

15:2006 WORKING PAPER

Jens Bonke
Karen Borregaard

THE PREVALENCE AND HETEROGENEITY OF AT- RISK AND PATHOLOGICAL GAMBLERS – THE DANISH CASE

RESEARCH DEPARTMENT OF SOCIAL POLICY AND WELFARE SERVICES

The Prevalence and Heterogeneity of At-Risk and Pathological Gamblers – the Danish Case

***Jens Bonke
Karen Borregaard***

***Social Policy and Welfare Services
Working Paper 15:2006***

The Working Paper Series of The Danish National Institute of Social Research contain interim results of research and preparatory studies. The Working Paper Series provide a basis for professional discussion as part of the research process. Readers should note that results and interpretations in the final report or article may differ from the present Working Paper. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including ©-notice, is given to the source.

The Prevalence and Heterogeneity of At-Risk and Pathological Gamblers - the Danish Case

Jens Bonke · Karen Borregaard

Abstract The article studies the prevalence of at-risk, problem and pathological gamblers among adult Danes. Based on a nation-wide survey applying the NODS-screening tool, the percentage of the different categories of gamblers with some problems within the last year were 1.85, 0.23 and 0.134, respectively. The questions most frequently yielding positive replies were about returning to win after having lost money, and having periods spending much time on making plans for future gambling. Also the question about gambling for more and more money to keep the same excitement and lying to family members about one's gambling behaviour were often positively replied to among problem and pathological gamblers. Finally, it is more likely to be a problem gambler among young people, men, singles, and people with low and medium incomes than among their counterparts.

Key Words Gambling prevalence, Screening instruments, Heterogeneity.

J. Bonke

The Danish National Institute of Social Research, Herluf Trolles Gade 11, DK-1057, Copenhagen K, Denmark

e-mail: jeb@sfi.dk

K. Borregaard

The Danish National Institute of Social Research, Herluf Trolles Gade 11, DK-1057, Copenhagen K, Denmark

Introduction

This article includes a study of the prevalence and the heterogeneity of at-risk and pathological gamblers in Denmark. This is possible due to a recent large-scale Danish study (Bonke & Borregaard, 2006), which was designed to make the results comparable with other studies.

A pre-test study was performed to prove the significance of different international validated screens – SOG-R and NODS – and the latter was chosen in the main study.

In other studies (overview in Lund & Nordlund, 2003) the prevalence of individuals with gambling problems, including pathological gamblers, was found to be relatively small for which reason more than 8,000 interviews were carried out. Moreover, this number was also chosen to ensure a statistical base for the estimations of the gambling behaviour and the instrumental and socio-economic heterogeneity within the group of gamblers.

This article includes the following sections. Section 2, the methodology is described. In section 3, a description of the data applied in the study follows. Section 4 concerns the estimates of the prevalence of gambling problems and pathological gambling, and in section 5 different kinds of heterogeneity in the group of problem gamblers is examined. Section 6 concludes.

Methodology

A number of screens have been developed to study the prevalence of gambling problems. In 1977, pathological gambling was included in the 9th edition of the International Classifi-

cation of Diseases, and was also included in the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-III) (Lesieur & Blume, 1987; Lesieur & Rosenthal, 1991). Since then, DSM-III was further developed to DSM-III-R and in 1994 to DSM-IV.

The DSM-IV uses a number of diagnostic criteria to diagnose gambling problems, see Bonke & Borregaard (2006), and constituted the basis for other screens, i.e. South Oaks Gambling Screen, SOGS and SOGS-R. By including questions referring to two time periods, lifetime and past year, the SOGS-R made it possible to distinguish between gambling problems during one's lifetime and during the past year.

SOGS and SOGS-R were used in the national Norwegian (Lund & Nordlund, 2003) and in the national Swedish prevalence study (Rönnerberg et al., 2000), as well as in the national study in New Zealand (Abbot & Volberg, 1996) (an overview, see Petry & Armentano, 1999).

The problem with SOG and SOGS-R is the number of false positive, which accordingly to Lund and Nordlund (2003) was one of the reasons why The National Research Center at the University of Chicago developed a new screen, NODS (NORC DSM Screen for Gambling Problems). This screen includes 17 items and the maximum score is 10, and as SOGS-R it includes two time dimensions: lifetime prevalence and past year prevalence. Both NODS and SOGS and SOGS-R were developed from the DSM-IV.

A test done by Gerstein et al. (1999) concludes that NODS has a good internal consistent as well as good retest reliability (the test is referred to in Lund & Nordlund, 2003). The test also shows that NODS-lifetime has a good validity because it places the people with dif-

ferent degrees of gambling problems in the right category. NODS-past year does not have as good validity as NODS-lifetime.

Even though NODS has fewer questions than SOGS-R, NODS is considered more restrictive than SOGS-R because several studies have shown that the prevalence of NODS is lower than the one of SOGS-R. (Volberg, 1999). The pre-test of the present study included both SOGS-R and NODS and sustains these experiences, i.e. the prevalence of NODS-lifetime and -past year in the pre-test study was found lower than the prevalence of SOGS-R.

In this main study, only the NODS screen (both lifetime and past year) was included. However, not all respondents were asked the NODS-questions. These were individuals who never had lost more than DKK 35 in a single day of gambling, which implied that they were considered not having a problem with their gambling behaviour. This filter was based on results from the pre-test study where all respondents were asked both the questions from NODS and SOGS-R, and for both screens no individuals with smaller losses were found problematic gamblers. An American study used a corresponding, though much more discriminating, filtering question: "...only respondents who acknowledged ever losing \$100 or more in a single day of gambling...." (Gerstein et al., 1999:19).

To insure easy-going interviews, the NODS questions (as well as the SOGS-R questions in the pre-test study) concerning life-time gambling behaviour were only followed up by past year questions if positive responses were given to the former. This means that the lifetime prevalence will be equal to or higher than the past year prevalence.

The data

This study is based on a representative sample (gender, age, geography, and marital status) of the 18-74-year-old Danes drawn on a randomly basis from the Danish CPR-register (the civil register) in 2005.

The interview is mainly conducted by telephone and not-obtained interviews were followed up by face-to-face interview. A letter was sent in advance to the interviewees giving information about the survey and the study in general. The reason for conducting telephone interviews is partly due to the great number of interviews and partly to the fact that a study of the questions concluded that the questions were not found especially sensitive. In Lund & Nordlung (2003), the interviewees could choose between telephone interviews and a questionnaire by mail. The response rate of the telephone interviews were around 50 percent higher than the response rate of the mailed interviews (65.5 and 40.7 percent). Therefore we conclude that telephone interviews concerning gambling problems is a reasonable method, in particular when the not-obtained telephone interviews were followed by a contact interview.

As the first part of the study, the pre-test study, 1,366 interviews were conducted to compare different screens for gambling problems as well as testing the relevance of other questions. This pre-test study was based on a sample taken from the complete sample of 11,737 individuals. All interviews were made by telephone. Because the pre-test study included the NODS screen, the prevalence, based on NODS, can be estimated for all interviews, including pre-test interviews and interview from the main study.

In addition to the 1,366 interviews in the pre-test study another 6,787 interviews were conducted in the main study. This gives a response rate of 70 percent, which is considerably higher than in Norway – 55 percent – (Lund & Nordlund, 2003) but at the same level as in Sweden – 72 percent – (Rönnerberg et al., 2000). In comparison with the response rates of most other countries, see Lund & Nordlund (2003, table 1.1), the Danish response rate is relatively high.

It is well known that sampling biases often appear (e.g. Lund & Nordlund, 2003). That is for example the participation of too few young people relatively to their proportion of the population, which could be an argument for doing an over sampling of this group. In the present Danish study, however, no groups are over sampled because the specific characteristics of the biases were not known in advance and therefore difficult to predict.

The prevalence of gamblers

At-risk, problem and pathological gamblers

The prevalence of gambling problems and the heterogeneity of the group of individuals with gambling problems are found by employing the NODS screen. Thus, this screen includes 17 questions with a maximum score of 10 points, where individuals scoring 1-2 points are categorized as at-risk gamblers, 3-4 positive answers yields problem gamblers, and 5 or more (5+) positive answers classify individuals as pathological gamblers (Gerstein, D. et al., 1999:21). As the NODS screen includes both questions referring to lifetime and a past year gambling behaviour, it is possible to distinguish between gamblers that at one point during their lifetime have had a gambling problem – NODS-lifetime – and

gamblers that still have or have had a gambling problem during the last year – NODS-last year.

Table 1. Lifetime and past year prevalence of gambling problems (n=8153). 18-74-year-olds.

	1 point	2 point	3 point	4 point	5+ point	In all (1+ point)
	Percent	Percent	Percent	Percent	Percent	Percent
NODS lifetime	2,4	0,8	0,2	0,2	0,3	3,9
NODS past year	1,5	0,4	0,2	0,1	0,1	2,3

The study shows that 3.9 percent of the adult Danish population at one point has had a gambling problem, whereas 2.3 still have or have had a problem during the last year (table 1). This implies that around one third of the Danes that at one point had a gambling problem, do not have this problem any more. However, these results do not imply that there are fewer Danes with a gambling problem today than there used to be. On the contrary, it demonstrates that one does not necessarily have a gambling problem forever as well as it is possible to have longer periods of time where gambling is not a problem.

It is not a surprise that gambling problems are more prevalent based on the NODS lifetime screen than on the NODS past year screen (Table 1). This means that there are people whose problem comes to an end or who have periods with other degrees of gambling problem or time periods without a gambling problem.

Table 2. The prevalence and number of at-risk, problem and pathological gamblers (n=8153). 18-74-year-olds.

	Lifetime prevalence		Past year prevalence	
	Prevalence	95% confidence interval	Prevalence	95% confidence interval
Pathological gamblers (NODS 5+)				
<i>Percent</i>	0,258	0,15 – 0,37	0,139	0,06 – 0,21
<i>Number</i>	9.856	5.740-14.158	5.163	2.296-8.036
Problematic gamblers (NODS 3-4)				
<i>Percent</i>	0,42	0,28-0,56	0,23	0,13 - 0,34
<i>Number</i>	15.957	10.605 – 21.310	8.917	4.912 – 12.922
At-risk gamblers (NODS 1-2)				
<i>Percent</i>	3,14	2,76 – 3,52	1,85	1,56 - 2,14
<i>Number</i>	120.149	105.664 – 134.635	70.869	59.671 – 82.068

Table 2 shows that between 5,700 and 14,200 adult Danes have at one point during their life been pathological gamblers. The number of Danes that during the past year have been or still are pathological gamblers is between 2,300 and 8,000, i.e. these numbers are included in the lifetime numbers. This means that 0.26 percent of the adult population has been pathological gamblers during their lifetime and 0.13 pct. still is or has been pathological gamblers during the past year.

The number of problematic gamblers (NODS 3-4) in life-time is between 10,600 and 21,300 adult Danes, while the number of problematic gamblers during the past year is between 4,900 and 12,900 individuals (table 2), i.e. the last numbers are included in the first numbers. Correspondingly, the number of at-risk gamblers (NODS 1-2) in life-time is between 105,700 and 134,600 of whom between 59,700 and 82,100 individuals have been or still are at-risk within the last year.

Bonke & Borregaard (2006) shows that the prevalence is almost unchanged when weighted for biases in the samples. Thus, weighting for gender, age, geography, or marital status changes the prevalence by 0.007 percent at the most and stays well within the confidence interval.

Because of the very few pathological gamblers in the sample, it was found necessary to aggregate problem- and pathological gamblers to obtain an adequate number of respondents in the following analysis. This aggregated group of gamblers will, in the following, be referred to as problem gamblers (NODS 3+).

The Heterogeneity of At-risk and Problem Gamblers

There are two different kinds of heterogeneity concerning problematic gambling behaviour. One is about the behaviour itself – instrumental heterogeneity – and the other one is about socio-economic characteristics of the gamblers – socio-economic heterogeneity. In the following, this distinction is firstly used to analyse the importance of the different questions in the NODS screen concerning their contribution to create at-risk and problem gamblers. Secondly, the socio-demographic characteristics of gamblers are compared to the characteristics of individuals with no gambling problems.

Instrumental heterogeneity

The NODS screening instrument includes 17 questions of which 10 questions are dedicated to give scores that constitute problematic gambling behaviour. As mentioned above, 1-2 positive scores yield at-risk gamblers, 3-4 positive scores problem gamblers, and 5+

positive scores pathological gamblers, where the two last categories are collapsed here because only 11 pathological gamblers were found in the sample. This aggregated group is named problem gamblers. The different number of scores, all taken out of 10 possible scores, implies that every group can be very heterogenic. That is, the individuals in the group of at-risk gamblers have in common that they all scored 1-2 points, but they probably have given positive answers to different questions.

In fact, some at-risk gamblers can be characterized as having a gambling problem because they have used time to get money to gamble (N2), and they gamble to forget personal problems (N7). Other at-risk gamblers are characterized as having a gambling problem because they have tried to stop gambling without success (N6), and they have lost their jobs due to their gambling behaviour (N13). Thus, the number of different combinations of at-risk gamblers can be calculated at 55, which equals the number of 1-2 different answers among 10 different possibilities. For problem gamblers, the corresponding number of possible combinations is 339 (3-4 out of 10), and for pathological gamblers 638 combinations (5 or more out of 10).

The questions in the NODS screen are relatively different since they are aiming at different aspects of problematic gambling behaviour. Some combinations of positive answers occur more frequently than other combinations. Table 3 shows that the most frequent positive answers for at-risk gamblers the past year are that they have had periods when loosing money at gambling one day they would return another day to get even (N9). 41 percent of at-risk gamblers have answered yes to this question. Almost as many (39 percent) have answered that there have been periods of two weeks or more when they have

spent much time thinking about their gambling experiences or making plans for future gambling ventures or bets (N1). The third most frequent positive answer for at-risk gamblers is that there have been periods when they needed to gamble with increasing amounts of money or with larger bets than before in order to get the same feeling of excitement (N3).

Table 3. Instrumental characteristics of at-risk gamblers (NODS 1-2 points) and problem gamblers (NODS 3- points) (NODS past year).

	At-risk gamblers (NODS 1-2) (N=151) Proportions	Problem gamblers (NODS 3+) (N=30) Proportions
N9: Has there in the past year been a period when losing money at gambling one day, you would return another day to get even?	41.1	90.0
N1: Have there in the past year been periods of two weeks or more when you spent much time thinking about your gambling experiences or making plans for future gambling ventures or bets?	39.1	60.0
N3: Have there in the past year been periods when you needed to gamble with increasing amounts of money or larger bets than before in order to get the same feeling of excitement?	15.2	53.3
N10: Have you in the past year lied three times or more to family members, friends, or others about how much you gamble or how much money you lost on gambling?	3.3	46.7

For problem gamblers it is the same three questions, N9, N1 and N3, to which respondents most frequently answer in a positive way. The top score is the question of returning another day to get even (N9). 90 percent of the problem gamblers have answered yes to this question, whereas 41 percent of the at-risk gamblers answered yes to this question. This question, therefore, is a strong indicator for being a problem gambler. More than half of the problem gamblers, 60 percent, have given a positive answer to the question considering using much time thinking about gambling experiences or planning future

gambling ventures or bets (N1). To the question of the need for gambling with increasing amounts of money or making larger bets to get the same feeling of excitement (N3) 53 percent of the problem gamblers answered yes. The fourth most frequent answer among problem gamblers is N10, where 47 percent answered yes to having lied to family members, friends, or others about how much they gamble or how much money they lost on gambling.

Table 4. The correlation between NODS questions for persons that have scored at least one point in the NODS past year*.

	N.7 ³	N.9 ¹	N.3 ¹	N.5 ²	N.10 ¹
	Pearson's correlation coefficient				
N.8 ⁴	0,78	0,77	0,63	0,61	
N.10 ¹				0,66	
N.12 ⁵	0,67		0,61		0,63

* Pearson's correlation coefficient > 0,6

¹see the questions in table 3

²N.5: On one or more of the times in the last year when you tried to stop, cut down, or control your gambling, were you restless or irritable?

³N.7: Have you in the last year gambled as a way to escape personal problems?

⁴N.8: Have you in the last year gambled to relieve uncomfortable feelings such as guilt, anxiety, helplessness or depression?

⁵N.12: Has your gambling in the last year ever caused serious or repeated problems in your relationship with any of your family members or friends?

Table 4 shows that there is some correlation to which NODS questions the gamblers reply positively. Thus, there is a clear correlation between the questions about having gambled to relieve uncomfortable feelings such as guilt, anxiety, helplessness or depression (N.8A) and having gambled as a way to escape personal problems (N.7A.), as well as returning another day to get even (N.9A.). The correlation coefficient is as high as .8 between the question about uncomfortable feelings (N.8A.) and the two other questions (N.7A.) (N.9A.). Moreover, a positive answer to the question on uncomfortable feelings (N.8A.) has a cor-

relation coefficient on .6 to the question whether you need to gamble with increasing amounts of money or larger bets in order to get the same feeling of excitement (N.3A.). The question about gambling to relieve uncomfortable feelings (N8A.) is also highly correlated to the question whether you were restless or irritable when you tried to stop, cut down, or control your gambling (N.5A.). Finally, the question about gambling behaviour causing serious or repeated problems in relation to family members or friends (N.12A.) is in clear correlation with three questions: Having gambled as a way of escaping personal problems (N.7A.), having gambled with increasing amounts of money or larger bets in order to get the same feeling of excitement (N.3A.), and having lied three times or more to family members, friends, or others about how much you gamble or how much money you lost on gambling (N.10A.).

Socio-economic heterogeneity

Other studies of gambling problems show that some risk factors such as gender, marital status, educational background, attachment to the labour market, etc. are at play. Thus, the study done in New Zealand shows that pathological gamblers in particular are male, unmarried and unemployed (Volberg & Abbot, 1996), while Volberg (1996) added short education and low income as characteristics of pathological gamblers. Götestam and Johansson (2003) concluded that in Norway, young, unmarried males more frequently had problematic gambling behaviour (at-risk- and pathological gamblers) than middle-aged and older, married females. A systematic overview of the risk factors is to be found in Götestam and Johansson (2003).

Table 5 shows the risk factors constituting at-risk-, problem-, and pathological gamblers for Denmark. The group of people that did not score any points on the NODS screen and therefore do not have a gambling problem are compared with the people that have a gambling problem (scored one or more points on the NODS screen). It is more frequent that males rather than females have a gambling problem, 83 percent of the group with gambling problems are males, compared to the group with no gambling problems where only 49 percent are males. In the group with gambling problems, young people in the 18 to 29 age group are overrepresented (22 percent compared to 8 percent) and the same applies to singles (48 percent compared to 26 percent), individuals with no children living at home (69 percent compared to 61 percent) and people under education (23 percent compared to 8 percent). People with gambling problems in general also have a lower income than people with no gambling problem.

Table 5 Descriptive statistics for individuals with no gambling problem and individuals with a gambling problem.

	Have not scored on NODS past year	NODS+ past year
	NODS=0 (or do not gamble)** (N=7972) Proportions	(NODS 1-5+) (N=181) proportions
Sex		
- male	48,5	82,8
- female	51,5	17,1
Age (N=6137)		
- 18-24	8,0	21,9
- 24-44	40,5	54,3
- 45-64	40,4	20,3
- 65-78	11,0	3,5
Marital status (N=7966)		
- single	26,3	47,5
- married/cohabiting	73,7	52,5
Children living at home (N=7966)		
- no	60,6	69,1
- yes	39,4	30,9
Education (N=7948)		
- under education	7,56	22,65
- no vocational edu.	19,14	27,62
- vocational edu.	36,90	27,07
- short further edu.	7,94	4,42
- medium further edu.	17,70	11,60
- long further edu.	10,45	6,63
Occupation (N=7957)		
- employed	59,3	59,7
- self-employed	7,1	5,5
- unemployed	3,9	3,9
- retired	20,3	6,1
- under education	7,5	22,1
- other	1,8	2,8
Income* (N=6773; 163)		
- average	22.234	20.604
- std. deviation	15.355	15.934
- 25% percentile – lower values	12.000	10.000
- 50% percentile – lower values	20.000	19.000
- 75% percentile – lower values	28.000	25.000

* Monthly gross income.

** Some respondents are not asked the NODS question either because they never gamble or they have never lost more than 35 D.kr. on a single day of gambling.

However, some of the socio demographics mentioned in table 5 are correlated. Therefore there has been made a logistic regression to find the factors with the highest explanatory

power in the characterization of the group of people with a gambling problem (NODS 1+)

Table 6 shows that being a male in particular has importance in terms of having a gambling problem. The probability of a man having a gambling problem is five times as large as the probability of a woman having a similar problem, when also considering other factors such as marital status, children living at home, education, occupation and income.

Comparing with the 25 to 44 age group, the likelihood of having a gambling problem is lower for the 45 to 64 age group and even lower for the 65 to 74 age group. However, being a single or being married does not affect the likelihood of having a gambling problem. This is the opposite of the findings for Norway and New Zealand, where singles are significantly more likely to have gambling problems than married people (Volberg & Abbot, 1996; Göttestam & Johansson, 2003). Having children living at home reduces the probability of having a gambling problem by approx. 50 percent. When the regression includes both marital status and age, it is not these variables that explain the large difference in probability between people with and without children living at home. Finally, table 6 shows that individuals with the highest income (75 percentile) are 40 percent less likely to have a gambling problem than people with lower income.

The group of people with the highest likelihood of having a gambling problem is then found among men below the age of 45, with an income in the 75 percentile.

Table 6 The probability of being an at-risk and problem gambler (NODS+1). Logistic regression. 18-74-years.

Logistic regression	At-risk and problem gamblers NODS+1	
	Model 1	Model 2
Sex	OR / CI 95%	OR / CI 95%
- male	5.02 / [3.34;7.55]*	5.19 / [3.46;7.78]*
- female	-----	-----
Age		
- 18-24	1.04 / [0.67;1.63]	1.17 / [0.74;1.83]
- 25-44	-----	-----
- 45-64	0.18 / [0.11;0.29]*	0.17 / [0.10;0.28]*
- 65-74	0.02 / [0.00;0.15]*	0.02 / [0.00;0.13]*
Marital status		
- single	1.22 / [0.84;1.78]	1.28 / [0.88;1.86]
- married/cohabiting	-----	-----
Children living at home		
- no	1.54 / [1.02;2.31]*	1.52 / [1.01;2.29]*
- yes	-----	-----
Education		
- under education	1.60 / [0.71;3.59]	
- no vocational edu.	1.84 / [0.88;3.87]	
- vocational edu.	0.98 / [0.47;2.03]	
- short further edu.	-----	
- medium further edu.	1.14 / [0.51;2.54]	
- long further edu.	0.95 / [0.39;2.33]	
Occupation		
- employed		-----
- self-employed		0.89 / [0.45;1.77]
- unemployed		0.82 / [0.36;1.87]
- retired		1.26 / [0.59;2.69]
- under education		1.73 / [0.65;4.65]
- other		1.16 / [0.70;1.93]
Income**		
- 0 % percentile	-----	-----
- 25% percentile	1.05 / [0.68;1.63]	1.04 / [0.66;1.65]
- 50% percentile	0.97 / [0.60;1.56]	0.87 / [0.52;1.45]
- 75% percentile	0.63 / [0.37;1.08]*	0.56 / [0.33;0.98]*
	Likelihood Ratio:	Likelihood Ratio:
	ChiSq=262.41	ChiSq=268.95
	Pr > ChiSq = <.0001	Pr > ChiSq = <.0001
	-2 log L 1439.15	-2 log L 1432.62

* Statistical significant difference on at least a 0,05-level in comparison with the reference group.

** Monthly gross income.

Summary

The article studies the prevalence of and the heterogeneity within the group of Danes with gambling problems. This was made possible because of a national wide survey of approx. 8,000 adult Danes in the 18 to 74 age group. The sample was randomly chosen from administrative registers, and the response rate was as high as 70 percent.

The applied screening tool was the international validated NODS, which allows for distinguishing between at-risk, problem, and pathological gamblers. Thus, the percentage of adult Danes that at some point during their life can become characterised as pathological gamblers (NODS 5+) was calculated at 0.26 percent, whereas 0.13 percent was found to have or have had such a problem within the past year.

The percentage of problem gamblers (NODS 3-4) in life-time and last year were 0.42 percent and 0.23 percent, respectively. And finally, the percentage of adult Danes being at risk-gamblers (NODS 1-2) in life-time was calculated at 3.14 percent and for the past year at 1.85 percent. Obviously, the estimated variances were very high for all the different categories of gamblers.

The most frequently upcoming questions with positive answers for at-risk gamblers were those who had periods when losing money would want to return to get even, and that there have been periods when they have spent much time thinking about their gambling experiences or making plans for future gambling. For problem gamblers, the same questions have positive replies, but much more frequently, and also the questions of the need for gambling with increasing amounts of money to get the same feeling of excite-

ment, and having lied to family members or others about how much they gamble is a strong indicator of being a problem gambler.

Finally, the analyses of socio-economic heterogeneity showed that especially men, young people, singles, and people with low and medium incomes are to be characterised as problem gamblers more often than their counterparts, when applying statistical analyses to the new Danish gambling dataset from 2005.

References

- Abbot, M.W. & Volberg, R.A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies*, 12, pp. 143-160.
- Bonke, J. & Borregaard, K. (2006). Ludomani i Danmark. Udbredelsen af pengespil og spilleproblemer. SFI-rapport 06:12.
- Gerstein, D., Hoffmann, J., Larison, C., Engelman, L., Murphy, S., Palmer, A., Chushro, L., Toce, M., Johnson, R., Buie, T. & Hill, M.A. (1999). Gambling Impact and Behavior Study. National Opinion Research Center at the University of Chicago. US.
- Götestam, K.G. & Johansson, A. (2003). Characteristics of gambling and problematic gambling in Norwegian context. A DSM-IV-based telephone interview study. *Addictive Behaviors*, 28, pp. 189-197.
- Lesieur, H.R. & Blume, S.B. (1987). South Oaks Gambling Screen (SOGS). A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*. 144, pp. 1184-1188.

- Lesieur, H.R. & Rosenthal, R.J. (1991). Pathological gambling. A review of the literature. *Journal of Gambling Studies*. Vol 1, No. 1, pp. 5-39.
- Pathological gambling: A review of the literature
- Lund, I. & Nordlund, S. (2003). Pengespill og pengespillproblemer i Norge. Rapport nr. 2/2003. Statens Institutt for rusmiddelforskning. Oslo.
- Petry, N.M. & Armentano, C (1999). Prevalence, assessment, and treatment of pathological gambling: a review. *Psychiatric Services*, 50, pp. 1021-1027.
- Rönnerberg, S, Volberg, R., Abbot, M., Moore, R., Andrén, A., Munck, I., Jonsson, J., Nilsson, T. & Svensson, O. (2000). Spel och Spelberoende i Sverige – rapport nr 3 I Folkhälsoinstitutets serie om spel och spelberoende, November 1999. Folkhälsoinstitutet 2000:21. Stockholm.
- Voldberg, R.A. (1999). Research methods in the epidemiology of pathological gambling. Development of the field and directions for the future. *Annuário de Psicología*. 30, pp. 33-46.
- Volberg, R.A. & Abbot, M.W. (1996). Lifetime prevalence estimates of pathological gambling in New Zealand. *International Journal of Epidemiology*, 23, pp. 976-983.
- Voldberg, R.A. & Dickerson, M.G. (1996). The prevalence of problem and pathological gambling: A critical analysis. *Journal of Gambling Studies*. 12, pp. 233-249.