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ORIGINAL ARTICLE

Compulsory school achievement and gambling among men and women aged 18–29 in Finland

TIINA LATVALA^{1,2}, SARI CASTRÉN^{1,3,4}, HANNU ALHO^{3,5} & ANNE SALONEN^{1,3}

¹Alcohol, drugs and addictions unit, Department of Public Health Solutions, National Institute for Health and Welfare, Finland, ²The Finnish Foundation for Alcohol Studies, Finland, ³Institute of Clinical Medicine, University and University Hospital of Helsinki, Finland, ⁴Department of Psychology and Speech Language Pathology, University of Turku, Finland, and ⁵Abdominal Centre, University and University Hospital of Helsinki, Finland

Abstract

Aims: This study aims to explore the associations between final compulsory school grades and gambling and their relation to substance use and perceived mental health among people aged 18–29 in Finland (N = 831). **Methods:** Cross-sectional random sample data, weighted on the basis of age, gender and region of residence, were collected in 2015. The data were analysed using logistic regression models adjusted for sociodemographic variables, risky alcohol use, daily smoking, and perceived mental health. **Results:** Weekly gambling and at-risk and problem gambling (ARPG) were more common among men. Weekly gambling was linked to smoking and risky alcohol use among men and smoking among women. Additionally, ARPG was linked to risky alcohol use among men. ARPG was associated with moderate/poor mental health among men and women, but this was not the case with weekly gambling. Among men, low and average final school grades at age 16 were associated with weekly gambling later in life, even when adjusting for other variables. Among women, low and average final school grades were not associated with weekly gambling when adjusting for substance use. Lower final school grades were associated with ARPG among women but not among men when all potential confounders were adjusted for. **Conclusions: Adolescents with lower final school grades are more likely to gamble weekly later in life. Lower final school grades are also linked with ARPG among women. It is important therefore for schools to have clear policies on gambling and to implement early prevention programmes.**

Key Words: *At-risk and problem gambling, gender, population survey, register data, school achievement, weekly gambling*

Introduction

Low school achievement predisposes young people to gambling and other risk behaviours and has a detrimental effect on their later life path [1]. At-risk and problem gambling (ARPG) is a growing public health concern in many countries [2], causing significant harm for some gamblers, their families and the community. Participation in gambling is at its peak during emerging adulthood, when rates for problem gambling are often higher than in older adults [3,4]. This period of life is furthermore often characterized by a high prevalence of many other types of risky behaviours [5], such as alcohol use and smoking.

ARPG refers to a wide spectrum of problematic gambling [6]. The prevalence of ARPG is higher among men than women, and overall participation in gambling is also more common among men [7,8]. Having said that, there is growing evidence, both nationally [4] and internationally [9], that gambling among women is on the increase. There is also evidence that individuals with lower socioeconomic status are at higher risk of problem gambling [10]. For example, lower income receivers have been found to gamble more than those with a higher income [11]. Women tend to have lower income than men – the

Correspondence: Tiina Latvala, National Institute for Health and Welfare, Department of Public Health Solutions, The Alcohol, Drugs and Addictions Unit, P.O. Box 30, FI-00271, Helsinki, Finland. E-mail: tiina.rasanen@thl.fi

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difference in Finland is around 20% [12] – which may put women at greater risk of gambling [13].

Both ARPG and weekly gambling may be associated with harmful behaviours such as smoking and alcohol misuse, as well as with depression [7]. Some studies have shown gender differences in associations between gambling, depression and risk-taking behaviours [14,15], men being more at risk. There is also evidence of a gender difference in Grade Point Averages (GPAs) in the Finnish education system, with girls more frequently scoring higher GPAs than boys [16].

Risk behaviours, which are known to affect school achievement [1,17,18], can compromise successful transition from adolescence to adulthood, and eventually lead to unemployment, lower income and various health and mental problems [16]. Low school achievement can lead to gambling or vice versa – the direction of this association is unclear, but two previous studies [17,18] imply that poor school achievement is a link to gambling problems.

Previous studies on the associations between gambling and school achievement have concentrated on ARPG or problem gambling only, ignoring weekly gambling. Gender differences are often disregarded as well, despite evidence of significant differences between men and women in gambling and other risk behaviours [7,15]. Furthermore, with just one exception [17], most earlier studies have used self-reported measurements of school achievement. For purposes of prevention and policymaking it is of utmost importance to identify and examine factors that may be associated with the later development of gambling problems, such as school achievement. It is equally important to explore and understand the gender differences in these associations so that we can develop more gender-sensitive prevention and intervention programmes.

This study uses epidemiological data to 1) explore gambling (weekly gambling, ARPG) in relation to substance use (risky alcohol use, daily smoking), and perceived mental health by gender; 2) examine the association between school grades at the end of compulsory school and gambling among men and women aged 18–29 in Finland when adjusting for sociodemographic variables, substance use and mental health status.

Method

Procedure

The data came from the cross-sectional Finnish Gambling 2015 survey conducted by Statistics Finland [4]. Computer-assisted telephone interviews were conducted between 3 March and 8 June

2015. Altogether 7400 persons were randomly selected from the Population Information Register. Participants had to be aged 15 to 74 years, have Finnish or Swedish as their mother tongue, and reside in mainland Finland. In the gross sample, 103 people did not meet these criteria. Overall 4515 interviews were completed, with a 62% response rate [4]. Register data were linked with the Finnish Gambling 2015 data. The data were weighted based on age, gender, and region of residence.

Weekly gambling

Gambling frequency was measured based on participation in 18 different forms of gambling during the past 12 months. Frequency was defined based on the type of game that occurred most often and recoded into two categories: 1) gambling weekly, and 2) gambling less often than weekly. We were interested in weekly gambling, because it is usually linked with disordered gambling [8] and other problem behaviours [14]. Those who participated on a weekly basis in lottery games only ($n = 48$) were excluded because playing lotteries is generally viewed as a safe activity with little risk of harm [19]. Lottery is the most popular form of gambling in Finland [4].

At-risk and problem gambling

ARPG was defined using the Problem Gambling Severity Index (PGSI), a nine-item instrument measuring past-year gambling behaviour and gambling consequences. All items have four response options ranging from never (0 points) to almost always (3 points), giving a maximum score of 27 points [20]. As in previous studies [6,21], respondents scoring one point or more were considered ARPGers. This conflicts with the common PGSI cut-off recommendations for problem gambling, [20] which we were unable to follow due to the small number of people with high gambling severity. Cronbach's alpha for the PGSI among men was 0.86 and among women 0.77.

Compulsory school achievement

Final school grades (range 5–10) were derived from Statistics Finland sources. In the Finnish school system, the final GPA is reported separately for all subjects and theoretical subjects. In this study, only the grades of theoretical subjects were taken into account due to relatively large number of missing GPA values for all subjects. The grade/grade average represents the categories creditable (9–10), satisfactory (7–8), and passable (5–6). Grade 5 is the lowest passing grade, and the data only covered grades 5 or higher.

The grade average was divided into three classes based on the 'formal' GPA categories mentioned above with 5.17–6.49 representing low (passable), 6.50–8.44 average (satisfactory) and 8.45–10 high (creditable). In Finland, compulsory school education ends at age 16.

Sociodemographics

The sociodemographic variables were age, income and labour-market status. With the exception of labour-market status, these were based on register data. The income variable was formed by adding together earned income, social security benefits (also included student allowance) and capital income. Income was divided into three categories, with the second and third quartiles combined into one category. Income categories were formed separately for men and women because of the gender differences in annual earnings [12]. For men, the annual income categories were low (€0–€3832), average (€3833–€27,308) and high (€27,309–€96,883); and for women, low (€0–€6387), average (€6388–€22,646) and high (€22,647–€65,017). Responses to the question concerning current labour-market status were recoded as: 1) employed (including employees, farmers and the self-employed), 2) students and 3) not in employment, education or training (NEET). The NEET category included unemployed respondents, conscripts or persons undergoing non-military service, persons caring for a child (also included those who were temporarily on parental leave) or relative at home, or homemakers or other.

Substance use

Alcohol consumption was measured with the three-item Alcohol Use Disorders Identification Test/Consumption (AUDIT-C) [22]. Scores of at least 6 (for men) and at least 5 (for women) indicated risky alcohol consumption [23]. Cronbach's alpha for men was 0.52 and for women 0.63. Smoking was measured with the question 'Have you smoked during the past 12 months?', with three response options: 'yes, daily', 'yes, occasionally' and 'no'. Respondents in the first category were considered daily smokers.

Perceived mental health

Perceived mental health was measured with the five-item Mental Health Inventory (MHI-5) [24], which enquires about feelings of nervousness, calmness, happiness, and feeling down and gloomy during the past four weeks. Sum scores were scaled to a range of 0–100, with high scores indicating good perceived

mental health [24]. In this study a cut-off score of 60 was used to indicate moderate to poor mental health [25]. Cronbach's alpha for men was 0.75 and for women 0.84.

Data analysis

Differences between men and women in weekly gambling, ARPG, daily smoking, risky alcohol use, and perceived mental health were first compared using the chi-square test. The same correlates were then examined by men's and women's final school grades, again using the chi-square test. The 95% confidence intervals (CIs) were estimated for all prevalence rates. Finally, gender stratified logistic regression models adjusted for sociodemographic variables, substance use, and perceived mental health were conducted for both weekly gambling and ARPG. The results of the regression analyses are presented as odds ratios (ORs) and their corresponding CIs. The analysis was done using SPSS version 24.

Results

The mean age of the participants was 23.3 years (SD 3.4). Just over half of them (51.5%) were men. Men's average annual income was €16,153.6 (SD €14,514.2), women's €14,721.4 (SD €10,737.8). Just under half (47.6%) of the respondents were employed, 37.4% students and 15.1% unemployed. Overall, women had higher final compulsory school grades than men ($\chi^2(1) = 38.4, p < 0.001$), with 37.7% belonging to the highest grade category and 7.2% to the lowest. Among men 21.9% had high and 18.7% low grades.

Weekly gambling and ARPG were more common among men than women. ARPG occurred among 27.5% of men, and 32.5% of men were considered weekly gamblers. The corresponding figures for women were 12.0% and 12.1%.

ARPG and weekly gambling were less common among women with higher final school grades compared with those with average and low final school grades (See Table I). Among men, by contrast, those with low, average and high final school grades differed only in the frequency of weekly gambling (See Table I).

As is seen in Table II (model 2), weekly gambling was linked to smoking (OR: 2.1, 95% CI: 1.3–3.6) and risky alcohol use (OR: 2.1, 95% CI: 1.2–3.4) among men and smoking among women (OR: 3.7, 95% CI: 1.5–8.9). However, weekly gambling was not associated with moderate/poor mental health among men and women in model 3 or 4. In model 1, low final school grades were associated with weekly gambling among both women (OR: 4.7, 95% CI: 1.1–19.1) and

Table I. Sociodemographic characteristics, gambling, substance use and perceived mental health by final grades in compulsory school by sex.

Age	<i>n</i>	Women (<i>n</i> = 403)		<i>p</i>	<i>n</i>	Men (<i>n</i> = 429)		<i>p</i>	All
		Final school grade ⁵ , proportion (95% CI)				Final school grade ⁵ , proportion (95% CI)			
		low (7.2%)	average (55.1%)			high (37.7%)	low (18.7%)		
18–20 years	94	23.3 (19.3–27.8)	19.0 (15.3–23.2)	30.0 (25.6–34.7)	114	17.7 (14.2–21.7)	28.9 (24.7–33.5)	28.0 (23.8–32.5)	208
21–23 years	121	20.0 (16.2–24.2)	32.1 (27.6–36.9)	29.3 (24.9–34.0)	113	26.6 (22.5–31.1)	28.1 (23.9–32.6)	22.6 (18.7–26.9)	234
24–26 years	86	33.3 (28.7–38.1)	20.8 (16.9–25.1)	19.3 (15.6–23.5)	107	30.4 (26.1–35.0)	22.1 (18.3–26.3)	28.0 (23.8–32.5)	193
27–29 years	101	23.3 (19.3–27.8)	28.1 (23.8–32.8)	21.3 (17.4–25.6)	95	25.3 (21.3–29.7)	20.9 (17.1–25.1)	21.5 (17.7–25.7)	196
Income			0.30						
Low	102	24.1 (20.0–28.6)	21.9 (18.0–26.3)	30.5 (26.0–35.3)	105	10.1 (7.4–13.4)	27.9 (23.7–32.4)	32.2 (27.8–36.9)	207
Average	200	55.2 (50.2–60.1)	49.8 (44.8–54.8)	48.3 (43.3–53.3)	208	53.2 (48.4–58.0)	46.3 (41.4–51.2)	56.7 (51.9–61.5)	408
High	100	20.7 (16.9–25.0)	28.3 (24.0–33.0)	21.2 (17.3–25.5)	103	36.7 (32.1–41.5)	25.8 (21.7–30.2)	11.0 (8.2–14.4)	203
Labour-market status			0.00						
NEET¹	64	41.4 (36.6–46.4)	14.0 (10.8–17.8)	13.2 (10.1–16.9)	61	14.1 (10.9–17.8)	14.7 (11.5–18.4)	11.8 (8.9–15.2)	125
Student	149	17.2 (13.6–21.3)	31.2 (26.7–36.0)	49.7 (44.7–54.7)	161	15.4 (12.1–19.2)	36.9 (32.3–41.7)	61.3 (56.5–65.9)	310
Employed	190	41.4 (36.6–46.4)	54.8 (49.8–59.7)	37.1 (32.4–42.0)	205	70.5 (65.9–74.8)	48.4 (43.6–53.3)	26.9 (22.8–31.4)	395
ARPG²	48	37.9 (33.1–42.8)	14.9 (11.6–18.8)	3.3 (1.8–5.6)	118	27.5 (23.3–32.0)	29.0 (24.7–33.6)	21.5 (17.7–25.7)	166
Weekly gambling³	30	17.2 (13.6–21.3)	10.3 (7.5–13.7)	3.3 (1.8–5.6)	110	36.1 (31.5–40.9)	30.6 (26.3–35.2)	12.5 (9.5–16.0)	140
Daily smoking	63	34.5 (29.9–39.4)	20.5 (16.7–24.8)	4.6 (2.8–7.1)	92	41.8 (37.1–46.6)	20.6 (16.9–24.8)	6.5 (4.4–9.3)	155
Risky alcohol use⁴	107	34.5 (29.9–39.4)	26.9 (22.6–31.5)	25.8 (21.6–30.4)	179	52.6 (47.8–57.4)	41.3 (36.6–46.1)	34.4 (29.9–39.1)	286
Moderate to poor mental health⁵	41	21.4 (17.5–25.7)	9.2 (6.6–12.5)	9.9 (7.2–13.2)	29	7.7 (5.4–10.7)	6.3 (4.2–9.0)	6.5 (4.4–9.3)	70

The numbers are percentages (95% confidence intervals); the data (*n* = 831, non-weighted *n* values), ¹Respondents not in employment, education or trainings; ² Problem Gambling Severity Index (PGSI, score ≥ 1) with reference group: Non-gamblers or PGSI = 0; ³Weekly gambling: gambling at least on a weekly basis all other games than lotteries; ⁴AUDIT-C, the Alcohol Use Disorders Identification Test, score for risk consumption ≥ 5 among females and ≥ 6 among males; ⁵MHI-5, the Mental Health Inventory, scale 1–100, moderate to poor mental health ≤ 60 for males and females; ⁵School grade: low: 5.17–6.42, average: 6.5–8.44, high: 8.45–10. Weighted based on age, gender and region of residence.

men (OR: 3.6, 95% CI: 1.5–8.7), when adjusted for sociodemographic factors. On the other hand, low and average final school grades were no longer statistically significantly associated with weekly gambling among women when substance use was adjusted for in model 2 and in model 4. However, among men low and average final school grades remained significantly associated with weekly gambling even when adjusting for all variables (See Table II).

In Table III, ARPG was linked to risky alcohol use among men (OR: 1.8, 95% CI: 1.1–2.8), but not among women in model 2. In models 3 and 4, ARPG was associated with moderate/poor mental health among both men (OR: 2.7, 95% CI: 1.2–6.1) and women (OR: 2.6, 95% CI: 1.1–6.2). Among women, low final school grades were associated with ARPG (OR: 14.8, CI: 4.1–52.6) when all potential confounders were adjusted for in model 4. Among men, final school grades were not associated with ARPG (See Table III).

Discussion

Our results showed that low and average final school grades at age 16 were associated with both weekly gambling and ARPG later in life. This is in line with earlier findings [15,18]. We also observed notable gender differences.

A larger proportion of men than women gambled weekly and were ARPGers [26]. Men also had lower GPAs in compulsory school than women, as has been shown earlier [16]. Furthermore, our results showed that low final school grades and alcohol use were associated among men who were considered weekly gamblers or ARPGers, while alcohol use seemed to confound the association between final school grades and weekly gambling for women. Smoking and final school grades, on the other hand, were associated among both men and women who were weekly gamblers. An association between moderate or poor mental health and final school grades was only seen for ARPGers. An earlier study in Sweden found an association between poor mental health, final school grades and moderate/severe problem gambling only for women [17]. Our results indicate that poorer school achievement may lead to less favourable life paths. These gender differences should be reflected in prevention and treatment programmes.

Among men, low and average final school grades were associated with weekly gambling even when controlling for sociodemographic factors, substance use and mental health. Among women, low and average final school grades were associated with weekly gambling only in models that did not adjust for substance use. Overall, our results indicate that lower

final school grades at age 16 predict regular (i.e. weekly) gambling later in life. For young Finnish women, it is possible that risky alcohol use is a distinct risk behaviour that is not associated with gambling. Our findings are consistent with results from Sweden where a positive association was found between alcohol use and gambling among males, whereas the association was reversed for females [15].

We also found a clearer association between lower final school grades and problematic gambling later in life among women than among men – another result consistent with earlier findings from Sweden [17]. Among women ARPG was associated with low and average final school grades in all models. It is known that women's motives for gambling differ from men's and often have to do with escape, boredom or loneliness [27]. It is possible that lower final school grades may lead to an undesirable path in life, and a lower socioeconomic status, which in turn may fuel increased spending on gambling [13]. Gambling may become a harmful coping style later in life especially for women. This highlights the importance of educating the public about the randomness of specific game types in prevention programmes.

Another potential explanation for women's vulnerability to problematic gambling is that gambling has become increasingly accessible for women over the years and greater numbers of them are now gambling. At the same time there is still a stigma around gambling particularly evident among females [9].

Study limitations

Key strengths of this study include its nationally representative sample with a higher than average response rate (62%) [28]. In addition, the use of population weights reduced bias to non-response. Selective non-response may nonetheless have affected the association between final school grades and gambling. The instruments we used also involved some limitations. Cronbach's alpha for risky alcohol use among men was relatively low at 0.52. The choice of the PGSI cut-off score for ARPG may also have influenced the results, although the cut-off score of 'one or more' scores has been previously used [6,21]. A recently published review identified several challenges in evaluating the burden of harms among ARPGers, including misclassification of low-risk gamblers, underestimating impacts of the binary classification to high-risk populations, a tendency to confuse behaviour and harm as well as the use of potentially overly inclusive definitions of harm among low-risk gamblers [28]. Additionally, we are unable to draw any conclusions on the causalities between correlating variables. Also, the time order between

Table II. Final school grade, sociodemographic factors, substance use and perceived mental health by sex in relation to weekly gambling⁵ (N = 783).

	Model 1: Sociodemographic factors		Model 2: Substance use		Model 3: Mental health		Model 4: Sociodemographic factors, substance use & perceived mental health	
	Women	Men	Women	Men	Women	Men	Women	Men
Final grade ¹								
Low	4.7 (1.1-19.1)	3.6 (1.5-8.7)	3.2 (0.7-13.9)	2.7 (1.1-6.8)	4.7 (1.1-19.7)	3.5 (1.5-8.5)	3.2 (0.7-14.1)	2.7 (1.1-6.7)
Average	3.1 (1.1-8.6)	3.1 (1.5-6.7)	2.2 (0.8-6.6)	2.8 (1.3-6.1)	2.9 (1.0-8.1)	3.1 (1.5-6.6)	2.3 (0.8-6.7)	2.8 (1.3-6.0)
High	1	1		1	1	1		1
Age	0.9 (0.8-1.0)	0.9 (0.8-1.0)	0.9 (0.8-1.1)	0.9 (0.8-1.1)	0.9 (0.8-1.1)	0.9 (0.8-1.1)	0.9 (0.8-1.1)	0.9 (0.8-1.1)
Labour-market status								
NEET ²	0.9 (0.3-2.6)	0.6 (0.3-1.2)	1.3 (0.4-3.7)	0.5 (0.2-1.2)	1.1 (0.4-3.1)	0.5 (0.3-1.2)	1.3 (0.4-3.8)	0.5 (0.2-1.2)
Student	0.4 (0.1-1.3)	0.6 (0.3-1.1)	0.6 (0.2-2.0)	0.6 (0.3-1.3)	0.6 (0.2-1.8)	0.5 (0.3-1.0)	0.6 (0.2-2.0)	0.6 (0.3-1.2)
Employed	1	1	1	1	1	1	1	1
Income								
Low	0.5 (0.1-2.4)	1.0 (0.4-2.5)	0.2 (0.0-1.6)	1.0 (0.4-2.6)	0.2 (0.0-1.5)	0.9 (0.4-2.4)	0.2 (0.0-1.5)	1.0 (0.4-2.5)
Average	1.1 (0.4-2.9)	1.3 (0.7-2.5)	1.2 (0.4-3.1)	1.3 (0.7-2.6)	1.0 (0.4-2.6)	1.3 (0.7-2.5)	1.2 (0.4-3.1)	1.3 (0.7-2.6)
High	1	1	1	1	1	1	1	1
Daily smoking								
Risky alcohol use³				2.1 (1.3-3.6)			3.7 (1.5-8.9)	2.1 (1.2-3.6)
Moderate to poor mental health⁴				2.1 (1.2-3.4)			1.1 (0.4-2.6)	2.1 (1.3-3.4)
				1.0 (0.4-2.5)			0.9 (0.3-3.1)	1.3 (0.5-3.2)
							1.2 (0.4-3.8)	

The numbers are ORs (95% Confidence Intervals); ¹ School grade: low: 5.17-6.42, average: 6.5-8.44, high: 8.45-10; ² Respondents not in employment, education or trainings; ³ AUDIT-C, the Alcohol Use Disorders Identification Test, score for risk consumption ≥ 5 among females and ≥ 6 among males; ⁴ MHI-5, the Mental Health Inventory, scale 1-100, moderate to poor mental health ≤ 60 for males & females; ⁵ Weekly gambling: gambling at least on a weekly basis all other games than lotteries. Bolded if $p \leq 0.05$. Weighted based on age, gender and region of residence.

Table III. Final school grade, sociodemographic factors, substance use and perceived mental health by sex in relation to at-risk and problem gambling⁴ (*n* = 831).

	Model 1: Sociodemographic factors		Model 2: Substance use		Model 3: Mental health		Model 4: Sociodemographic factors, substance use & perceived mental health	
	Women	Men	Women	Men	Women	Men	Women	Men
Final grade ¹								
Low	16.2 (4.7–56.4)	1.2 (0.6–2.5)	15.1 (4.3–53.5)	1.0 (0.4–2.2)	15.3 (4.4–54.5)	1.2 (0.5–2.5)	14.8 (4.1–52.6)	0.9 (0.4–2.0)
Average	5.8 (2.2–15.9)	1.5 (0.8–2.7)	5.4 (2.0–14.9)	1.4 (0.8–2.5)	5.8 (2.1–16.0)	1.4 (0.8–2.6)	5.8 (2.1–16.0)	1.3 (0.7–2.5)
High	1	1	1	1	1	1	1	1
Age	0.8 (0.7–0.9)	1.0 (0.9–1.1)	0.8 (0.7–1.0)	1.0 (0.9–1.1)	0.8 (0.7–1.0)	1.0 (0.9–1.0)	0.8 (0.7–1.0)	1.0 (0.9–1.0)
Labour-market status								
NEET ⁵	1.1 (0.5–2.7)	1.3 (0.6–2.5)	1.3 (0.5–3.3)	1.3 (0.7–2.7)	1.3 (0.5–3.1)	1.3 (0.6–2.5)	1.4 (0.6–3.4)	1.3 (0.7–2.7)
Student	0.4 (0.2–1.1)	0.6 (0.3–1.2)	0.5 (0.2–1.4)	0.7 (0.4–1.3)	0.5 (0.2–1.4)	0.6 (0.3–1.1)	0.5 (0.2–1.4)	0.6 (0.3–1.2)
Employed	1	1	1	1	1	1	1	1
Income								
Low	1.5 (0.4–5.2)	1.6 (0.6–3.8)	1.2 (0.3–4.2)	1.5 (0.6–3.8)	1.2 (0.3–4.2)	1.4 (0.6–3.6)	1.2 (0.3–4.2)	1.4 (0.6–3.6)
Average	1.6 (0.7–4.1)	1.6 (0.8–2.9)	1.6 (0.6–3.9)	1.6 (0.8–3.0)	1.4 (0.5–3.4)	1.5 (0.8–2.8)	1.3 (0.5–3.4)	1.5 (0.8–2.9)
High	1	1	1	1	1	1	1	1
Daily smoking								
Risky alcohol use ²								
Moderate to poor mental health ³								
				1.8 (1.1–2.8)	2.6 (1.1–6.2)	2.7 (1.2–6.1)	2.5 (1.0–6.1)	2.7 (1.2–6.2)

The numbers are ORs (95 % confidence intervals); ¹School grade: low: 5.17–6.42, average: 6.5–8.44, high: 8.45–10; ²AUDIT-C, the Alcohol Use Disorders Identification Test, score for risk consumption ≥ 5 among females and ≥ 6 among males; ³MHI-5, the Mental Health Inventory, scale 1–100, moderate to poor mental health ≤ 60 for males and females; ⁴Problem Gambling Severity Index (PGSI, score ≥ 1) with reference group: Non-gamblers or PGSI = 0. Bolded if *p* ≤ 0.05. Weighted based on age, gender and region of residence. ⁵ Respondents not in employment, education or training.

gambling, substance use and mental health was unclear, due to lacking information about the onset of these behaviours. Hence, it would be fruitful to design a study that has an accurate baseline measure as well.

Regardless of these limitations, our study demonstrated that early adulthood often involves many risk-taking behaviours, including gambling. Lower final school grades may be linked with gambling and other risk behaviours later in life. However, this claim still needs to be verified with research exploring the longitudinal association between final school grades and problem behaviours. Therefore, studies are also needed to examine the association between school achievement and gambling participation. Further evaluation could also include type of gambling, the nature of the gambling provider (commercial, private, charity, community, non-profit group) and gambling mode (face-to-face, remote) as well as gambling expenditure and time spent gambling [29].

Conclusions

Our findings indicate that adolescents with lower final school grades are more likely to gamble weekly later in life. Lower final school grades are also linked with ARPG among women. Earlier research has shown that adolescents' gambling is clearly associated with gambling later in life [17]. School teachers are particularly well placed to influence student gambling attitudes and behaviour. It therefore makes sense to formulate clear school policies and implement early prevention programmes. It might also be useful to screen young people for problematic gambling behaviour with a view to addressing gender-specific high-risk behaviours through intervention strategies.

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Declaration of conflicting interests

The authors declare that there is no conflict of interest.

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