
Article

Social Inequalities in Harmful Drinking and Alcohol-Related Problems Among Swedish Adolescents

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Abstract

Aims: The study aims to examine how socio-economic status (SES) among youth is related to binge-drinking and alcohol-related problems using three SES indicators: (i) SES of origin (parental education level), (ii) SES of the school environment (average parental education level at student's school) and (iii) SES of destination (academic orientation).

Methods: Cross-sectional data on upper secondary students ($n=4448$) in Sweden. Multilevel logistic and negative binomial regression were used to estimate the relationship between each SES indicator and binge-drinking and alcohol-related problems, respectively.

Results: Only SES of destination was significantly associated with binge-drinking, with higher odds for students in vocational programmes (OR= 1.42, 95% CI= 1.13–1.80). For the second outcome, SES of destination ($rr=1.25$; 95%CI=1.08–1.45) and SES of the school environment ($rr=1.19$, 95% CI=1.02–1.39) indicated more alcohol-related problems in vocational programmes and in schools with lower-educated parents. After adjustment for drinking patterns, the relationship remained for SES of the school environment, but became non-significant for SES of destination.

Conclusion: Our results suggest that the SES gradient among youth is stronger for alcohol-related problems than for harmful drinking. By only focusing on SES differences in harmful alcohol use, researchers may underestimate the social inequalities in adverse alcohol-related outcomes among young people. Our findings also support the notion that the environment young people find themselves in matters for social inequalities in alcohol-related harm.

INTRODUCTION

Groups with low socioeconomic status (SES) have been shown to have an elevated risk of alcohol-related harm (Schmidt *et al.*, 2010; Probst *et al.*, 2014; Mackenbach *et al.*, 2015). There are indications that social inequalities in alcohol-related harm are greater than the social gradient found for other health outcomes. In a systematic review of socioeconomic differences in mortality, the results showed a 1.5–2.0-fold higher mortality for alcohol attributable causes in the low SES groups, compared to all-cause mortality (Probst *et al.*, 2014). Still, the social patterning of alcohol use and related harm

tends to deviate from the traditional pattern found for other risky health behaviours. While other health risk behaviours like smoking and obesity tend to be more prevalent in lower SES groups, higher prevalence of alcohol consumers and drinking occasions has been recorded in high SES groups, but higher alcohol-related harm in lower SES groups (Schmidt *et al.*, 2010; Probst *et al.*, 2014; Mackenbach *et al.*, 2015). This has partly been explained by higher prevalence of harmful drinking in lower SES groups (Schmidt *et al.*, 2010). However, there is evidence that SES has a direct association with alcohol-related harm, net of drinking patterns (Makela and

Paljarvi, 2008; Huckle *et al.*, 2010; Grittner *et al.*, 2012; Laatikainen *et al.*, 2014).

Considering the observed social inequalities in alcohol-related harm in the adult population, it seems reasonable to assume that a similar pattern will be found among youth. However, while both the association between SES and alcohol use, as well as the association between alcohol use and alcohol-related harm (Kraus *et al.*, 2009; Bye and Rossow, 2010; Boden and Fergusson, 2011) is fairly well researched among youth, few studies have addressed the association between SES and alcohol-related harm. Moreover, unlike the strong social gradient in alcohol-related harm found in adult samples, research among youth has provided a less conclusive picture. For instance, in a birth cohort study in the United Kingdom (Melotti *et al.*, 2013), boys (but not girls) with higher educated mothers experienced lower risk of alcohol-related behavioural problems, while higher household income was associated with greater risk of alcohol-related psychosocial problems among girls (but not among boys). A more recent study on the same birth cohort revealed that high parental SES was associated with increased alcohol consumption and heavy episodic drinking, while low SES predicted alcohol-related problems (Kendler *et al.*, 2014).

Studies in the field have traditionally defined youth SES at the individual level by socioeconomic origin, e.g. parents' education or occupational class. To measure SES through educational level has the potential to comprise both knowledge attained through education as well being an indicator of future (or obtained) occupational level (Galobardes *et al.*, 2006). Using parental SES, studies have demonstrated a link between low SES and elevated risk of drinking and/or harmful drinking (Droomers *et al.*, 2003; Pape *et al.*, 2017) and alcohol-related disorders in young adulthood (Gauffin *et al.*, 2013). Still other studies have shown a positive association between SES and alcohol-related problems (Melotti *et al.*, 2013) and substance use (Hanson and Chen, 2007).

Given that young people often spend less time with their parents and much of their time in school, some researchers have argued that the SES of classmates and the larger school environment may represent a more central social context for students' drinking habits than does parents' SES (West, 1997; Olsson and Fritzell, 2015). In line with this, researchers have found that students from more affluent schools were at greater risk of health-related harmful behaviour (high alcohol use and drug use) (Olsson and Fritzell, 2015). Similarly, Pedersen *et al.* (Pedersen *et al.*, 2015) found support for higher alcohol consumption and intoxication among students in affluent areas in Oslo, Norway, yet students in less affluent areas were more exposed to alcohol-related problems, partially mimicking the pattern described among adults (Grittner *et al.*, 2012).

A third approach is to use academic orientation as a measure of SES (Hagquist, 2007) i.e. the type of education the students attend (e.g. vocational programme and higher education preparatory programme). This represents a proxy indicator of future SES, and indicates a change in focus from SES of origin to SES of destination. In line with this approach, research has shown that young adults' own education and occupational status may be an important predictor of health inequalities, even after adjustment for parental education (Rahkonen *et al.*, 1995; Hagquist, 2007; Gauffin *et al.*, 2015; Bosque-Prous *et al.*, 2017).

Furthermore, recent studies have drawn attention to possible mechanisms that may underlie the relationship between SES, harmful drinking and related problems among youth. In a Norwegian study, alcohol-related parental permissiveness, parental drinking and parental monitoring accounted for a large part of the negative

relationship between parental SES and youth alcohol consumption (Pape *et al.*, 2017). Another Nordic study found a positive relationship between parental education and binge-drinking, which was accounted for, at least in part, by parents' willingness to offer alcohol and the number of friends who had been intoxicated (Carlson, 2018). Moreover, it is possible that part of the social gradient in alcohol-related harm among youth may be explained by deviant behaviour being more prevalent in lower SES groups. For example, lower parental education has been showed to be associated with higher levels of truancy (Henry, 2007), and students with high truancy are known to engage in more harmful drinking and experience more alcohol-related problems compared to their peers (Mounteney *et al.*, 2010). Also, and in line with this, another plausible assumption may be an unequal exposure of harmful levels and patterns of drinking across SES groups (Schmidt *et al.*, 2010).

Against this background, the present study aims to examine how SES among youth is related both to harmful alcohol use (measured by frequency of binge drinking) and to self-reported alcohol-related problems using data from a Swedish survey on substance use among upper secondary students in 2015–2016. We include both binge-drinking and alcohol-related problems as outcomes in order to assess whether, in line with findings from the adult population, there is a steeper social gradient for alcohol-related harm than for alcohol use. To gain a more detailed understanding of how different dimensions of young people's socioeconomic context are tied to binge drinking and alcohol-related problems, we assess the role of three different SES indicators at the individual and group level: (i) the student's individual SES of origin, measured by his/her parents' education level, (ii) the SES of the school environment, measured by the average parental education level at the student's school, and (iii) the SES of destination, measured using information on academic orientation. To further strengthen our approach, we adjust for factors that might mediate the associations, including levels and patterns of drinking (for alcohol-related problems only), truancy and parental monitoring indicators.

DATA AND METHOD

Study sample

The data stem from a Swedish national school survey conducted in 2015 and 2016 by the Swedish Council for Information on Alcohol and Other Drugs. An anonymous paper-and-pen questionnaire was completed by 17- to 18-year-old students in the classroom. A stratified sampling procedure was used to ensure that all regions in Sweden were represented, and school class (one per school), rather than pupil, was used as the unit when selecting the sample. The participation rate was 79% in 2015 and 81% in 2016; the response rate on the individual level (students who were present and chose to participate) was 82% in 2015 and 81% in 2016 (Englund, 2016).

All students in Sweden who have completed compulsory school are entitled to a 3-year, tuition-free, non-compulsory upper secondary school education (Skolverket, 2017). Statistics reveal that 98% of primary school students continues to upper secondary school, indicating good coverage of the present data (Gymnasiekommittén, 2002).

The dataset consisted of 8,257 upper secondary school students. The survey responses were processed such that forms that were incomplete or appeared to contain exaggerated responses were excluded ($n = 148$; 1.8%), such as reporting an excessive alcohol consumption or repetitive answers (Gripe, 2013). 6153 students were self-reported alcohol consumers and therefore eligible for inclusion in the study. The analytical sample consisted of those who had

Table 1. Sample description. Years 2015–2016

	Participants		Men		Women	
	(n)	%	(n)	%	(n)	%
All	4448		2047	46	2401	54
<i>SES of origin - Individual level</i>						
Neither mother nor father studied at college	974	22	396	19	578	24
At least one parent studied at college	3474	78	1651	81	1823	76
<i>SES of environment- Group level- proportion of tertiary education among parents</i>						
Schools with <u>lowest</u> proportion	1487	33	702	34	785	33
Schools in the <u>middle</u> category	1483	33	719	35	764	32
Schools with <u>highest</u> proportion	1478	33	626	31	852	35
<i>SES of destination - Group level</i>						
Vocational programme	964	22	522	26	442	18
Higher education preparatory	3484	78	1525	74	1959	82

completed all of the survey items included in the study resulting in 4448 students (see Table 1).

The study was approved by The Regional Ethical Review Board in Stockholm (Reg. no. 2015/711-31/1).

Measurements

Outcome variables

The outcome variables comprised self-reported information on frequency of binge-drinking and the number of self-reported alcohol-related problems (see Table 2).

Binge-drinking was measured using a question regarding how often the student (during the past 12 months), on one continuous occasion, has consumed an amount of alcohol equivalent to at least a whole bottle of wine or four cans of beer/mixed drinks or six cans of medium strength beer (3.5% per volume) or 18 cl spirits. The measure intends to describe a large amount of alcohol consumed at one occasion, therefore it is of less importance for the respondent to know the exact amount he or she consumed. Those who reported

such consumption at least once a month were coded as binge drinkers in the analyses.

Self-reported alcohol-related problems were measured using the question: 'Have any of the following things happened to you in relation to your alcohol drinking during the past 12 months?' 1) Quarrel, 2) Physical fight, 3) Accident or injury, 4) Deliberately harmed yourself, 5) Deliberately harmed someone else, 6) Victim of violence, 7) Lost money or valuables, 8) Ruined clothes or other belongings, 9) Problems with relations to parents, 10) Problems with relations to friends, 11) Engaged in sexual intercourse that you regretted the next day, 12) Riding a moped or other motor vehicle with a drunk driver, 13) Trouble with the police, 14) Needed go to hospital or emergency room, 15) Driving a moped or other motor vehicles, 16) Victim of robbery or theft, 17) Gone swimming in deep waters. The response options 'never', 'once' or 'twice' were coded as 0, 1 and 2, respectively. Respondents who selected the highest value on more than 16 of the problem-related questions were deemed unreliable and excluded from the study, total variable score ranged

Table 2. Distribution of key variables across the SES indicators. Among consumers. Years 2015–2016

	All n = 4448		SES of origin - Individual level		SES of environment- group level- proportion of tertiary education among parents			SES of destination - group level	
			Neither mother nor father studied at college	At least one parent studied at college	Schools with <u>lowest</u> proportion	Schools in the <u>middle</u> category	Schools with <u>highest</u> proportion	Vocational programme	Higher education preparatory
Alcohol volume (L)	3.9	3.8		3.9	4.6	3.7	3.4	5.5	3.5
Binge drinking (%)	34.2	33.6		34.4	35.5	34.1	33.2	40.1	32.6
Alcohol-related problems (mean)	2.7	2.7		2.7	3.1	2.6	2.4	3.3	2.5
Parents offering alcohol (%)	54.8	57.3		54.1	54.5	52.7	57.2	56.1	54.4
Low knowledge of whereabouts (%)	5.8	5.6		6.4	6.1	5.7	5.5	6.8	5.5
Recurrent truancy (%)	20.9	20.2		21.1	21.7	20.8	20.2	20.7	21.0

Bold numbers indicate significant difference between the groups within SES indicators. Test for significance included; Chi2, Kruskal Wallis test and Mann-Whitney U test.

therefore from 0 to 33. The internal reliability was found to be good, as determined by Cronbach's $\alpha = 0.83$.

Independent variables

Individual-level SES of origin was measured using parents' educational attainment, as reported by the student. It was created using two questions: *Has your father/mother studied at university or college?* The questions were combined and coded into two categories: at least one parent has studied at college and neither parent has studied at college. Excluded from the main analysis were students who did not respond for either of the parents, and those who answered no higher education for one parent and gave no answer/don't know for the other. These responses comprised 17% ($n = 1041$).

In an additional sensitivity analysis, we included the students who answered no higher education for one parent and gave no answer/don't know for the other in the lowest SES group. Resulting in a variable with two categories: at least one parent has studied at college and one or both parents have not studied at college (attrition 12%, $n = 739$).

The indicator SES of the school environment (group level) was obtained from Statistics Sweden and represents the proportion of students with at least one parent with a post-secondary education for each school level and each year (i.e. 2015 and 2016). In order to simplify the analysis, this variable was divided into 3 equal categories. An additional analysis (not shown) produced similar results when the indicator remained a continuous variable. The attrition in this variable comprised 1% ($n = 71$).

We used academic orientation (group level) as a proxy for SES of destination; this information was received from each school before participating in the survey. Included in the analysis were the school classes coded as either vocational programme or higher education preparatory programme. Introductory, unknown and mixed programme classes were not included in the analysis (1%, $n = 61$).

Covariates

Previous studies (Grittner *et al.*, 2013) have shown that, when looking at alcohol-related problems, the importance of SES may differ between men and women. Therefore, we conducted an interaction analysis between each of the SES indicators and gender, but without significant results. For this reason, we proceeded without stratifying the sample by gender. However, all analyses are adjusted for gender. Only those who chose the answer female or male were included (the attrition was $n = 60$, 1%).

Drinking pattern was measured using binge-drinking at least once a month (described under *outcome variables*) and average volume of alcohol consumption during the past 12 months. The latter was constructed using a beverage-specific quantity and frequency scale, which was summed up in litres of 100% alcohol. This measure combines questions on how often spirits, wine, beer, and cider have been consumed and the typical amount consumed per occasion. The frequency questions were formulated in the same way for all types of beverages, while the response alternatives for the quantity questions were specific to each beverage and customized to the different standard containers in which the beverages are sold. The consumed quantity was multiplied by the alcoholic strength of each beverage (taken from registered sales); this gave a measure of each respondent's total alcohol consumption in litres of pure alcohol per year.

Two questions were used to measure parental monitoring. The first was: *Have your parents/guardians offered you alcohol during the past 12 months?* The responses were coded into 'No' and 'Yes', where 'Yes'

included tasting, up to having more than occasional drinks. Second question: *Do your parents/guardians know where you are on Friday and Saturday nights?* The responses 'Always' and 'Usually' were coded as 'Yes', and 'Usually not' and 'Sometimes' as 'No'. High parental monitoring was the reference category, and the opposite – low parental monitoring – was defined as low knowledge of one's child's whereabouts and occasions of offering one's child alcohol.

School truancy was coded into recurrent truancy with responses ranging from once a month to several times a week, the 'No' responses were 'No' and 'Yes, once per semester'.

Statistical analyses

Because the students in the present survey were clustered in school classes, the assumption of independence between observations was violated (Hox, 2002). This, and the fact that our data are on both the individual and group level, prompted us to use a multilevel approach. A multilevel method allows separate estimates on the individual and group level; it also allows the researcher to estimate associations at one level while controlling for associations on another level.

We fitted different generalized mixed models (i.e. multilevel models) to the different outcomes, and each model included a random intercept for school. Multilevel logistic regression was used in the models for binge-drinking. Multilevel negative binomial regression was applied to alcohol-related problems. Since this is a count variable with an over-dispersed distribution (mean = 2.71, variance = 15.24), negative binomial was the best choice.

We estimated two models for the outcome binge-drinking and three models for the second outcome alcohol-related problems. The first model included the SES indicators and the second included indicators of parental monitoring along with truancy. For alcohol-related problems, the third model included indicators of pattern of drinking.

RESULTS

Descriptive statistics

Table 2 presents the distributions of the outcome variables and the covariates across the three SES indicators. For SES of origin—the proportion of binge drinkers was the same in both groups. However, the mean volume of consumption and mean number of alcohol-related problems were somewhat lower in the group of students whose parents lacked a tertiary education, although only the difference in mean number of alcohol-related problems was significant (2.67 compared to 2.72).

For both SES of the school environment and SES of destination, the prevalence of the alcohol-related variables displayed a negative gradient. Students in schools with the lowest proportion of educated parents and students enrolled in vocational programmes reported higher mean volume of consumption, prevalence of binge-drinking (not significant for SES of the environment) as well as mean number of alcohol-related problems.

For the parental monitoring indicators and truancy, the prevalence values only differed slightly between the groups within the different SES measures.

Multilevel analysis

Results from the multilevel models with binge-drinking as outcome are presented in Table 3. In Model 1, we found no significant association with binge-drinking for SES of origin or SES of the

Table 3. The association of SES with binge drinking. Among consumers. Multilevel logistic regression

	Model 1		Model 2	
	OR	95% CI	OR	95% CI
Female (ref. male)	0.66***	0.57–0.75	0.64***	0.56–0.74
<i>SES of origin - Individual level</i>				
At least one parent studied at college	ref	ref	ref	ref
Neither mother nor father studied at college	0.96	0.81–1.13	0.94	0.80–1.12
<i>SES of environment - Group level - proportion of tertiary education among parents</i>				
Schools with highest proportion	ref	ref	ref	ref
Schools in the middle category	0.95	0.76–1.19	0.97	0.77–1.21
Schools with lowest proportion	0.93	0.72–1.19	0.93	0.73–1.20
<i>SES of destination - Group level</i>				
Higher education preparatory	ref	ref	ref	ref
Vocational programme	1.42**	1.13–1.80	1.42**	1.12–1.80
Covariates				
Parents offering alcohol (ref. no)			1.57***	1.37–1.80
Knowledge of whereabouts (ref. yes)			1.56**	1.19–2.06
Recurrent truancy (ref. no)			2.07***	1.76–2.43

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. or, odds ratios; CI, confidence interval.

environment. However, the estimate for SES of destination (OR = 1.42 [CI = 1.13–1.80]) implies that students in vocational programmes had 42% higher odds of binge-drinking compared to those in higher education preparatory programmes, adjusted for SES of origin and SES of destination. In Model 2, all covariates demonstrated significant and positive estimates, implying that truancy and low levels of parental monitoring are related to higher odds of binge-drinking. Still, adjustment for these factors did not affect the estimates for any of the SES indicators.

The analyses with alcohol-related problems as outcome are presented in Table 4. In Model 1, SES of origin obtained a non-significant estimate below 1. Conversely, the estimate for SES of environment, $rr = 1.19$ ([CI 1.02–1.39]), implies that students in schools with a low level of parental education experienced approximately 19% more problems compared to students in schools with the largest proportion of high-educated parents, when controlling

for the other SES indicators. Likewise, students in vocational programmes experienced 25% ($rr = 1.25$ [CI 1.08–1.45]) more problems compared to those in higher preparatory programmes.

Just as for binge-drinking, the parental monitoring indicators and truancy showed significant associations with alcohol-related problems in Model 2. Adjusting for these variables did not affect the estimates for SES of the school environment and SES of destination. However, the estimate for SES of origin became significant ($rr = 0.89$ [CI 0.79–0.99]), implying that students with neither a mother nor father who studied at college experienced 11% fewer alcohol-related problems compared to those with at least one higher educated parent, controlling for truancy and parental monitoring.

In Model 3, both indicators of drinking patterns showed a positive and significant association with alcohol-related problems. Adjustment for these variables did not affect the estimates for SES of origin and SES of environment, whereas the estimate for SES of

Table 4. The association of SES with alcohol-related problems. Among consumers. Multilevel negative binomial regression

	Model 1		Model 2		Model 3	
	<i>rr</i>	95% CI	<i>rr</i>	95% CI	<i>rr</i>	95% CI
Female (ref. male)	0.99	0.90–1.09	1.00	0.92–1.10	1.23***	1.13–1.33
<i>SES of origin - Individual level</i>						
At least one parent studied at college	ref	ref	ref	ref	ref	ref
Neither mother nor father studied at college	0.92	0.82–1.03	0.89*	0.79–0.99	0.90*	0.81–0.99
<i>SES of environment - Group level - proportion of tertiary education among parents</i>						
Schools with highest proportion	ref	ref	ref	ref	ref	ref
Schools in the middle category	1.04	0.91–1.20	1.05	0.91–1.20	1.09	0.97–1.22
Schools with lowest proportion	1.19*	1.02–1.39	1.17*	1.01–1.36	1.20**	1.06–1.37
<i>SES of destination - Group level</i>						
Higher education preparatory	ref	ref	ref	ref	ref	ref
Vocational programme	1.25**	1.08–1.45	1.27**	1.10–1.47	1.07	0.94–1.21
Covariates						
Parents offering alcohol (ref. no)			1.41***	1.29–1.54	1.19***	1.10–1.28
Knowledge of whereabouts (ref. yes)			1.69***	1.41–2.02	1.39***	1.18–1.63
Recurrent truancy (ref. no)			1.91***	1.72–2.12	1.57***	1.43–1.72
Volume of alcohol					1.06***	1.05–1.07
Binge drinking					1.98***	1.80–2.16

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$. *rr*, rate ratios; CI, confidence interval.

destination became non-significant. Finally, the estimate for gender in Model 3 implies that girls experienced more problems than boys did, when SES along with the covariates were taken into account.

Sensitivity analysis

In addition to the main analyses, a sensitivity analysis was carried out to include students from potential single-parent homes where the one parent had not studied at college. These additional analyses did not reveal any diverging results.

DISCUSSION

The aim of the present study was to assess the relationship between SES among youth and binge-drinking and alcohol-related problems using three SES indicators.

Overall, and in line with findings from the adult population (Schmidt *et al.*, 2010; Probst *et al.*, 2014; Mackenbach *et al.*, 2015), our results suggest that the SES gradient among youth is stronger for alcohol-related harm than for binge-drinking. That is, we failed to find a consistent social patterning of binge-drinking, whereas a negative relationship between SES and alcohol related-problems was found for two of the three SES indicators employed.

The only stable predictor across outcomes was academic orientation, the proxy for SES of destination, where students in vocational programmes had an increased likelihood of binge-drinking, and higher risk of alcohol-related problems. These findings were in line with previous studies (Hagquist, 2007) and provide further support for the assumption that SES of destination is an important predictor of health risk behaviour among youth. Still, after adjustment for drinking patterns, students in the vocational programme did not experience more alcohol-related problems compared to their more academically oriented peers—suggesting that the inequalities in alcohol-related problems as a function of academic orientation can largely be explained by greater exposure to harmful levels and patterns of drinking among students in vocational programmes.

Also SES of the school environment showed a negative association to alcohol-related problems, whereas the findings for SES of origin were less clear. None of these two SES indicators displayed a significant association to binge-drinking. With regard to SES of the school environment, a larger proportion of parents without tertiary education in the school was associated with more alcohol-related problems, both before and after adjustment of the covariates. This finding indicates that the social inequalities in alcohol-related problems at the school level are due to factors other than differences in drinking patterns, truancy or the included parental monitoring indicators. Following research from the adult population, one tentative explanation is that part of the gradient may be due to unequal exposure—between schools—to a host of risk factors that increase the risk of experiencing alcohol-related problems (Makela and Paljarvi, 2008; Syden *et al.*, 2017). Future research would benefit from including additional covariates that might cluster in low-SES schools. Those could include; drinking in higher-risk contexts, childhood household dysfunction (Gauffin *et al.*, 2016), prevalence of depression (Torikka *et al.*, 2017) or low school ethos (i.e. a term for measuring positive contextual features in a school, such as good atmosphere and a positive learning environment) (Olsson *et al.*, 2018).

Recent studies among adolescents in Stockholm have shown positive associations between students from schools with high levels of educated parents and alcohol drinking (Carlson and Almqvist,

2016) and excessive drinking (Olsson and Fritzell, 2015). Keeping this in mind, our findings demonstrate the importance of including alcohol-related problems as an outcome when studying SES and alcohol-related behaviour among youth. Our results are more in line with those of Pedersen *et al.* (Pedersen *et al.*, 2015), who found that adolescents from more affluent areas of Oslo, Norway, drank more alcohol, but that students in less affluent areas were more exposed to alcohol-related problems.

For the individual-level SES of origin we found a positive association with alcohol-related problems, which became significant after adjustment for truancy and parental monitoring indicators. Parental monitoring has previously been identified as a protective factor in this context; see, for example, the review by Yap *et al.* (Yap *et al.*, 2017). However, unlike previous studies where inequalities between SES groups have largely been explained by parental factors (Pape *et al.*, 2017; Carlson, 2018), this was not the case in the present study. Moreover, Pape *et al.* (2017) showed that low parental education was associated with lower parent-child relationship quality and more lenient parenting, indicating an unequal extent of parental monitoring across SES groups. This correlation was not supported in the present study, however, as no apparent differences in parental monitoring prevalence were found. The most likely explanation, according to us, since we cannot explain this theoretically, is that the positive relationship between alcohol-related problems and SES of origin seen in the first model, becomes significant in the second model due to the fact that the indicators for parental monitoring and truancy are reducing some of the error variance in SES of origin. Therefore, our interpretation is that SES of origin has only a weak explanation capacity.

Some limitations of the study should be noted. There is a risk that students who are not present at the time for the survey have a differential distribution of risk factors or sociodemographic characteristics (Dawson *et al.*, 2014). In a study on the Swedish national school surveys which estimate prevalence's, it was shown that the students who were not present at the original time of the survey, did show an increased consumption of alcohol, drugs and tobacco (Andersson and Hibell, 1993) this did however barely affect the overall results of the study. Moreover, the coverage according to sociodemographic characteristics in these Swedish national surveys has proven to be good (Englund, 2014). Yet another risk is that of underestimating the alcohol consumption (Midanik, 1982) there is, however, evidence that self-reported consumption among adolescence is reliable (Lintonen *et al.*, 2004). Furthermore, measuring young people's SES of origin by requesting information on parents' education is problematic, partly because of the nature of second-hand information, and partly because not all students know their parents' educational background. Since we decided to employ an analysis with the same sample in all models, respondents with incomplete answers were excluded. Some of these respondents were however included in the sensitivity analysis. This additional analysis showed, that when including students who did not report educational level for one parent and reported no higher education for the other, the results remained essentially the same. Still, looking at all the respondents excluded due to non-response (not shown) we could see slightly higher levels of alcohol-related problems and an overrepresentation of respondents from schools with a low proportion of educated parents and the vocational program. Thus, we might have underestimated the SES differences on the group level.

Moreover, the individual level SES indicator was quite crude, distinguishing only between students with parents having a higher education and students whose parents did not have a higher

education. A more fine-grained measure, which was not feasible in the present data, of individual level SES, would have allowed for a more precise examination of the relation between SES at the individual level and the drinking outcomes. Another limitation is that the data did not allow us to adjust for foreign background, a possible confounder for the association between SES and the outcome variables. Which could potentially lead to an underestimation of the association between SES and the outcome variables.

Though beyond the scope of the present study, an additional intriguing finding was that girls experienced more alcohol-related problems after adjusting for drinking pattern. This calls for more gender-focused research in the future.

CONCLUSIONS

By only focusing on SES differences in harmful alcohol use, researchers may underestimate the social inequalities in adverse alcohol-related outcomes among young people. Moreover, our findings add support to the notion that the environment young people find themselves in matter for social inequalities in alcohol-related harm. Both SES of destination and SES of the school environment were negatively associated with alcohol-related problems; for the latter this also applied over and above levels and patterns of drinking. Future research should focus on identifying the pathways and mechanism through which students from low-SES schools experience more alcohol-related problems.

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CONFLICT OF INTEREST STATEMENT

None to declare.

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