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Lessons from the Grey Area: A Closer Inspection of At-risk Gamblers

Ingeborg Lund

Abstract   The study takes a closer look at at-risk gamblers, with the objective to see how they differ from no-risk gamblers. The data comes from a national gambling survey in 2002, and the age group is 15–74 years. The sample consists of 4188 current gamblers with no current gambling problems or pathology. The analysis includes cross-tabulations and a logistic regression. The results show that at-risk gamblers differed substantially from no-risk gamblers in terms of demographic characteristics, gambling behaviour and the presence of other assumed risk factors. Demographic segments with a higher risk of falling into the at-risk group are men, young people, divorced or single people, and non-western immigrants. Furthermore, gambling problems in the family, beginners luck and misconceptions about winning chances significantly increased the odds for at-risk gambling. The study concludes that at-risk gamblers deserve more attention from research, that their similarity with problem gamblers increases the likelihood that many of them will eventually develop a gambling problem, and that their tendency to be superstitious about winning chances might be exploited in preventive work.

Keywords   At-risk gambling · Adults · Risk factors

Introduction

In recent years, the area of gambling and gambling problems has been subject to increasing political and scientific interest in many countries. Numerous population studies have been carried out in the USA, Canada, Australia and New Zealand (e.g: Abbott & Volberg, 2000; Gerstein et al., 1999*; Shaffer, Hall, & Vander Bilt, 1997; Wiebe, Single, & Falowski-Ham, 2001), and since the 1990s also in several European countries, such as England (Sproston, Erens, & Orford, 2000), Sweden (Rönnberg

I. Lund (✉)
Norwegian Institute for Alcohol and Drug Research, Post Box 565, Sentrum, Oslo 0105, Norway
e-mail: il@sirus.no

et al., 1999), Finland (Ilkas & Turja, 2003) and Denmark (Bonke & Borregaard, 2006). The focus of these studies has primarily been to assess the prevalence of gambling problems in the country, using various gambling screens to classify respondents.

Norway is typical of the development in gambling and gambling research in Northern Europe. Parallel to an expanding gambling supply since the mid 1980s, gambling involvement escalated, and is still escalating, to the extent that, between 2001 and 2004, gross sales in the gambling market increased by 82% (The Norwegian Gaming and Foundation Authority, 2006). As people gambled more, the negative effects of gambling also became more visible. Treatment centres were established, politicians and professionals expressed concerns about the extent of gambling problems in the country, and research funding and research efforts increased. To date three prevalence studies have been carried out. Götestam and Johansson (2003) found a prevalence of gambling problems in 1997 of 0.6% for people 18 years and older, Lund and Nordlund (2003) found that 0.7% of 15–74-year-olds had problems in 2002, while Kavli and Berntsen (2005) found that 1.9% of people 15 years and older had gambling problems in 2005. Although some of the differences in prevalence between the last study and the two before probably reflect a real increase in the prevalence of gambling problems, it is likely that part of it is a result of differences in methodology, gambling screens and response rates between the studies (Abbott, in press). As the prevalence of gambling problems is very low in the normal population, the results of any screening are highly susceptible to variations in the response rate, even with very large gross samples. Furthermore it is generally suspected that hard gamblers are under-represented in gambling studies (Lesieur, 1994), as they may spend less time at home, or be less willing to answer telephone calls from unknown callers, in case they are from creditors. An additional problem is that hard gamblers may underestimate the extent of their gambling involvement.

This demonstrates the problems gambling research is faced with, and the difficulties of estimating prevalence rates for gambling problems and changes in this over time. Are there then additional sources of information that can fill out the picture for us? Even if the problem of different gambling screens still needs to be tackled, this study puts forward the idea that people who gamble so that they experience negative consequences, yet not enough to classify as problem- or pathological gamblers, may help us to learn more about the gambling situation in a population. These individuals, classified as at-risk gamblers in the gambling screen NORC Diagnostic Screen (NODS), and moderate risk gamblers in the Canadian Problem Gambling Index (CPGI), have already developed gambling habits that have led to some undesirable effects. As the focus of international gambling research tends to be directed at problem gamblers and pathological gamblers, little is known about at-risk gamblers.

There are clear advantages in looking more closely at this group, e.g. that the risk for under-representation is most likely smaller for at-risk gamblers than for problem- and pathological gamblers. There are two reasons for this. First, because at-risk gamblers are a larger group of people, the results are less vulnerable to variations in the response rate. Second, at-risk gamblers may be less difficult to get hold of, and more willing to discuss their gambling habits on the phone, than people with more serious problems. Seen in the light of this, it is interesting to note that the differences between the results of Lund and Nordlund (2003) and Kavli and Berntsen (2005) are smaller for at-risk/moderate risk gamblers than for problem gamblers. Lund and Nordlund (2003) found a past year prevalence of at-risk gambling of 2.8%, while

Kavli and Berntsen (2005) found that 3.6% of their sample were current moderate risk gamblers. Even when we compare the findings from studies in Norway, Sweden and Denmark, the percentage gap between the size of the at-risk gambler groups is smaller than the percentage gap between the size of the problem- and pathological gambler groups (Bonke & Borregaard, 2006).

It is also conceivable that at-risk gamblers run a greater risk than others of becoming problem gamblers, and it has been suggested that high at-risk levels today might transform into higher problem levels in the future, at least when the at-risk group is young (Schrans & Schellinck, 2004).

These aspects make at-risk gamblers an interesting group for further study, and the aim of this paper is therefore to inspect this group more thoroughly. In particular, the question of what distinguishes at-risk-gamblers from no-risk-gamblers in demographic terms will be addressed. Furthermore we will take a closer look at the prevalence of factors that are assumed to increase the risk of gambling problems in the at-risk group, in the hope of uncovering evidence that could prove useful for preventive purposes.

Method

Data

The data were collected as part of a national gambling survey in 2002 (SIRUS, 2002). In Norway all inhabitants are registered in a population database, and access to this database allowed a straightforward sampling procedure. Individuals were randomly drawn and no stratification technique was necessary. The response rate was 55%, and the net sample includes 4188 people. To account for the non-response, a weight was constructed based on national population statistics (Statistics Norway, 2003). The weighted net sample is considered to be representative of the adult population, 15–74-years old (Lund, 2006). A more thorough discussion of the survey design and sampling procedure is found in Lund (2006).

Variables

In the current study, the focus is on current no-risk and at-risk gamblers. Non-gamblers and current problem gamblers or pathological gamblers were not included in the analysis. Current gamblers are individuals who have gambled during the last 12 months. A current no-risk gambler is a gambler who has not experienced any negative gambling-related consequences during the last 12 months, whilst a current at-risk gambler has experienced one or two negative consequences. The classification of gamblers into the at-risk or no-risk groups is based on NODS, developed by Gerstein et al. (1999). Table 1 shows the distribution of no-risk and at-risk gamblers in the material.

The participants' age, gender, marital status, education level and country of birth are included to investigate demographic differences between the two gambler groups. In the area of gambling participation, both the choice of games, and the frequency of gambling is discussed. Respondents were asked about participation in nine main categories of gambling. These categories, most of which include several

Table 1 Associations between demographic group and risk category

Dem. group	No risk	At risk	Proportion of at-risk group	N
Total	96.54	3.46	1.00	4,188
Gender***				
Men	94.76	5.24	0.77	2,139
Women	98.39	1.61	0.23	2,049
Age***				
15–17	84.46	15.54	0.21	193
18–24	91.74	8.26	0.26	460
25–44	97.07	2.93	0.35	1,742
45–64	98.56	1.44	0.14	1,386
65–74	98.76	1.24	0.03	404
Marital status***				
Married	98.87	1.13	0.19	2,126
Cohabiting	96.75	3.25	0.20	770
Single	91.55	8.45	0.58	876
Widowed	96.58	3.42	0.03	117
Education**				
7 years	96.14	3.86	0.08	311
Junior high	95.81	4.19	0.24	812
Senior high	95.76	4.23	0.47	1605
College	97.92	2.08	0.21	1440
Country of birth***				
Norway	96.87	3.13	0.85	3924
Other western	95.27	4.73	0.05	148
Non-western	82.95	17.05	0.10	88

χ^2 ** $P < 0.01$, *** $P < 0.001$

Table 2 Participation in types of games for no-risk and at-risk gamblers

	No risk	At risk	Total	$P < (\chi^2)$
N	4043	145	4188	
Lotteries	91.9	86.1	91.7	*
Football pools	16.7	36.6	17.4	***
Sports betting	10.7	42.8	11.8	***
Horse gambling	10.5	25.0	11.0	***
Bingo	25.0	31.3	25.3	n.s.
Bingo automats	1.5	9.7	1.8	***
Gambling machines	24.8	62.9	26.2	***
Cards and casino-type games	8.0	32.4	8.8	***
Internet gambling	2.8	13.1	3.2	***
Sum of shares	191.9	339.9		

* $P < 0.05$, *** $P < 0.001$

individual games, are shown in Table 2. The motivation for applying this grouping technique was both that it gave a shorter questionnaire and that it reduced the risk of accidentally leaving some games out, as new types of games are introduced from time to time, and the total number of individual games is very high. Gambling frequency was measured for every game category, with response alternatives ranging from "have gambled once during the last 12 months", to "have gambled every, or almost every, day".

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The variables gambling initiation, beginners luck and gambling problems in the family were included, as previous research has indicated that these are factors that influence the risk for gambling problems (Black, Monahan, Temkit, & Shaw, 2006; Johansson & Götestam, 2004; Orford, Sproston, Erens, White, & Mitchell, 2003). Gambling problems in the family were measured as having either parents or other family members with gambling problems, current or past. As this variable is based on the respondent's own opinion of family members, it is probably better to interpret it as a measure of the occurrence of ardent gamblers, more than actual problem gamblers, in the respondent's family. Gambling initiation was based on information from the respondents on how old they were when they started to gamble regularly. Beginners luck was measured using a yes/no question in the questionnaire.

To have misconceptions about winning chances and the laws of probability is also thought to increase the risk for gambling problems. Several studies have found increased risk when misconceptions are present (Johansson & Götestam, 2004; Joukhador, Blaszczynski, & Maccallum, 2004), or have discussed the possible advantages in treatment or prevention of addressing issues related to such misconceptions (Benhsain, Taillefer, & Ladouceur, 2004; Delfabbro, 2004; Williams & Connolly, 2006). Five variables concerning misconceptions were included in this study. The variables are shown in Table 5. The respondents were asked to agree or disagree with the statements, and here agreement includes "fully agree" or "partly agree".

Statistical Analysis

Both bivariate and multivariate methods were applied. In the bivariate section, χ^2-testing for cross tabulations and t-testing (anova) for comparison of group means were used to describe the composition of the two groups. In the multivariate section, a binary logistic regression was applied, with risk category as the dependent variable. The advantage of bivariate methods is their ability to give an overview of the structure and composition of the groups. The multivariate method on the other hand provides a better foundation for conclusions about risk factors.

Results

Classification of Gamblers and Gambling Behaviour

The available data were collected at one single point in time, and therefore they say nothing about how the situation will develop for the at-risk gamblers in the future. However, we have information about the respondents' earlier status, as questions were asked both about their current situation (last 12 months) and their lifetime situation. Cross-tabulations showed that while 89% of the current at-risk group had never had more serious problems than now, 11% of them had previously been either problem gamblers or pathological gamblers. For this last group the at-risk classification therefore represents an improvement compared to their earlier situation. In addition, the proportion of current at-risk gamblers in the lifetime at-risk group was very high (50%, or 129 of 255 people).

As shown in Table 1, 3.5% of the sample fell into the at-risk group. At-risk gambling was more prevalent for men, young people, single people, and people from abroad, especially from non-western countries. There were also significantly more at-risk gamblers among those with medium length education, although the difference in prevalence levels was not very big.

Table 1 shows that there were large variations in the sizes of the groups, so that the typical at-risk gambler emerges as a young to middle-aged single man with no college education. Despite the high prevalence among non-western immigrants, the low number of individuals in this group means that the typical at-risk gambler is an ethnic Norwegian.

As shown in Table 2, lotteries were by far the most common type of gambling for both no-risk and at-risk gamblers. For no-risk gamblers the second most popular games were bingo and gambling machines, both played by approximately one in four. For at-risk gamblers, gambling machines were the second most popular game, played by more than three in five. Sports betting was also popular among the at-risk gamblers, played by almost 43% of them.

For the majority of games listed in Table 2, at-risk gamblers' participation was significantly higher than no-risk gamblers' participation. The exceptions were lotteries, where significantly more no-risk gamblers participated, and bingo, where there was no significant difference in participation.

By adding together all the shares of no-risk or at-risk gamblers for the different games we see that while no-risk gamblers participated in 1.9 different types of games on average, at-risk gamblers participated in 3.4. A division of the no-risk and at-risk gamblers based on how many different types of games they participated in (not reported) gave a significantly different distribution for the two groups of people (χ^2, $P < 0.001$). Sixty per cent of the no-risk gamblers played games from 1–3 of the game groups, and only 0.6% of them participated in 8–9 types of games. For at-risk gamblers the corresponding figures were 30% in 1–3 types of games and 9% in 8–9 types.

At-risk gamblers also tended to gamble more frequently than no-risk gamblers. As shown in Table 3, 9% of the at-risk group had gambled daily, and two-thirds of them had participated in gambling at least once a week. To gamble every week was admittedly also quite common among no-risk gamblers, but the proportion of them who gambled daily was very small in comparison (0.7%).

Distribution of Assumed Risk Factors

Table 4 shows that factors that are assumed to increase the risk for gambling problems were more present in the at-risk group. At-risk gamblers started to gamble at a significantly earlier age (17.8 vs. 21.5 years), they significantly more often

Table 3 Frequency of gambling participation for no-risk and at-risk gamblers	No risk	At risk	Total
N	4019	144	4163
Daily	0.7	9.0	1.0
One or more times per week	40.1	56.9	40.7
1–3 times per month	23.2	23.6	23.3
A few times last 12 months	35.9	10.4	4.3

χ^2 $P < 0.001$

Table 4 Associations between beginners luck, gambling problems in the family and gambling initiation and risk category

	No risk	At risk	Total
N	4043	144	4187
Percent			
Beginners luck	21.7	55.6	22.9***
Gambling problems in family	25.4	48.3	26.2***
Mean years			
Gambling initiation	21.5	17.8	21.4***

*** $P < 0.001$, $P < (\chi^2)$ for beginners luck and gambling problems in the family, Anova for gambling initiation.

reported that their parents or other family members have or have had gambling problems (48.3 vs. 25.4%), and significantly more of them had experienced beginners luck (55.6 vs. 21.7%).

A similar pattern appeared when we looked at another type of assumed risk factors, i.e. misconceptions about winning chances and the laws of statistics. With the exception of believing that bad luck will turn, at-risk gamblers were more than twice as likely as no-risk gamblers to believe in the statements listed in Table 5. For the belief that luck will turn, the proportion of at-risk gamblers was almost twice as large as the proportion of no-risk gamblers.

Logistic Regression

The results from the binary logistic regression confirm most of our earlier bivariate results regarding the importance of demographic factors and other risk factors. A categorical variable for earlier (lifetime) problem status was included to control for the fact that a high percentage of the current at-risk gamblers have a past as a problem gambler or pathological gambler. Gender, education, marital status, country of birth, beginners luck and gambling in the family are categorical variables with constant reference categories (indicators or simple). Misconceptions is a categorical variable based on the five statements shown in Table 5. It was assumed that the important component is not which types of superstition an individual has, but rather how many. The variable is coded so that every category except the first is compared to the preceding category (difference). The variables measuring frequencies of gambling are semi-continuous, computed from the categorical answers given by the respondents. Daily or almost daily gambling equals 312 times per year (an average of 5–7 times per week), once or several times a week equals 130 times (an average of 1–4 times per week), 1–3 times a month equals 24 times (an average

Table 5 Misconceptions about winning chances

	No risk	At risk	Total	$P < (\chi^2)$	N no risk	N at risk
Believe in big win	21.6	47.8	22.5	***	3795	138
Believe in more win than lose	10.7	21.6	11.1	***	3847	139
Believe you can influence the results	12.6	36.3	13.4	***	3752	135
Believe in better winning chances	22.0	51.4	23.1	***	3887	142
Believe that bad luck will turn	15.9	26.1	16.2	***	3860	138

*** $P < 0.001$

of 1–3 times per month), several times a year equals seven times (an average of 2–11 times per year), and once a year equals one time.

Table 6 shows that gender, age and ethnicity were important demographic factors, with men, young people, and people born in a non-western country being more at risk of becoming at-risk gamblers. Education had no significant effect, but marital status did. Interestingly, cohabiting individuals had a higher risk of at-risk gambling than married people, even though single people and divorced people had the highest odds ratios.

To have had beginners luck and to have, or have had, gambling problems in the family significantly increased the risk for at-risk gambling, while early gambling initiation had no significant effect. In accordance with previous beliefs, misconceptions

Table 6 Logistic regression. Dependent variable: Past year risk gambler (yes/no)

Independent variables	B	Wald test	OR	95% Conf
Constant	–3.731	28.984***	0.024	
Demographics:				
Gender (man/woman)	–0.673	7.578**	0.510	0.316–0.824
Age	–0.027	5.581*	0.973	0.951–0.995
Education (ref: 7 years, df: 3)		2.905		
Junior high	–0.686	2.586	0.504	0.218–1.162
Senior high	–0.533	1.770	0.587	0.268–1.287
College	–0.659	2.320	0.517	0.222–1.208
Marital status (ref: married, df: 4)		24.480***		
Cohabiting	0.695	3.870*	2.004	1.003–4.005
Single	1.216	12.467***	3.375	1.718–6.630
Divorced	1.693	19.521***	5.436	2.565–11.519
Widowed	0.492	0.301	1.635	0.283–9.461
Country of birth (ref: Norway, df: 2)		13.536**		
Western country	0.642	1.488	1.900	0.677–5.332
Non-western country	1.727	12.471***	5.623	2.156–14.663
Gambling experiences:				
Earlier problem gambling (yes/no)	1.528	10.296**	4.610	1.813–11.726
Initiation age	0.028	3.841	1.028	1.000–1.058
Beginners luck	0.458	4.543*	1.581	1.038–2.410
Parental gambling	0.725	10.965**	2.065	1.344–3.172
Misconceptions (ref: previous category, df: 2)		18.957***		
1–2 misconceptions	0.583	5.040*	1.791	1.077–2.980
3–5 misconceptions	1.036	16.808***	2.817	1.717–4.621
Gambling frequency:				
Lotteries	0.003	2.224	1.003	0.999–1.007
Football pools	–0.005	2.715	0.995	0.989–1.001
Sports betting	0.012	25.311***	1.012	1.008–1.017
Horse betting	–0.003	0.270	0.997	0.987–1.007
Bingo	–0.002	0.228	0.998	0.992–1.005
Bingo automat	0.025	8.133**	1.025	1.008–1.043
Gambling machine	0.009	19.374***	1.009	1.005–1.013
Cards, etc.	–0.001	0.026	0.999	0.982–1.015
Internet gambling	0.004	0.969	1.004	0.996–1.012

–2LL = 785.442, Nagelkerke R^2 = 0.328

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

Unweighted N = 4116

OR-Odds Ratio

about winning chances significantly increased the risk. As shown in Table 6, both having 1–2 misconceptions and having 3–5 misconceptions had significant effects on the risk for at-risk gambling, indicating that the risk increases the more misconceptions an individual has.

Frequency of participation in sports betting, bingo automats, and gambling machines also significantly increased the risk for at-risk gambling, while how often people played the lotteries, football pools, bingo, cards etc, or gambled on horses or the Internet had no significant effect.

Discussion

The results from this study show that men, younger people, cohabiting, single and divorced people, as well as people born in a non-western country, have an elevated risk of being at-risk gamblers. In demographic terms, therefore, at-risk gamblers are quite distinct from non-risk gamblers. On the other hand they resemble very much the groups of problem- and pathological gamblers, commonly found in research both internationally (e.g. Gerstein et al., 1999; Rönnberg et al., 1999; Sproston et al., 2000) and in Norway (Gøtestam & Johansson, 2003; Lund, 2006). This resemblance also includes other aspects related to gambling, like a higher occurrence of beginners luck, familial gambling and misconceptions about winning chances (Lund, 2006), aspects that were also found to significantly increase the risk for at-risk gambling.

The effects found for misconceptions are perhaps the most interesting for the purpose of this study. As earlier gambling problems are controlled for in the model, the significant effect of these superstitions applies regardless of the individuals' lifetime status. Even among people who have never had gambling problems, the presence of irrational beliefs about winning chances and superstitious ideas about controlling the outcome of games, increase the odds for becoming an at-risk gambler. This indicates that these types of misconceptions might form relatively early in a gambling career. To educate both at-risk and no-risk gamblers about winning chances could therefore prove useful for preventive purposes, not only to reduce the size of the at-risk group, but also perhaps to reduce the chances that at-risk gamblers will develop more serious gambling problems. In fact, it has been suggested by earlier research that informing and educating people before they actually develop a gambling habit might be particularly effective in preventive work (Delfabbro, 2004).

In terms of gambling involvement the at-risk gamblers lies somewhere between no-risk gamblers and problem gamblers, as problem gamblers tend to participate even more frequently and in an even wider range of games (Lund & Nordlund, 2003). Total gambling involvement thus seems to be closely linked to the degree to which one experiences negative consequences from gambling. Furthermore, it is likely that the finding that some games are more risky than others is related to properties of the different games. Games that came out as significant for the risk in this sample, sports betting, bingo automats and gambling machines, are all continuous games, with high accessibility. In the case of automats there is also high event frequency and short payout interval, factors that are considered to increase the risk for gambling more than intended (Cornish, 1978). Regarding cards etc. and Internet gambling, it is important to realise that Internet poker had not yet become a common game in 2002. It may therefore be premature to conclude that they are without risk based on the results from this study.

All in all, the results from this study show that there is a remarkable likeness between at-risk gamblers and problem gamblers, both in terms of demographic variables, gambling preferences and the prevalence of other risk factors. These findings support the idea that many at-risk gamblers might eventually develop into problem gamblers, and of course some of them have already been problem gamblers at earlier stages in their gambling career. Seen in that context, the fact that 50 per cent of the lifetime at-risk gamblers in the sample were current at-risk gamblers is rather disconcerting. Even if some people will not increase their gambling involvement any further when they reach at-risk-levels, this high percentage might be a sign of a large proportion of relatively recent at-risk gamblers, which in turn could mean that at-risk gambling is a growing phenomenon. If at-risk gamblers are more at risk for problem gambling, this makes a future growth in problem gambling more likely.

An alternative interpretation to the many similarities between at-risk and problem gamblers is that there is a lot of under-reporting, and that many of the people who have been classified as at-risk gamblers in reality are problem gamblers or pathological gamblers. People do not always answer truthfully when asked about their problems, and some people do not remember things that happened in the past. However, it would be surprising if there is so much under-reporting, as this would imply that the classification instrument is flawed. NODS has previously been found to have good internal consistency, good retest reliability and good validity (Gerstein et al, 1999). Furthermore, our finding that at-risk gamblers tend to gamble less frequently and on a smaller number of games than problem gamblers seems to indicate that they are less deeply into gambling, and probably constitute a different group of people.

The results from this study show that at-risk gamblers are an interesting group for further study. Their status as people with a higher risk for developing gambling problems has been strengthened, at the same time as their marked tendency to have false beliefs about winning chances gives a potential for preventive work, particularly in the area of cognitive misconceptions. Furthermore, monitoring at-risk gamblers could be an important step towards building a better understanding of the cause and nature of problem gambling and pathological gambling. In addition it seems that the many similarities between at-risk gamblers, and problem gamblers and pathological gamblers, could be utilized in a better way than is done at present. Inclusion of at-risk gamblers in the analysis of demographic distributions and (new) high risk games could result in a more cost-effective approach to these questions, as it would lessen the problems connected to small group sizes and possibly also help reduce the representativity problems associated with this type of study.

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