in casinos, or bought Lotto tickets, had the highest spending rates. 13% of the sample was classified as problem gamblers and 5% probable pathological gamblers in adolescence. Activities associated with pathological gambling included scratch tickets, gaming machines and housie. Regular gambling significantly predicted problem gambling scores. The results were compared with findings from a national sample and adolescent samples overseas.

Recent research in the United States, Canada and the United Kingdom (Buchta, 1995; Fisher, 1993; Jacobs, 1989, cited in Winters, Stinchfield, & Kim, 1995; Ladouceur, Dubé, & Bujold, 1994; Lesieur et al., 1991; Shaffer & Hall, 1996) indicates that prevalence rates for adolescent gambling and for adolescent problem gambling are higher than for adult populations. Estimates of adolescent problem gambling range from one and a half to more than three times as high as for the adult population. The vast majority (85 to 95%) of adolescents have gambled for money at least once. Prevalence of gambling and problem gambling among adolescent males is usually greater than among female adolescents (Buchta, 1995; Jacobs, 1989, cited in Winters et al., 1995; Ladouceur et al., 1994; Winters, Stinchfield, & Fulkerson, 1993a, 1993b). Adolescent males may spend more than adolescent females on lottery tickets (Browne & Brown, 1994; Ladouceur et al., 1994) but not on fruit machines (Fisher, 1993).

For some adolescent problem gamblers, gambling is associated with a number of problems. First, research suggests that a direct relationship exists between age of onset of underage gambling and the severity of future gambling problems (Abbott & Volberg, 1996; Bergh, & Kuhlhorn, 1994; Fisher, 1993; Griffiths, 1995a, 1995b; Ladouceur and Mireault, 1988; Stinchfield & Winters, 1994, cited in Winters, et al., 1995). Second, empirical investigations have consistently shown that adolescent pathological gambling is positively related to the use of alcohol, tobacco and addictive substances, to substance abuse, and to criminality including stealing, drug pushing, and prostitution (Arcuri, Lester, & Smith, 1985; Browne & Brown, 1994; Fisher, 1993; Griffiths, 1990; Jacobs, 1987; cited in Radecki, 1994; Ladouceur et al., 1994; Lesieur & Heineman, 1988, cited in Buchta, 1995; Shaffer & Hall, 1996; Winters, et al., 1993b). Other problems include suicide attempts, disruptions to relationships with family and friends, and educational difficulties such as truancy and poor academic performance (Browne & Brown, 1994; Fisher, 1993; Griffiths, 1990; Ladouceur et al., 1994; Shaffer, LaBrie, Scanlan, & Cummings, 1994; Winters et al., 1993b).

In the United Kingdom, Fisher (1993) found that 10% of adolescents who played on fruit machines had fallen out with close friends and family as a direct consequence of their gambling. However, the causal relationship between gambling and family problems could be the reverse. Another study found that the majority of adolescent gambling machine players reported that family problems precipitated their addiction (Dickerson, 1984, cited in Bentall, Fisher, Kelly, Bromley, & Hawksworth, 1989). The severity of adolescent gambling problems is associated with gambling

regularly and with the amount of money spent (Winters et al., 1993b), and adolescents who gamble regularly or spend large amounts of money may be more likely to do so on a wide range of activities rather than on a few (Browne & Brown, 1994; Fisher, 1993).

Adolescent gamblers are likely to have one or both parents who gamble (Browne & Brown, 1994; Buchta, 1995; Fisher, 1993; Lesieur et al., 1991; Lesieur & Klein, 1987; Winters et al., 1993b). For example, Fisher (1993) found a direct relationship between adolescent pathological gambling and parents' frequency of gambling on fruit machines. However, Ladouceur et al. (1994) found that adolescents whose parents pathologically gamble were *less* likely to have gambling problems themselves; that is, an inverse relationship was found between parental and adolescent problem gambling. The authors suggested that perhaps the adolescents may have been deterred from gambling by experiencing the problems generated by their parents' excessive gambling. Alternatively, the adolescent problem gamblers may have perceived their parents' gambling behaviour as not severe, given that parental gambling was assessed by the adolescents.

Gambling and Problem Gambling in New Zealand

In 1995, a randomly selected New Zealand sample of 1,200 people aged 15 and older were interviewed for a survey of participation in gambling activities (Reid & Searle, 1996). More respondents aged 15 to 24 played gaming machines than any other age group: 43% compared with 24% of the general population. From the total sample, men were more likely than women to have played gaming machines and made bets with friends. Women were more likely than men to have played housie (bingo), and purchased scratch tickets. Participation in housie and Daily Keno was highest for Maori and the lowest income groups. For the other activities, participation generally increased with income.

There have been only two published reports (Abbott & Volberg, 1996; Wells, Bushnell, Hornblow, Joyce, & Oakley-Brown, 1989) on the prevalence of pathological gambling in New Zealand, and none for adolescents. Abbott and Volberg noted that in their national sample of New Zealanders, 54% of lifetime probable pathological gamblers and 67% of current probable pathological gamblers were 18 to 29 years of age, even though they comprised only 29% of the total sample. Probable pathological gamblers were more likely to gamble once per week or more, and spend more money on all forms of gambling than gamblers without problems. Approximately 80% of lifetime and current probable pathological gamblers in New Zealand were men. Problem and probable pathological gambling in New Zealand have been found disproportionately among the unemployed and lower socioeconomic groups (Abbott, 1993).

Concern has been widely expressed at the effects of gambling on native peoples and those belonging to minority groups. In Minnesota and North Dakota (Abbott and Volberg 1997; Winters, et al., 1993b; Zitzow, 1992, cited in Winters et al., 1995) problem and pathological gambling among Native American adolescents is greater than among their non-Native peers. Similarly, in New Zealand (Abbott & Volberg, 1997) there are higher rates of problem and pathological gambling among Maori than among Caucasians. For both North Dakota and Maori indigenous groups, problem and pathological gamblers were predominantly female, in contrast to Caucasians who were predominantly male. Prevalence rates of problem gambling are even greater for Pacific Islanders than for Maori when compared to New Zealanders of European ancestry: a 3:1 Maori to European ratio, and a 6:1 Pacific Islander to European ratio (Abbott, 1993). Significantly higher expenditure rates have also been found for Maori, Pacific Islanders and North Dakota Native Americans, compared to Caucasians (Abbott & Volberg, 1997; Read & Searle, 1996).

Abbott and Volberg (1992) in an earlier report on the national adult sample found that regular participation and expenditure on continuous gambling activities such as gaming machines and dice games, were higher for problem and pathological gamblers than for non-problem gamblers. Continuous gambling activities, defined as activities where winnings can be immediately reinvested within the same session, accounted for four of the six most popular activities which participants had ever gambled on.

The purpose of the present study was to investigate the prevalence of gambling behaviour and problem gambling in a small sample of first-year university students in New Zealand when they were adolescents; that is, younger than 20 years of age. Like the investigators for the national survey (Reid & Searle, 1996), we were interested in the rates of participation in various gambling activities, the frequency of gambling and expenditure on the activities during adolescence. Based on the findings of the literature on problem gambling, we predicted that severity of problem gambling among adolescents will be related directly to number of gambling activities, number played regularly and expenditure.

Method

Participants

The sample consisted of 68 students who were enrolled in an introductory psychology course at the Albany Campus of Massey University in 1996. Of the 142 women and 64 men enrolled, 126 respondents completed usable questionnaires. Respondents' ages ranged from 15 to 64. Because we wished to compare the prevalence rates of our sample with the rates for young people in the national survey (Reid & Searle, 1996), and because of the retrospective nature of the study, only the data from respondents aged 15 to 24 were selected. There is a logarithmic relationship between autobiographical measures and time, with recent memories most accessible (Bradburn, Rips, & Shevell, 1987; Rubin, Wetzler, & Nebes, 1986). Hence, we limited our analysis to a relatively homogeneous group for whom there is some equivalence in terms of the length of recall period, and for whom the recall period is not an extended period. As an additional area of interest, we compared their total

Table 1: Sample Characteristics (N=68)

	n	(%)
Age		
15-19	42	(61.8)
20-24	26	(38.2)
SES		
Low	0	(0)
Moderately Low	7	(10.3)
Average	33	(48.5)
Moderately High	24	(35.3)
High	4	(5.9)
Ethnicity		
NZ European	63	(92.6)
Maori	5	(7.4)

mean gambling scores with the total mean scores for the older group (25+) to ascertain differences on the variables. To ensure that only New Zealanders were included in the sample, data for groups other than for New Zealand European/Pakeha and Maori were omitted from the analysis.

Table 1 summarizes the sample characteristics. Due to clerical error the question concerning gender was omitted on the questionnaire; thus, gender differences for gambling could not be investigated. Volunteers were treated in accordance with the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992). All responses were treated with confidentiality and no identifying details such as name, specific age, or university identification number were collected.

Materials

A questionnaire consisting of three parts was given to the respondents: (a) an adaptation of the questionnaire used by Abbott and Volberg (1991, 1992); (b) a modified version of the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987, 1993); and (c) a section for demographic data. The first section of the Abbott and Volberg interview form listed a number of gambling activities. All of the activities except casinos were legal in New Zealand from 1986 (Reid & Searle, 1996).

Casinos which first became available in New Zealand in November 1994 were added to the list. Participants were asked to indicate which of the 15 gambling activities they had ever taken part in, which regularly (once a week or more), and amount spent monthly, rounded to the nearest New Zealand dollar, on each activity *before the age of 20*. Three scores were tabulated for each person: (a) total number of activities involved, (b) total number played regularly at least weekly, and (c) total monthly expenditure on all activities. An open-ended question asked them to state their reasons why they participated in the activities.

The second section used the South Oaks Gambling Screen (SOGS), a valid 20-item questionnaire based on DSM-IIIR criteria, which screens for pathological gambling (Lesieur & Blume, 1987, 1993). The coefficients for internal consistency and test-retest reliability are reported to be .97 and .71, respectively (Lesieur & Blume, 1987). The SOGS was chosen rather than the revised version (SOGS-RA) for adolescents (Winters, Stinchfield & Fulkerson, 1993a), the Massachusetts Gambling Screen (Shaffer et al., 1994), or the DSM-IV-J (Fisher, 1993), for several reasons: (a) More information is needed about the reliability and validity of the adolescent scales; (b) we wished to compare our data with the data from Abbott and Volberg's (1996) survey, and minimize the effects of instrument variability; and, (c) Abbott and Volberg (1996) provided some support for the validity of the SOGS in predicting true pathological gamblers who met the DSM-IIIR clinical criteria in New Zealand. A score of five or more categorizes the participant as a "probable pathological gambler", three or four as a "problem gambler".

Because the volunteers were completing the questionnaires based on recall of their behaviour before the age of 20, SOGS questions were reworded in the past tense. For example, "Have people criticized your gambling?" was changed to "Did people ever criticise your gambling?" (Lesieur & Blume, 1987, p. 1188). All respondents were reminded to complete the questionnaire based on memories of their gambling behaviour before the age of 20, a direction repeated at the beginning of each section or page on the questionnaire. Revising the scale and depending upon peoples' memories may have contributed to a lower coefficient of internal consistency with our sample than expected ($\alpha = .63$). Some content validity may have been lost because adolescent behaviours were measured using an adult instrument.

Using some of the categories from the national survey (Abbott and Volberg, 1991, 1992), we asked respondents to indicate which ethnic group they identified with (New Zealand European or Pakeha, New Zealand Maori, Pacific Island group, Other), which of five socioeconomic groups best described their family background (low, moderately low, average, moderately high, high) and in which age group they currently belonged (15 to 19, 20 to 24, 25 to 29, 30 to 39, 40 to 49, 50 to 64, 65+, in years).

Design and Procedure

After explaining the project and obtaining consent of the respondents, we administered the questionnaire to the group after the end of an early introductory psychology lecture on research methodology in class. No material on problem gambling or any pathological behaviour had been taught. All statistical analyses were completed with the SPSS/PC+ analysis system (Norušis, 1992), with minimum alphas of .05. Yates' correction was used in calculating χ^2 for small expected frequencies.

Conceptually, there is support for the hypothesis that problem gambling and pathological gambling are similar for adults and adolescents (Winters et al., 1993a). Because of the exploratory nature of our study, we decided to categorize participants according to two sets of existing criteria. We obtained an estimate of the prevalence of problem gambling when the participants were in adolescence by grouping scores firstly according to the SOGS criteria

(Lesieur & Blume, 1987), and secondly by using a generic multilevel classification scheme proposed by Shaffer and Hall (1996) to facilitate comparisons with other findings in the literature.

Results

Prevalence of Adolescent Gambling

Before 20 years of age, our entire sample had gambled for money at least once, and 18% regularly, once per week or more. As shown in Table 2, the most popular activities were instant scratch tickets (82%), Lotto (69%), lotteries/ raffles (62%). The prevalence rates for these activities among the national sample (Reid & Searle, 1996) aged 15 to 24 were 61%, 65% and 57%, respectively. Except for Lotto, $\chi^2(1, N=68)=0.51, p>.05$, the differences between the observed rates and the expected rates were statistically significant, $\chi^2(1, N=68)=9.46, p<.01$ for scratch tickets and $\chi^2(1, N=68)=6.16, p<.05$ for lotteries/raffles.

Substantial proportions of our adolescents and those aged 15 to 24 in the national sample had tried many activities, but few young people in either sample gambled regularly: 13% of our sample and 12% of the national sample had tried seven or more activities (distribution not tabled). The most popular regular activity was buying a Lotto ticket (13% and 15%, respectively). Significantly more of our adolescents than expected had participated in four or more activities, compared to the total national sample (72% vs. 41%), $\chi^2(1, N=68)=27.12, p<.001$.

Participants who played housie (bingo), gambled in casinos or bought Lotto tickets had the top spending rates ($NZ 13.78, 11.50 and 8.49, respectively). Comparable amounts for the national sample aged 15 to 24 were $4.08, $6.67 and $6.67, respectively. The average monthly expenditure on any activity by our adolescents was $24.63, and the national sample aged 15 to 24 was $28.25.

Table 2. Distribution of Participant's Gambling Behaviour as Adolescents (N = 68)

Activity	Ever gambled *n*	(%)	Weekly *n*	(%)	Average Spent Monthly ($)
Lotto	47	(69)	9	(13)	8.49
Instant scratch tickets	56	(82)	5	(7)	5.09
Lotteries/raffles	42	(62)	1	(2)	2.60
Housie (bingo)	9	(13)	3	(4)	13.78
Horse/dog races	24	(35)	1	(2)	4.21
Gaming machines	35	(52)	0	(0)	3.83
Overseas casinos	10	(15)	0	(0)	4.50
NZ casinos	16	(24)	1	(2)	11.50
Card games	22	(34)	0	(0)	2.59
Dice games	0	(0)	0	(0)	0.00
Gaming/casino evenings	8	(12)	0	(0)	2.50
Bets on events	35	(52)	1	(2)	2.29
Football pools	10	(15)	0	(0)	2.70
Sports betting	11	(16)	2	(3)	4.09
Other	4	(6)	0	(0)	3.75
Any activity	68	(100)	12	(18)	24.63

Note. Percentages in parentheses were rounded to the nearest whole numbers.

The prevalence rates of adolescent gambling in our sample for *specific* activities were different from rates in United States, Canada and Great Britain (Browne & Brown, 1994; Buchta, 1995; Fisher, 1993; Ladouceur et al., 1994; Lesieur et al., 1991; Winters et al. 1993b). Regular gambling behaviour was similar and relatively low. For example, with lottery tickets, 31% of a sample of college students in Oregon (Browne & Brown, 1994), 46% averaged across five American states (Lesieur et al., 1991) and 40% in California (Buchta, 1995) had played lotteries illegally while 62% of our sample was involved in lotteries, excluding Lotto, during their adolescence. The prevalence of lottery gambling for our students was comparable with the prevalence in the states of New York and New Jersey (69% and 66%, respectively). Prevalence of gambling on any activity among our sample was very similar to that found with college students across the five American states (Lesieur et al., 1991) and in Quebec, Canada (Ladouceur et al., 1994): 100% of our sample, an average of 85% of the states' groups, and 90% of the Canadian students had gambled at least once. Regular gambling figures were 18%, 23% and 22%, respectively.

Reasons Given for Gambling and Source of Funds

All but 5 of the participants provided reasons for their gambling. The responses from those that did were sorted into five categories. Approximately 46% did it for fun, enjoyment or excitement; 30% to win money prizes or get rich; 21% as a social event or activity; and 4% each for curiosity/novelty and supporting worthy causes or fund raising. The main reason given for participation by New Zealand adults was to win prizes or money (Reid & Searle, 1996). These findings suggest differences in the attitudes of adolescents and adults towards gambling that may have important implications for the difference in prevalence rates of problem gamblers in the two populations. Of the 18 adolescent gamblers who had indicated their sources of funding, 85% borrowed from relatives or close friends, 28% from lending institutions, 22% from household money, and 11% by bouncing checks.

Adolescent Problem Gambling

The SOGS scores were positively skewed, with the majority of the sample (52.9%) reporting no symptoms, 29.3% one or two symptoms, and 13.3% three or four symptoms. Only one of the three persons (4.5%) with a score greater than four (probable pathological gamblers) acknowledged that he or she had a gambling problem. Based on scores of three or more (Abbott & Volberg, 1996; Shaffer & Hall, 1996), our sample had more than twice as many problem gamblers or probable pathological gamblers in adolescence (17.8%) as expected from the national sample (6.9%), $\chi^2(1, N=68)=4.25, p<.05$, and more than three times the sample of Quebec college students (5.8%), $\chi^2(1, N=1,388)=15.19, p<.001$, (Ladouceur et al., 1994). For SOGS scores of 5 or

more, probable pathological gambling percentages across the three samples were similar — 4.5%, 2.7%, and 2.8%, respectively. Compared with the average rates of problem gambling and probable pathological gambling in five American states(15% and 5.5%, respectively; Lesieur et al., 1991), the New Zealand figures were also similar.

When the national survey (Reid & Searle, 1996) was undertaken in 1995, the first casino had been operating for three to four months in Christchurch, and 7% of the group aged 15 to 24 played there. A second one opened in Auckland in 1995. Our survey in 1996 found that in less than 12 months since the latter opened, 24% of our sample was underage (less than 20 years of age) when they gambled in New Zealand casinos. This finding was not surprising because in Atlantic City, 64% of the students at one secondary school had gambled at one or more of the many casinos there (Arcuri, Lester, & Smith, 1985). Only one underage person in our sample gambled regularly in New Zealand casinos. That person was not classified as a problem gambler according to the SOGS criterion.

Abbott and Volberg (1992) found that more problem than non-problem gamblers were involved in continuous gambling, whereby winnings can be immediately reinvested within the same session. Our data confirm this finding. Total scores for the continuous activities of scratch tickets, gaming machines, track betting, card games, and New Zealand casinos were calculated. The difference in mean continuous activities score for the adolescent problem gamblers (M = 3.25, SD = 1.36, n =12), compared with the mean score for the adolescent non-problem gamblers (M = 2.04, SD = 0.93, n =56), was statistically significant, $t(67) = 3.76$, $p < .001$.

Table 3 shows correlations among the variables. SOGS scores were directly related to the number of activities participated in, the number played regularly, and the amount of money spent. The more forms of gambling in which adolescents participated, the more regularly they gambled, or the more money they spent, the greater was the risk of problem gambling. Also, the more that the students gambled regularly, the more likely that they did so on a range of activities rather than a select few.

To determine the contributions of number of gambling activities participated in, number played regularly, amount of money spent, and family socioeconomic status (SES) to variance in problem gambling scores, a hierarchical regression analysis was computed. Predictor variables were allowed to vary with no forced entry within the group. Only the number of activities played regularly accounted for significant, unique variance in SOGS scores, $R = .385$, $F(1, 66) = 11.49$, $p < .001$.

Pathological Gambling Cases

Each of the three probable pathological gamblers in adolescence gambled about NZ$40 monthly on instant scratch tickets, and from $5 to $40 monthly on gaming machines such as one-armed bandits and slot machines. Two of them also gambled at least once each week on Lotto and spent $40 monthly. One of them spent $10 and another one spent $40 in New Zealand casinos, and one bet $60 monthly on housie.

As indicated in the literature (Abbott & Volberg, 1996; Fisher, 1993; Griffiths, 1995a, 1995b; Ladouceur and Mireault, 1988; Stinchfield & Winters, 1994, cited in Winters, et al., 1995), probable pathological gamblers in adolescence are at risk of becoming adult pathological gamblers, especially when they participate in a variety of gambling activities. Two of them were still less than 20 years of age when they completed our questionnaire and did not think that either parent or they had a gambling problem; the third, in the 20 to 24 age group, did not know about parents but felt that he or she had a gambling problem. He or she was classified into Level 4 (Impaired Gambler Who Displays Willingness to Enter Treatment) of Shaffer and Hall's (1996) scheme because he or she acknowledged a gambling problem while the other two did not. Close relatives and friends provided at least some of the funding for all three, and the main reason they gave for their gambling was for social activity with the relatives and friends.

Discussion

High frequencies of adolescent gambling and problem gambling may be simply indicative of an experimental stage which many adolescents outgrow, similar to experimentation with drugs. Indeed, patterns of adolescent problem gambling

Table 3. Correlation Matrix for SOGS Scores, Total Number of Activities, Total Played Regularly, Total Amount Spent, and Socio-economic Status (SES) (N = 68)

Variable:	1	2	3	4	5
1. SOGS scores	—	0.28*	0.39**	0.35**	-0.06
2. Total activities		—	0.24*	0.23	0.15
3. Total weekly			—	0.44**	-0.07
4. Amount monthly				—	-0.02
5. SES					
Mean	1.12	4.85	0.32	24.63	3.37
SD	1.62	2.25	0.61	39.67	0.75

*$p < .05$. ** $p < .01$. All tests are two-tailed.

Table 4. Mean Scores for Younger and Older Groups on SOGS Scores, Total Number of Activities, Total Played Regularly, and Total Amount Spent, Controlling for Activities Available

Variable	Younger 15 - 24 years (n = 68)	Older 25 - 64 years (n = 58)	t (df = 124)
1. SOGS scores	1.13 (1.62)	0.47 (0.94)	2.87**
2. Total activities	5.68 (2.90)	3.31 (3.10)	4.42***
3. Total regularly	4.99 (2.72)	3.14 (2.93)	3.67***
4. $NZ monthly	24.63 (39.67)	13.38(41.80)	1.54

Note. SD in parentheses
** $p < .01$. ***$p < .001$. All tests are one-tailed

are very similar to adolescent patterns of substance abuse, in that the prevalence of problems seems to decrease with maturity (Buchta, 1995; Ladouceur et al., 1994; Winters et al., 1993b, 1995).

Compared to the older group in the class (Table 4), the younger sample had higher gambling and problem gambling mean scores, even though the most popular activities were excluded from the analyses because they were not available for the older group. Even with more activities available for the younger groups, participation in earlier forms of gambling was greater among the younger groups. Because nearly half the sample was older than 25, and those participants reported their gambling behaviour before 20 years of age, the lower SOGS scores for older students may be a reflection of fewer gambling opportunities available in New Zealand for them when they were in adolescence. The differences may be due to the effect of time on recall, rather than on generational differences, but New Zealand may be following North American trends (Jacobs, 1987, cited in Radecki, 1994; Seager, 1979, cited in Arcuri et al., 1985; Shaffer & Hall, 1996; Winters et al., 1993a; 1993b; 1995), whereby prevalence rates of gambling and problem gambling among adolescents can be expected to rise along with availability of gambling activities (Sullivan, 1994).

The findings from our study have been based on data collected from a non-representative sample of well-educated and predominantly European New Zealanders recalling their adolescence. Most came from families with average or above average SES. The participants completed the questionnaires from memories of their gambling behaviour in adolescence. Because the reliability of autobiographical memories decreases over time, the older group might have been less likely to recall details of their underage gambling (Bradburn et al., 1987; Rubin et al., 1986). The small sample size makes it difficult to estimate the prevalence of problem gambling among adolescents in New Zealand, because base rates for problem gambling in general are relatively low.

Given that there were proportionately more women than men in the class (69%), and because men in New Zealand are more likely to be problem gamblers than women (Abbott & Volberg, 1996), our findings might be conservative estimates of adolescent problem gambling in New Zealand. Also, higher levels of education are usually associated with lower rates of problem gambling (Abbott & Volberg, 1991; Browne & Brown, 1993; Reid & Searle, 1996). Yet, as adolescents, the entire sample gambled, and more than four times as many adolescents as adults were classified as problem gamblers, rates comparable to more representative samples overseas which included lower educated, troubled and disadvantaged youth (Fisher, 1993; Winters et al., 1995).

In light of our findings and in line with Shaffer and Hall's (1996) prevention and treatment categories, some suggestions offered by Winters et al. (1995) to minimize the effects of adolescent gambling could be applied to New Zealand. We found that our three probable pathological gamblers usually gambled with family and close friends. Families of adolescents and children at risk of becoming problem gamblers need to be educated about their modelling role and the need for safe and nonaddictive gambling rules in their homes. Because the risk factors for problem gambling and substance abuse are very similar, education about both and sources for help could be integrated into school programmes, beginning at the primary level, to target the groups who are at risk. Underage gambling laws regarding casino entry, sales of lottery tickets and other regulated gambling sources need to be strictly enforced. Even though our respondents were underage and only two casinos had recently opened in New Zealand, many of them had gambled in the casinos and had spent substantial amounts of money in them.

Conclusions

Prevalence rates of gambling and problem gambling among New Zealand adolescents are probably very similar to rates in the United States, Canada and Great Britain. The data from our non-representative sample, which likely underestimate the extent of adolescent gambling and problem gambling in New Zealand, support findings from other studies: (a) Gambling and problem gambling are widespread among adolescents; (b) casinos are popular and expensive attractions for underage gamblers; (c) gambling for most adolescents is a form of experimentation which decreases in adulthood; (d) few adolescents with gambling problems and a very small minority of adolescents become pathological gamblers; and (e) risk factors for adolescents becoming problem gamblers include participating in a wide variety of gambling activities, gambling regularly at least weekly, higher gambling expenditure than non-problem gamblers, preference for continuous gambling activities, a parent with a gambling problem, and low socioeconomic status. Intervention with at-risk adolescents and their families, education about gambling, and strict enforcement of gambling laws might decrease the incidence of children and adolescents becoming pathological gamblers.

References

Abbott, M. W. (1993). Counselling and treatment: Whom are we reaching/missing and what works, for whom? In New Zealand Department of Internal Affairs (Ed.), *Seminar papers from problem gambling seminar* (pp. 59-78). Wellington, NZ: New Zealand Department of Internal Affairs.

Abbott, M. W., & Volberg, R. A. (1991). *Gambling and problem gambling in New Zealand.* Research Series No. 12. Wellington, NZ: Department of Internal Affairs.

Abbott, M. W., & Volberg, R. A. (1992). *Frequent gamblers and problem gamblers in New Zealand.* Research Series No. 14. Wellington, NZ: Department of Internal Affairs.

Abbott, M. W., & Volberg, R. A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies, 12,* 143-160.

Abbott, M. W., & Volberg, R. A. (1997, July). *Gambling and pathological gambling among New Zealand Maori, Pacific Islanders and Native Americans.* Paper presented at the 1997 Conference of the International Council of Psychologists, Graf, Austria. Auckland, New Zealand: Auckland Institute of Technology, Faculty of Health Sciences.

American Psychological Association. (1992). Ethical principles of psychologists and code of conduct. *American Psychologist, 47,* 1597-1611.

Arcuri, A. F., Lester, D., & Smith, F. O. (1985). Shaping adolescent gambling behavior. *Adolescence, 20,* 935-938.

Bale, D. W. (1992). *Lotteries, gaming and public policy.* Wellington, NZ: New Zealand Lotteries Commission.

Bradburn, N. M., Rips, L. J., & Shevell, S. K. (1987). Answering autobiographical questions: The impact of memory and inference on surveys. *Science, 236,* 157-161.

Bentall, R. P., Fisher, D., Kelly, V., Bromley, E. & Hawksworth, K. (1989). The use of arcade gambling machines: Demographic characteristics of users and patterns of use. *British Journal of Addictions, 84,* 555-562.

Brown, R. (1996). *An analysis of problem gambling in New Zealand.* Auckland, NZ: North Health.

Browne, B. A., & Brown, D. J. (1994). Predictors of lottery gambling among American college students. *The Journal of Social Psychology, 134,* 339-347.

Buchta, R. M. (1995). Gambling among adolescents. *Clinical Pediatrics, 34,* 346-348.

Fisher, S. (1993). Gambling and pathological gambling in adolescents. *Journal of Gambling Studies, 9,* 277-288.

Griffiths, M. D. (1990). The acquisition, development, and maintenance of fruit machine gambling in adolescents. *Journal of Gambling Studies, 6,* 193-204.

Griffiths, M. D. (1995a). Towards a risk factor model of fruit machine addiction: A brief note. *Journal of Gambling Studies, 11,* 343-346.

Griffiths, M. D. (1995b). *Adolescent gambling.* London: Routledge.

Ladouceur, R., Dubé, D., & Bujold, A. (1994). Prevalence of pathological gambling and related problems among college students in the Quebec metropolitan area. *Canadian Journal of Psychiatry, 39,* 289-293.

Ladouceur, R., & Mireault, C. (1988). Gambling behaviors among high school students in the Quebec area. *Journal of Gambling Behavior, 4,* 3-12.

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144,* 1184-1188.

Lesieur, H. R., & Blume, S. B. (1993). Revising the South Oaks Gambling Screen in different settings. *Journal of Gambling Studies, 9,* 213-223.

Lesieur, H. R., Cross, J., Frank, M., Welch, M., White, C. M., Rubenstein, G., Moseley, K., & Mark, M. (1991). Gambling and pathological gambling among university students. *Addictive Behaviors, 16,* 517-527.

Lesieur, H. R., & Klein, R. (1987). Pathological gambling among high school students. *Addictive Behaviors, 12,* 129-135.

Norušis, M. J. (1992). *SPSS/PC+ base system user's guide, version 5.0.* Chicago: SPSS Inc.

Radecki, T. E. (1994). The sales of lottery tickets to minors in Illinois. *Journal of Gambling Studies, 10,* 213-218.

Reid, K., & Searle, W. (1996). *Public participation in and attitudes towards gambling: Final results of the 1995 survey* (Research Series No. 22). Wellington, NZ: Department of Internal Affairs.

Rubin, D. C., Wetzler, S. E., & Nebes, R. D. (1986). Autobiographical memory across the lifespan. In D. C. Rubin (Ed.), *Autobiographical memory* (pp. 202-221). Cambridge: Cambridge University Press.

Shaffer, H. J., & Hall, M. N. (1996). Estimating the prevalence of adolescent gambling disorders: A quantitative synthesis and guide toward standard gambling nomenclature. *Journal of Gambling Studies, 12,* 193-214.

Shaffer, H. J., LaBrie, R., Scanlan, K. M., & Cummings, T. N. (1994). Pathological gambling among adolescents: Massachusetts Gambling Screen (MAGS). *Journal of Gambling Studies, 10,* 339-362.

Sullivan, S. (1994). Why compulsive gamblers are a high suicide risk. *Community Mental Health in New Zealand, 8,* 40-47.

Wells, J. E., Bushnell, J. A., Hornblow, A. R., Joyce, P. R., & Oakley-Brown, M. A. (1989). Christchurch epidemiology study, part I: Methodology and lifetime prevalence for specific psychiatric disorders. *Australian and New Zealand Journal of Psychiatry, 23,* 315-326.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993a). Towards the development of an adolescent gambling problem severity scale. *Journal of Gambling Studies, 9,* 63-79.

Winters, K. C., Stinchfield, R., & Fulkerson, J. (1993b). Patterns and characteristics of adolescent gambling. *Journal of Gambling Studies, 9,* 371-386.

Winters, K. C., Stinchfield, R., & Kim, L. (1995). Monitoring adolescent gambling in Minnesota. *Journal of Gambling Studies, 11,* 165-183.

Author Note

This report was based on a research exercise by the second author in partial fulfilment of the requirements for the degree of Bachelor of Science (Honours) in Psychology at Massey University.

Address for correspondence

Dr Dave Clarke
School of Psychology
Massey University, Albany Campus
Private Bag 102 904
North Shore Mail Centre
New Zealand.

Facsimile no. +64 9 443 9732.
Email: D.Clarke@massey.ac.nz.