Chasing the criteria: Comparing SOGS-RA and the Lie/Bet screen to assess prevalence of problem gambling and 'at-risk' gambling among adolescents

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All URLs were active at the time of submission. This paper was peer-reviewed.

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Abstract

Most instruments assessing gambling problems are relatively extensive and therefore not suitable for comprehensive youth surveys. An exception is the two-item Lie/Bet questionnaire. This study addresses to what extent two instruments (Lie/Bet and South Oaks Gambling Screen Revised for Adolescents (SOGS-RA)) (1) overlap in classifying problem gambling and at-risk gambling, (2) reflect different underlying dimensions of problem gambling, and (3) differ in distinguishing between young gamblers with respect to intensity and frequency of gambling in gender-specific analyses. Data stemmed from a school survey among teenagers in Norway (net sample = 20,700). The congruence in classification of problem gamblers was moderate. Both instruments discriminated sensibly between youths with high versus medium and low gambling frequency and gambling expenditures, although more so for boys than for girls. Both Lie/Bet items loaded on one 'loss of control' dimension. The results suggest that the Lie/Bet screen may be useful to assess at-risk gambling for both genders in comprehensive youth surveys.

Introduction

The prevalence of gambling problems seems to be significantly higher among young people compared to the adult population (see, for instance, Shaffer, Hall, & Vander Bilt, 1999, for a review). There is, however, no 'gold standard' for the assessment of problem gambling in surveys among youth, and the various surveys that have been conducted have applied a wide range of instruments (see, for instance, the South Australian Centre for Economic Studies, 2003) such as the South Oaks Gambling Screen (SOGS) and South Oaks Gambling Screen Revised for Adolescents (SOGS-RA), National Opinion Research Center Diagnostic Screen (NODS), DSM-IV and DSM-IV-J, Lie/Bet, Gamblers

Anonymous (GA) 20 Questions, Massachusetts Gambling Screen (MAGS), The Canadian Problem Gambling Index, and the Victorian Gambling Screen (see, for instance, Lesieur, 2004; Shaffer et al., 1999; Shaffer & Hall, 2001; and Shaffer, LaBrie, LaPlante, Nelson, & Stanton, 2004, for reviews). The method of scoring 'at-risk' problem gamblers differs between studies and researchers (applying different scorings of 'subclinical' levels) (Lesieur, 2004). This implies that it is difficult to compare the prevalence rates of different studies. And the SOGS-RA, MAGS, and DSM-IV-J have not been validated with a criterion group of adolescent problem gamblers (Lesieur, 2004).

Several gambling researchers have pointed out the need to develop one international gold standard for the assessment of problem gambling in surveys (Derevensky & Gupta, 2000; Fisher, 2000; Langhinrichsen-Rohling, Rohling, Rohde, & Seeley, 2004). Although this has not yet been accomplished, it seems that many researchers consider DSM-IV (or DSM-IV-J) as a standard and several studies have applied DSM-IV and DSM-IV-J as the standard when comparing various instruments (see, for instance, Derevensky & Gupta, 2000; Götestam, Johansson, Wenzel, & Simonsen, 2004). On the other hand, SOGS-RA still appears to be the most widely used screening instrument for gambling problems among adolescents (Langhinrichsen-Rohling et al., 2004).

From a public health perspective, one concern is that disordered gambling may be not only a problem in itself but also a gateway to substance use, anxiety, and other mental health disorders (Korn & Shaffer, 1999; Shaffer & Korn, 2002; Winters, Arthur, Leitten, & Botzet, 2004). The emerging health concern around youth gambling is related to the fact that not only do young gamblers seem to represent the highest-risk group for gambling problems but also problem gambling among youth to a large extent is associated with significant mental health problems, use of intoxicants, and criminal behaviour. It is therefore highly relevant to include questions on gambling behaviour and problem gambling in comprehensive youth surveys covering a wide range of

topics, including health and problem behaviour. Furthermore, the expansion of gambling in many countries has also generated concern about problem gambling and a need to more accurately monitor gambling and gambling problems (Wiebe, Cox, & Mehmel, 2000), and a feasible way of monitoring gambling behaviour and gambling problems over time may be to include gambling questions in comprehensive surveys that are repeated periodically.

In comprehensive surveys where many topics are covered, it may, however, be difficult to include a full instrument like SOGS-RA or DSM-IV-J, and consequently a few-item instrument is more attractive to save space. The Lie/Bet questionnaire is such an instrument, containing two items. Although it may not be considered a diagnostic instrument, it is assumed that it may be useful to indicate possible problem gambling or at-risk gambling. It has been validated in two studies: one by Johnson et al. (1997) and one by Götestam et al. (2004). Johnson et al. (1997) applied a case-control design comprising 191 pathological gamblers and 171 controls, finding a very high sensitivity (.99) as well as specificity (.91). In two population surveys (adult population and youth population), comprising 1,383 and 894 respondents, respectively, when Götestam et al. (2004) applied DSM-IV criteria for pathological or at-risk gambling, they also found a very high sensitivity (.92 and .93) and high specificity (.96 and .85) for the adult and youth samples, respectively.

Orford (2003, p. 53) pointed out that 'no single existing screening questionnaire adequately reflects the multi-dimensional nature of problem gambling'. It has been suggested (South Australian Centre for Economic Studies, 2003) that the DSM-IV instrument principally measures dependence, whereas SOGS measures gambling-related problems such as financial stress and preoccupation with gambling. Petry (2004) also noted that the various instruments capture various domains: SOGS-RA comprises items on family and friends, GA 20 Questions on money, and DSM-IV-J on clinical and behavioural correlates. On the other hand, one may

argue that although the scoring procedures for the instruments seem to imply unidimensionality, results from factor analyses have been interpreted as bidimensional. Wiebe et al. (2000) extracted two factors from SOGS-RA: 'control over gambling' and 'gambling consequences'. Correspondingly, Fisher (2000) extracted two factors from DSM-IV-MR-J: 'negative psychological dimensions' and 'withdrawal symptoms and antisocial and illegal behaviours'. As the two items in the Lie/Bet screen are derived from the DSM-IV criteria, they are fairly similar to two of the DSM-IV-J items. In Fisher's study (2000), the two Lie/Bet items split between the two factors extracted; the 'Lie' item belonged to 'withdrawal symptoms and antisocial and illegal behaviours' and the 'Bet' item belonged to 'negative psychological dimensions'. It is, however, not evident that this two-item screen actually reflects different dimensions of problem gambling.

Gender is the most salient risk factor for problem gambling and pathological gambling. A consistent finding is that males are more likely to gamble and/or to gamble more frequently than females (Griffiths, 1995; Lesieur, 2004), and population-based studies have reported a three to five times higher proportion of male problem gamblers than female problem gamblers (Jacobs, 2000). Most studies comparing screening instruments for youth problem gambling and addressing aspects of instrument validity are, however, based on samples of relatively modest size given the low prevalence of problem gambling, particularly among females, and consequently gender-specific analyses have rarely been carried out.

Among the few exceptions is Fisher's study (2000), comprising almost 10,000 respondents and presenting some gender-specific analyses. Nevertheless, the results reported from studies addressing screening instruments are by and large based on male respondents, and it is possible that the validity of screening instruments is male biased and that the validity may differ for boys and girls.

Given the above-mentioned arguments, the aim of this study was therefore to assess for each gender

separately whether—or to what extent—the Lie/Bet questionnaire and SOGS-RA (1) overlap in classifying problem gambling or at-risk gambling among youth, (2) reflect different underlying dimensions of problem gambling, and (3) differ in capturing intensive or high-frequency gambling.

Data and methods

The study was based on a recent school survey among pupils in grades 8 through 13 (junior and senior high school) in Norway. The study was part of the baseline study in an evaluation of alcohol and drug prevention programmes in Norway conducted by the Norwegian Institute for Alcohol and Drug Research (Pape, Rossow, & Storvoll, 2005), but it also served as a baseline survey for a planned evaluation of a government proposal to reduce the availability of slot machines in Norway.

Participants

In September 2004, all students in all junior and senior high schools (ages 13 to 19 years) in 16 municipalities from all geographical regions in Norway were invited to participate in the study. In Norway, 98.5% of the age cohorts between 12 and 16 attend the ordinary public junior high schools. After graduating from these, 97% begin senior high school. Due to dropout and courses which take less than 3 years to complete, about 80% of the 18-year-olds are still in high school. The only exclusion criterion was a severe lack of reading capability.

Procedures

Consent from the local school authorities was obtained. At each school, one of the teachers was appointed as 'liaison officer', serving as the research team's link to the school, the students, and the parents. Every student gave his or her consent in writing based on both an oral and a written description of the project formulated according to the standards prescribed by the Norwegian Data Inspectorate. Written informed consent was also

obtained from the parents of students below the age of 18. The questionnaire took one regular school class of 45 minutes to complete. The students put the completed questionnaires in envelopes and sealed them themselves. A teacher trained by the liaison officer monitored the students in the class during completion. In order to avoid students influencing each other's responses, all eligible students at each school completed the questionnaire at the same time. Students who had consented to participate but who were not present in class on the day of data collection were asked to complete the questionnaire on a later occasion.

The response rate was 80.2%: 85.5% in junior high school and 75.7% in senior high school. Twenty-four subjects were excluded because they had obviously given incorrect or humorous responses. In grade 8, some of the students were not yet 13 years old at the time of the data collection (2.8% of the total sample), and for various reasons some of the students in senior high school were above 19 years old (mostly 20 years old) (2.5% of the total sample). The net sample comprised 20,703 students.

Instruments

The Lie/Bet questionnaire: This comprised the two items 'Have you ever lied to family and friends about how much money you have spent on gambling?' and 'Have you ever felt that you needed to gamble for more and more money?' both with the response categories 'Yes' and 'No'. Responses were given the value 1 for 'Yes' and 0 for 'No', and the Lie/Bet sum-score thus ranged from 0 to 2. We have applied two cut-off points: between 0 and 1 (as suggested by Johnson et al., 1997, and Götestam et al., 2004) and between 1 and 2 (which gives a lower prevalence estimate).

SOGS-RA: This instrument comprises 12 scored items mostly relating to perceived problems from gambling during the past 12 months and with the response categories 'Yes' and 'No' for 11 of the items; responses were given the value 1 for 'Yes' and 0 for 'No'. The

response categories for the question on 'chasing losses' ('How often during the past 12 months have you returned another day to win back the money you had lost?') were 'Every time', 'Almost every time', 'Sometimes', and 'Never', and responses on any of the former two categories were given the value 1, and 0 otherwise. Hence a sum-score on SOGS-RA was constructed, ranging from 0 to 12. Students who scored 0 or 1 were considered to have no gambling problems, students with scores 2 to 3 were considered to be at-risk gamblers, and students who scored 4 or more were considered to be problem gamblers.

Gambling frequency: The students were asked how often they had gambled on various games for money during the past 12 months; these games comprised slot machines, scratch card lottery, lottery tickets, Internet gambling, horse races, and other (unspecified) kinds of games. The response categories were 'Daily or almost daily', 'Several times a week', 'Once a week', 'Several times a month', 'Less than once a month', and 'Have not gambled during the past 12 months'. The responses were recoded into semicontinuous variables on annual gambling frequency for each type of game, and these were added into a sum-score on annual total gambling frequency.

Gambling expenditures: The students were asked how much was the largest amount they had ever spent on gambling, and the midpoints of the six response categories were used to construct a semicontinuous variable. The students who reported having gambled during the past 12 months were also given an open-ended question on how much money they had spent on slot machines during the past week (past 7 days).

Demographic characteristics: The students were categorised into junior high school students (grades 8 through 10) and senior high school students (grades 11 through 13). Family composition was assessed by a question on whom the students were living with, and the responses were collapsed into a three-category variable: those living with both parents, those living with one

parent (or sharing time equally between the two), and those not living together with their parents (e.g., living alone, with friends, etc.). A question on religious affiliation was applied as a proxy for non-Western immigrant background; those who stated an Islamic or other non-Christian religious affiliation were assumed to have a non-Western immigrant background.

Results

A total of 74.4% of the students (81.6% of the boys and 67.3% of the girls) reported that they had gambled at least once during the preceding year. Scratch lottery tickets and slot machines were the most frequently reported games (55.5% and 50.2% of the students, respectively, had gambled on these games during the past year), whereas gambling on lottery tickets (31.4%), horse races (7.3%), Internet (6.9%), and other games (15.9%) was less frequently reported. One of ten (10.9%) reported gambling on slot machines once a week or more often, and a somewhat smaller proportion had gambled once a week or more often on lottery tickets (8.9%), whereas the proportions who had gambled at least weekly on any other games were significantly lower.

One out of seven students (14.1%) answered affirmatively on at least one of the two Lie/Bet items, and 3.5% answered affirmatively on both items. A total of 8.5% scored 2 or more on the SOGS-RA, whereas 2.5% scored 4 or more. When applying the three category variables on Lie/Bet and SOGS-RA (non-problem, at-risk, and problem gamblers), these were positively and moderately correlated ($r = 0.53$ for all students: $r = 0.54$ for boys and $r = 0.48$ for girls). Applying the whole range of values on SOGS-RA did not alter the correlation coefficient for the two variables ($r = 0.55$). A more detailed picture of the classification agreement between scores on Lie/Bet and SOGS-RA for students who reported gambling in the past 12 months is given in Table 1.

Table 2 shows the proportion of students within each problem gambling category who fulfilled the criteria for

another category of problem gamblers. The agreement rates varied significantly, as could be expected, but they did not vary significantly between boys and girls.

Demographic characteristics of the various categories of problem gamblers are given in Table 3. For all categories of problem gamblers, the proportion was higher among boys than among girls, higher among those not living with both parents, and higher among those with an Islamic or other non-Christian religious affiliation. It may be noted that the stricter the criteria for problem gambling and the smaller the proportion of students fulfilling them, the more prominent were the demographic characteristics—that is, the higher the proportion of boys, of students living without both parents, and of students with non-Western immigrant background.

Table 4 shows the results of the principal components analyses of SOGS-RA and Lie/Bet when both instruments were included. Kaiser's criterion (eigenvalue > 1.0) suggested a two-factor solution, accounting for 49.7% of the variance, and a varimax rotation was used. Eight items from SOGS-RA loaded on the first factor, whereas the remaining four items from SOGS-RA and the two Lie/Bet items loaded on the second factor. There were no significant differences in factor solutions and factor loadings when comparing the gender-specific analyses (Table 4).

The variables on gambling frequency and gambling expenditures were dichotomized, the cut-off being the 90th percentile on the total gambling frequency and expenditures on slot machines in the past week and the 85th percentile on maximum amount ever spent on gambling. Hence, we could compare to what extent those who scored on SOGS-RA or on Lie/Bet were among the most frequent gamblers and among those who reported the highest expenditures on gambling. Table 5 shows the proportions of frequent gamblers and high-expenditure gamblers among the various categories of problem gamblers and at-risk gamblers according to SOGS-RA and Lie/Bet criteria. For both instruments, we found that the proportion of frequent gamblers and

gamblers with high expenditures was lower among female problem gamblers and at-risk gamblers than among their male counterparts (Table 5). Mean scores on gambling frequency and gambling expenditures were also significantly lower among female problem gamblers than among male problem gamblers.

Discussion

The present study found a prevalence rate of problem gambling at 2.5% among all students by applying a cut-off at 4+ on SOGS-RA and a prevalence rate of 3.5% when both items on Lie/Bet were endorsed. The prevalence rates were higher among boys than among girls, higher among those who did not live with both parents, and higher among youth with a religious affiliation indicating a non-Western immigrant background. The congruence in classification of problem gamblers was moderate; half of those classified by SOGS-RA were also classified by Lie/Bet, and one third of those classified by Lie/Bet were also classified by SOGS-RA, and there were no significant gender differences in congruence of classification of problem gamblers. Both instruments discriminated sensibly between youths with high versus medium and low gambling frequency and gambling expenditures, but more so for boys than for girls.

The high proportion of teenagers reporting gambling and the demographic distribution of gambling problems found in the present study are in line with numerous previous studies (see for instance Lesieur, 2004; Shaffer et al., 1999; Shaffer & Hall, 2001; Shaffer et al., 2004, for reviews). The proportion of at-risk or problem gamblers as classified by the Lie/Bet questionnaire (applying a cut-off between 0 and 1) was significantly higher in the present study (14.1%) than in Götestam et al.'s study (2004), where a prevalence rate of 5.2% was reported, the difference most probably being due to differences in data collection methods and response rates. The proportion of respondents classified with gambling problems by SOGS-RA (scoring 4+) was lower in the

present study (2.5%) than in several North American studies, where prevalence rates around 4% to 8% have been reported (see, for instance, Fisher's review (2000) and Derevensky & Gupta, 2000; Derevensky, Gupta, & Winters, 2003; Langhinrichsen-Rohling et al., 2004).

In the present study, we found a moderate congruence in classification of problem gamblers when applying two different screening instruments. This was lower than what was reported on the Lie/Bet screen and DSM-IV in Götestam et al.'s study (2004) and lower than on SOGS-RA and DSM-IV-J in Derevensky and Gupta's study (2000), but higher than what was reported on SOGS-RA and MAGS by Langhinrichsen-Rohling et al. (2004).

The results from the factor analysis suggested a two-factor solution and resembled the solution reported by Wiebe et al. (2000). The first factor extracted comprised eight SOGS-RA items, including items on arguments, borrowing money, skipping school or work due to gambling, stealing or borrowing money, and chasing losses. Wiebe et al. (2000) suggested that this factor may be interpreted as (negative) 'Gambling Consequences'. The second factor extracted six items (four SOGS-RA items and the two Lie/Bet items): gambled more than planned; been criticized or told you had a gambling problem; felt bad about the amount bet; wanted to stop, but couldn't; felt the need to bet for more and more money; and lied to significant others about gambling. It may be interpreted as 'loss of control' (or 'control over gambling' as suggested by Wiebe et al., 2000). While the DSM-IV criteria are one-dimensional in scoring, different authors have noted the need for a multidimensional understanding of the gambling concept. Chiarrochi (2002) proposed three main dimensions: (1) damage/disruption, (2) dependence, and (3) loss of control. Shaffer (2003) claimed that dependence behaviour has three components: 'some elements of craving', 'loss of control', and 'continuance of the behaviour in question in spite of the negative consequences associated with the behaviour'. The factor solution found in this study comprised only two dimensions but may still be considered to be in line with

this more theoretically multidimensional understanding of the gambling addiction concept.

Strengths and limitations

The present study is based on a very large sample. Most studies addressing validity aspects of gambling screening instruments among adolescents have been based on significantly smaller samples, often in the neighbourhood of around 500 to 3000 respondents (see Fisher, 2000), implying that analyses of problem gamblers are based on relatively few observations. The very large sample size in the present study also allowed for gender-specific analyses, which have rarely been conducted in previous studies of screening instruments for youth gambling. Despite the fact that written informed parental consent was a prerequisite for study participation among those under the age of 18, the response rate was rather high, particularly among junior high school students. The overall response rate was higher than in many school surveys where response rates have been reported (for instance, Fisher, 2000) and much higher than in other youth surveys (for instance, Götestam et al., 2004), but it may be noted that several studies on youth problem gambling have not reported the overall response rate (for instance, Derevensky & Gupta, 2000; Langhinrichsen-Rohling et al., 2004). It is likely that a high overall response rate increases the likelihood of including a higher percentage of problem gamblers, whereas a low response rate may increase the likelihood of obtaining a lower prevalence rate of problem gambling.

Although large samples and high response rates may be more easily obtained in school surveys compared to other forms of youth surveys, one may argue that school students are not representative of all teenagers, and particularly with respect to problem gambling youth it is more likely that these are underrepresented in school survey samples. As noted previously, virtually all adolescents in the age cohort 12 to 16 years in Norway attend the ordinary public junior high schools, and 80%

of the 18-year-olds are still in senior high school. This implies that the present study sample was fairly representative among junior high school students, whereas the respondents in senior high school to a somewhat lesser extent could be considered representative of their age cohorts. The data presented here were collected as part of a comprehensive study primarily undertaken for other purposes, and consequently the available information on various gambling issues was limited.

The reliability and content validity of various instruments used for assessment of problem gambling has been discussed to some extent. Poulin (2002) reported from a study among Canadian adolescents that SOGS-RA was found to have adequate stability and internal consistency reliability. On the other hand, Ladouceur, Ferland, Poulin, Vitaro, & Wiebe (2005) found in a study of 15- to 17-year-olds that only a small fraction (8%) of those screened as problem gamblers according to SOGS-RA could be clinically confirmed as pathological gamblers when applying DSM-IV criteria. Correspondingly, Stinchfield's study (2002), based on an adult population sample and a gambling treatment sample, also concluded that SOGS overestimated the number of pathological gamblers in the general population as compared to DSM-IV diagnostic criteria. Also, with respect to validity assessment of the Lie/Bet screen, comparisons have been made with DSM-IV criteria. Götestam et al. (2004) found that in both an adolescent sample and an adult population sample the Lie/Bet screen came very close to the full DSM-IV instrument in assessment of pathological gambling plus at-risk gambling. However, it is not obvious that DSM-IV can be considered a 'gold standard' for comparisons with other instruments for assessment of gambling problems. Studies by Cox, Enns, & Michaud (2004) and Stinchfield, Govoni, & Frisch (2005) suggest that the accuracy of classification of gambling problems by DSM-IV diagnostic criteria can be improved upon by lowering the cut score. Thus, it is possible that assessment of problem gambling by use of Lie/Bet and SOGS-RA yields

inflated estimates, whereas use of DSM-IV may yield deflated estimates. Furthermore, the comparability of assessments based on SOGS-RA and Lie/Bet may be hampered by different time frames (i.e., past 12 months vs. lifetime, respectively). This may imply that Lie/Bet may yield a higher prevalence estimate of gambling problems compared to SOGS-RA.

Implications

By applying endorsement on both items on Lie/Bet as scoring criteria, it seems that the prevalence rate obtained is somewhat higher than the prevalence rate for problem gambling based on SOGS-RA. Moreover, the present study found a moderate overlap between problem gamblers as classified by the Lie/Bet screen and by SOGS-RA and that the Lie/Bet screen items belonged to a 'loss of control' dimension when SOGS-RA and Lie/Bet items were factor-analysed. Wiebe et al. (2000) suggested that such a 'control over gambling' dimension reflects areas indicative of struggling with gambling behaviour and an early (as opposed to more problematic) level of gambling involvement and could be more indicative of at-risk gambling. The present results may therefore suggest that the Lie/Bet screen may be a useful tool to assess at-risk gambling in comprehensive youth surveys. Especially in surveys covering a broad range of topics, the use of a small screening tool like the Lie/Bet questionnaire might be a good alternative to a full instrument, if not the only possibility to assess problem gambling or at-risk gambling. Furthermore, applying the Lie/Bet questionnaire in a series of youth surveys that monitor behaviour and behaviour correlates may provide a feasible way of monitoring gambling behaviour and gambling problems in youth populations over time.

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Tables

Table 1.

Contingency table of classification agreement between Lie/Bet and SOGS-RA subsamples: Students who reported gambling in the preceding year

	Lie/Bet categories			
SOGS-RA Categories	0	1	2	Total
No problem (0–1)	12,122	493	213	13,700
At-risk (2–3)	493	477	153	1,209
Problem (≥ 4)	77	153	258	488
Mean score SOGS-RA	0.18	1.17	3.37	15,397
SD	0.62	1.63	3.06	15,397
Range	12	12	12	15,397
Total for sample	12,692	1,995	710	15,397

Table 2.

Classification congruence between scores on Lie/Bet and SOGS-RA for total sample and by gender

	All students (*n* = 15,382)		Boys (*n* = 8,328)		Girls (*n* = 7,054)	
	Within Lie/Bet 1+ 17.6% (*n* = 2,705)	Within Lie/Bet 2 4.6% (*n* = 710)	Within Lie/Bet 1+ 21.7% (*n* = 1,810)	Within Lie/Bet 2 6.7% (*n* = 557)	Within Lie/Bet 1+ 12.7% (*n* = 893)	Within Lie/Bet 2 2.2% (*n* = 152)
SOGS-RA 2+	41.7%	70.0%	47.2 %	70.9%	30.3 %	66.4%
SOGS-RA 4+	15.2%	36.3%	18.6%	37.9 %	8.3%	30.3 %

	Within SOGS-RA 2+ 11.0% (*n* = 1,697)	Within SOGS-RA 4+ 3.2% (*n* = 488)	Within SOGS-RA 2+ 15.4% (*n* = 1,282)	Within SOGS-RA 4+ 4.8% (*n* = 398)	Within SOGS-RA 2+ 5.9% (*n* = 414)	Within SOGS-RA 4+ 1.3% (*n* = 89)
Lie/Bet 1+	66.4%	84.2%	66.7 %	84.4%	65.5 %	83.1%
Lie/Bet 2	29.3%	52.9%	30.8%	53.0%	24.4%	52%

Note. This subsample comprises students who reported gambling in the preceding year.

Table 3.

Proportions of students who fulfil criteria for at-risk gambling or problem gambling

All students	Lie/Bet 1+ 17.6% 'at-risk'	Lie/Bet 2 4.6% 'problem gambling'	SOGS-RA 2+ 11.0 % 'at-risk'	SOGS-RA 4+ 3.2 % 'problem gambling'
Gender				
Girls	12.7%	2.2%	5.9%	1.3%
Boys	21.7%	6.7%	15.4%	4.8%
Grades in school				
8–10	16.1%	3.8%	10.2%	3.1%
11–13	19.0%	5.3%	11.7%	3.2%
Family composition				
Both parents	16.1%	4.0%	9.8%	2.7%
One parent	19.0%	4.7%	12.0%	3.2%
No parents	22.9%	7.8%	15.7%	6.1%
Religious affiliation				
Christianity/none	17.3%	4.4%	10.7%	3.0%
Islam/other	27.0%	10.8%	21.6%	10.0%

Note. This subsample comprises students who reported gambling in the preceding year.

Table 4.

Rotated factor loadings for SOGS-RA items and Lie/Bet items (n = 15,260)

	All students		Boys		Girls	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
SOGS-RA items:						
Gone back to win back the money you lost	.46		.47		.41	
Told others you were winning when you weren't	.50		.52		.40	
Caused any problems	.60		.61		.56	
Gambled more than you planned to		.74		.74		.72
Anyone criticized you or told you you had a gambling problem		.50		.50		.50
Felt bad about the amount bet		.72		.72		.70
Wanted to stop but didn't think you could		.43	.43			.46
Hidden betting slips, lottery tickets, etc.	.66		.65		.69	
Money arguments centred on gambling	.67		.67		.69	
Borrowed money to bet and not paid back	.71		.71		.70	
Skipped school or work due to gambling	.76		.76		.80	
Borrowed or stole money to cover gambling debts	.75		.74		.78	
Lie/Bet items:						
Felt the need to bet for more and more money		.69		.69		.68
Lied to significant others about your gambling		.64		.67		.57

Table 5.

Proportions of adolescents who reported the highest amounts of money ever spent on gambling, on slot machines in the past week, and the highest total frequency of gambling in the past 12 months

	Lie/Bet score 1+ Deceiving about gambling and/or chasing losses: Lifetime		Lie/Bet score 2 Deceiving about gambling and chasing losses: Lifetime		SOGS-RA score 2+ Past year		SOGS-RA score 4+ Past year	
	Yes	No	Yes	No	Yes	No	Yes	No
All students								
Maximum amount of money spent, 85th percentile (%)	42.5	11.4	66.7	14.4	52.3	12.5	70.6	15.5
Money on slot machines last week, 90th percentile (%)	23.5	3.8	44.1	5.5	34.0	4.0	54.5	5.7
Annual gambling frequency, 90th percentile (%)	34.0	9.4	55.5	11.7	48.8	9.4	74.6	11.7
Boys								
Maximum amount of money spent, 85th percentile (%)	53.0	18.9	73.6	23.0	58.9	20.5	72.9	24.1
Money on slot machines last week, 90th percentile (%)	30.0	6.7	48.7	9.1	38.9	6.8	56.8	9.5
Annual gambling frequency, 90th percentile (%)	42.9	15.4	61.0	18.5	54.8	15.3	76.9	18.6
Girls								
Maximum amount of money spent, 85th percentile (%)	21.3	3.3	41.4	4.8	32.0	3.9	60.7	4.9
Money on slot machines last week, 90th percentile (%)	10.4	0.8	27.6	1.4	18.8	1.0	44.9	1.5
Annual gambling frequency, 90th percentile (%)	16.0	3.1	34.9	4.0	30.0	3.1	64.0	3.9

Note. This subsample comprises students who reported gambling in the preceding year.

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