

Internet Gambling and Problem Gambling Among 13 to 18 Year Old Adolescents in Iceland

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Abstract This study reports findings on Internet gambling and problem gambling among Icelandic youth. Participants were 1,537 13–18 year-old students, 786 boys and 747 girls. Results revealed that 56.6% had gambled at least once in the past 12 months and 24.3% on the Internet. Gender and developmental differences were found for Internet gambling, as boys and older age-groups were more likely to gamble on the Internet than girls or younger age groups. Problem gambling for the total sample was 2.2%, but Internet gamblers were more likely to be classified as problem gamblers (7.7%) than non-Internet gamblers (1.1%). A comparison of the findings of this study to earlier studies on adolescents conducted in 2003 and 2004 reveals that Icelandic adolescents are gambling less in land-based types of gambling and more on the Internet. In general, the results of this study thus suggest that the gambling habits of Icelandic youth are changing.

Keywords Adolescent · Gambling · Internet · Problem gambling

Pathological gambling behavior suggests continuous or periodic loss of control of gambling, preoccupation with gambling and continued gambling despite multiple adverse consequences for the gambler, his family or work environment (APA, 2000). It is a well established finding that gambling is widespread among adolescents and that they engage in a wide variety of gambling activities. Further, although research has shown that most adolescents gamble without any negative consequences a significant minority, ranging from 4% to 8%, gamble excessively and

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experience symptoms and negative consequences of pathological gambling (Hardoon and Derevensky 2002; National Research Council 1999; Shaffer and Hall 1996). However, the bulk of published research on youth gambling comes from North America or the UK with surprisingly few published European studies existing outside the UK (e.g., Becona 1997; Fisher 1999; Griffiths 1995; Hansen and Rossow 2008; Johanson and Göttestam 2003; Olason et al. 2006a, b).

Until the mid-1980s, the gambling market in Iceland was small and consisted mainly of three monthly lotteries, the weekly sports pool and low stake Finnish slot machines named Payazzo. During the last 20 years the market has changed considerably with the introduction of new forms of gambling such as high and low stake electronic gambling machines, scratch-cards, national lotto and fixed-odds sports betting. The operation of all legal gambling activities in Iceland is restricted to non-governmental institutions or charities and each gambling form is specifically legislated for each operator. Icelandic operators for monthly lotteries, national lotto, football pools and sports betting are also permitted to sell their products on the Internet, but any other forms of internet gambling (e.g. poker, casino games) are illegal. Further, there is no legal age restriction on participation in most gambling activities except for gambling machines, which are illegal for anyone under the age of 18 years. However, a number of gambling operators have recently set 18-year-old restriction on their products.

In Iceland, two earlier studies on adolescent gambling and problem gambling conducted in 2003 and 2004 suggested that Icelandic adolescents gambled widely (79% and 70% respectively) and predominantly in lotto, scratch-tickets and electronic gambling machines (EGMs) (Olason et al. 2006a, b). Prevalence of youth problem gambling was similar in both studies (1.9% and 2.0% respectively). A more recent study on 1,513 16–18 year old Icelandic students conducted in 2006, suggested a change in youth gambling behavior (Baldursdóttir et al. 2008). Adolescent gambling was overall less than in earlier studies (62%) and the downward trend was mostly due to less gambling on EGMs, scratch tickets and lotto. Interestingly, the opposite trend was observed for Internet gambling where one fifth of the adolescents in 2006 had wagered money on the Internet compared to only about 2% in studies from 2003 and 2004. These changes coincided with considerable change in the access and particularly the quality of internet connection available to Icelandic homes. In 2002, about 78% of Icelandic homes had access to the Internet but only 26% were connected with high speed connections (e.g., ADSL). In 2006 the number of Internet connected homes had only risen to 84% but more importantly the proportion of high speed Internet connections had risen to 85% of connected homes (Statistics Iceland 2006). An access to high speed Internet connection is a prerequisite to successful Internet gambling.

Although the results from the last study (Baldursdóttir et al. 2008) were based on a relatively large convenience sample it can not be ruled out that the results regarding Internet gambling were sample specific and did not reflect general trends in gambling behavior among Icelandic adolescents. The main aim of the current report is to further examine Internet and problem gambling in a more comprehensive sample of 13–18 year old students, obtained as a part of a bigger study on health and well-being of Icelandic adolescents.

Method

Participants

In the school year of 2007–2008 approximately 1,887 adolescents aged from 13 to 18 years were registered in 7 primary schools and two upper secondary schools in the third largest town (Hafnarfjörður) in Iceland. The town is only 10 km from the Capital Reykjavik and

falls within the region of the Capital commuting area. A total of 1,537 students in both school levels participated in the study, 786 boys and 747 girls (4 did not report their gender). The total response rate was 81.4% (1,537/1887) of all possible students within the age-range of 13 to 18 years in Hafnarfjörður.

Instruments

- 1) *Gambling behavior*: Students completed a 15 question survey regarding their gambling participation; both in land-based and Internet based gambling. Students were asked to rate their frequency of each gambling behavior with five response options: “Never,” “less than monthly,” “monthly,” “weekly” and “daily”. The following land-based gambling types were measured: Lotto, scratch-tickets, bingo, sport pools, sport betting, electronic gambling machines (EGMs), poker (with cards), other types of card or table games (e.g. bridge) and games of skill. For Internet gambling the students were asked to what extent they participated in gambling types available on Icelandic websites: these being lotto, sport pools and sport betting. Subsequently they were asked about Internet gambling on non-Icelandic websites, i.e., Internet poker, other types of casino gambling (EGMs, roulette, black-jack etc) or sport betting on non-Icelandic websites.
- 2) *DSM-IV-MR-J* (Fisher 2000). The DSM-IV-MR-J includes 12 items that measure 9 out of 10 criteria for DSM-IV diagnosis of adult pathological gambling. Most items are given four response options: “Never,” “once or twice,” “sometimes” or “often”. Generally, a score of four or more from the nine DSM criteria items suggests “problem” gambling; a score between 2-3 “at risk” gambling and a score between 0-1 “no problem” gambling. A recent psychometric evaluation of the Icelandic version of DSM-IV-MR-J confirmed that the scale has adequate reliability ($\alpha=.78$) and all items loaded on one common factor (Olason et al. 2006a).

Procedure

After having obtained consent from the Icelandic Data Protection Authority, approval from the ethical committee of Social Sciences at the University of Iceland and from the relevant school authorities, parents were sent a letter in which the research objectives were described and given opportunity to reject their children’s participation. Only 0.6% ($n=10$) rejected their child’s participation in the study. Data collection was subsequently arranged in cooperation with each school authorities and teachers. The questionnaire was always administered to students during lessons and a trained researcher was present in all instances. All students attending lessons on the day of data collection received the same general information before they answered the questionnaire and were instructed to answer individually. Participation was voluntary and the students were ensured confidentiality and were specifically asked not to provide their names or other personal identification information. They were also informed that they could terminate their participation at any time without any consequences.

Results

Overall Gambling Participation

A total of 56.6% ($n=862$) of the adolescents had gambled during the previous year and 8.1% gambled regularly (at least once a week). Examining Internet gambling specifically

revealed that 24.3% reported wagering money on either Icelandic (lotto, sport pools and betting) or non-Icelandic (e.g. poker, EGMs, casino games, sport betting) gambling websites and 4.1% did so at least weekly. Table 1 presents gender and developmental differences for total gambling and Internet gambling. Examining participation in all gambling forms (including all land-based and Internet gambling forms) revealed that boys were more likely to gamble overall ($\chi^2(1, N=1520)=114.26, p<.001$) and more regularly ($\chi^2(1, N=1533)=86.84, p<.001$) than girls. Gambling participation in all gambling forms jumped considerably at age 15-16 years compared to the 13-14 years and remained relatively steady after that ($\chi^2(2, N=1517)=39.143, p<.001$). Similar trends were found for developmental differences in regular gambling in all gambling forms ($\chi^2(2, N=1530)=31.380, p<.001$).

Examining gambling participation on the Internet revealed that boys were more likely to have gambled on the Internet ($\chi^2(1, N=1513)=13.31, p<.001$) and to gamble regularly on the Internet ($\chi^2(1, N=1533)=44.75, p<.001$) than girls. Again, overall gambling participation on internet wagering jumped significantly at age 15 and remained relatively steady after that ($\chi^2(2, N=1510)=21.05, p<.001$). Similar trends were found for developmental differences in regular gambling on the Internet except that regular participation was slightly less for 17-18 years ($\chi^2(2, N=1530)=15.53, p<.001$) and not significantly different from younger age groups.

Subsequently, the overlap between land- and Internet based gambling was examined. The results revealed that 95.1% of those who gambled on the Internet also gambled on land-based games, but 42.1% of those who gambled on land-based games also gambled on the Internet. These results suggest that the majority of adolescent gamblers who gamble on the Internet do that in addition to conventional gambling. The most popular past year gambling activities among the entire adolescent sample were scratch tickets (27.1%), followed by poker (22.3%) and EGMs (21.4%). The most popular forms of gambling on the Internet were casino type games on non-Icelandic websites (like EGMs, Blackjack and roulette) (12.4%), and Internet Lotto (8.7%) and sport pools (8.5%) on Icelandic websites.

Subsequently, the problem gambling estimates were calculated. For the total sample, 2.7% were at-risk gamblers and 2.2% were problem gamblers. There were substantial gender and age differences. Problem gambling was predominantly found among boys

Table 1 Total and Regular Gambling by Gender and Developmental Age

Gambling activity	All gambling forms		Internet gambling	
	Total gambling	Regular gambling	Total gambling	Regular gambling
Gender				
Boys (<i>n</i> =786)	69.7	14.3	36.5	7.4
Girls (<i>n</i> =747)	42.6	1.5	11.5	0.7
Age levels				
13-14 years (<i>n</i> =701)	48.0 ^a	3.9 ^a	18.9 ^a	2.1 ^a
15-16 years (<i>n</i> =508)	61.7 ^b	12.2 ^b	27.5 ^b	6.7 ^b
17-18 years (<i>n</i> =321)	66.6 ^b	10.6 ^b	30.8 ^b	4.4 ^{a, b}

All table values are percentages. Table values with different letter notation are significantly different at $p <.001$ Total gambling: Gambling at least once in the past 12 months; Regular gambling: Gambling at least once a week

(4.2%) as only one girl was classified as a problem gambler (0.1%) (χ^2 (3, $N=1503$)=136.26, $p<.001$). In terms of age difference in problem gambling, adolescents aged 15 to 16 years were more likely to be classified as problem gamblers (4.2%) than 13-14 years (0.7%) or 17 to 18 years (2.2%) (χ^2 (6, $N=1504$)=55.33, $p<.001$). These results coincide with other school-based studies on alcohol and drug use among Icelandic adolescents that show that during the age of 15 to 16 the use of alcohol and drugs increase considerably (Alcohol and Drug Abuse Prevention Council 2003). The most likely explanation is that Icelandic adolescents go from primary school to upper secondary school at this age. The reason for a lower problem gambling prevalence among older students in this study might be the fact that the dropout numbers from upper secondary school is greatest during the first year (Statistics Iceland 2004). Thus students that have problems with gambling, alcohol or drugs might be dropping out during the first year in proportionally higher numbers.

Examining problem gambling among Internet gamblers revealed that the prevalence of problem gambling among Internet gamblers (7.5%) was considerably higher than was obtained for the total sample (2.2%). To examine in more detail the difference between land-based gamblers and Internet gamblers we compared problem gambling prevalence between those who gamble only on land-based gambling activities ($n=476$ or 58.3% of gamblers) to those who gamble both on land-based and Internet gambling activities ($n=340$ or 41.7% of gamblers). The results revealed that 1.1% of land-based gamblers were classified as problem gamblers and 0.8% as risk-gamblers. However, for those who also gambled on the Internet, 7.7% were classified as problem gamblers and 10.6% as at risk-gamblers (χ^2 (2, $N=816$)=68.48, $p<.001$). These results indicate that problem gambling is predominantly found among those students who gamble on the Internet in addition to their land-based gambling activities.

Discussion

In general, this study findings supports earlier finding from 2006 (Baldursdottir et al. 2008) that indicated that gambling behavior among Icelandic youth is changing. Overall, 56.6% of the adolescent sample reported gambling at least once in the past 12 months. This is lower than results from earlier studies from 2003 (79%) and 2004 (70%) have shown (Olason et al. 2006a, b).¹ As in 2006, fewer students gambled on EGMs (21.4%), scratch-tickets (27%) and lotto (10.7%) than was observed in 2004 and 2003 where from 32% to 47% reported gambling on EGMs, 48–54% on scratch-tickets and 28–30% in lotto. The most likely explanation for these differences between studies is that in 2005 the legal age limit to EGMs participation rose from 16 to 18 years and also that gambling operators for scratch-tickets, lotto and sports betting set their own age-limit to 18.

About one fourth of the adolescent sample had wagered money on Internet gambling activities and 4.1% did so at least weekly. Boys were more likely to gamble on the Internet than girls and there were developmental differences with older age groups more likely to have wagered money on Internet gambling. These findings support earlier finding from 2006 (Baldursdottir et al. 2008) and together both studies indicate that Internet gambling among youth is much more prevalent today than it was in 2003 and 2004. This change in youth gambling behavior is of concern for the Icelandic society. Specifically as the results

¹ Post hoc analysis using the Wilson procedure for calculating the confidence interval for the difference between two independent proportions (Newcombe 1998) showed that 56.6% was significantly lower than either 79% (2003) or 70% (2004).

also revealed that problem gambling prevalence was predominantly identified among youth who gambled on the Internet. The results for problem gambling among Internet gamblers are comparable to other studies that show that prevalence of problem gambling tend to be much higher among Internet gamblers than non-Internet gamblers (Derevensky and Gupta 2007; Griffiths and Barnes 2008; Ladd and Petry 2002; Petry 2006; Wood and Williams 2007). However, it should be noted that these findings could either mean that Internet gambling is simply more addictive or alternatively that problem gamblers are gambling on the Internet to a greater degree than before (Wood and Williams 2007).

In conclusion, the results of the study indicate that Icelandic youth are to some extent changing their gambling habits from land-based gambling to Internet gambling, to which they have easy access through high speed Internet connections in their homes or schools. Age restrictions on legal gambling activities in Iceland have become stricter which might also make Internet gambling more attractive for Icelandic youth as age restrictions on the Internet are generally poor and the possibility of anonymity is greater than in land-based activities (Derevensky and Gupta 2007; Griffiths and Barnes 2008). Further studies are necessary to examine in more detail Internet gambling among Icelandic youth.

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