

**Social Class and Alcohol Use by Youth: Different Drinking Behaviors, Different Associations?**

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**ABSTRACT. Objective:** Low socioeconomic status (SES) is related to hazardous alcohol use in adults, and the association seems to be stronger for more deviant and harmful drinking behaviors. We examined whether a similar pattern was present among adolescents. **Method:** Data stem from a Norwegian school survey of 14- to 17-year-olds ( $n = 12,966$ ; response rate in participating schools: 86%). Parental education (high/middle vs. low) was our main SES indicator. The outcomes comprised lifetime and past-year drinking and intoxication, and past-year symptoms of excessive drinking. We used Poisson regression to estimate relative risks (RR) and post-estimation Wald  $F$ -tests to compare coefficient estimates. **Results:** Parental education was related inversely to the lifetime measures of drinking and intoxication among all students but the 17-year-olds. The impact on any intoxication episodes was significantly stronger than that on any alcohol use only among the 14-year-olds (RR = 1.79, 95% CI [1.31, 2.43] vs. RR = 1.21, 95% CI [0.98, 1.49]) ( $p < .001$ ). Among past-year drinkers at all ages (14–17 years;  $n = 7,796$ ), the differential impact of low parental education was particularly large with respect to the frequency of intoxication (RR = 1.68, 95% CI [1.39, 2.02]) compared with the frequency of drinking (RR = 1.42, 95% CI [1.24, 1.62]) ( $p < .001$ ) and frequent symptoms of excessive drinking (RR = 1.80, 95% CI [1.47, 2.20]) compared with any symptoms (RR = 1.07, 95% CI [1.01, 1.14]) ( $p < .001$ ). A similar but somewhat less clear pattern emerged when using an alternative indicator for low parental SES. **Conclusions:** Parents' social standing was inversely related to alcohol use by youth, and related more strongly so to more deviant and harmful drinking behaviors. (*J. Stud. Alcohol Drugs*, 79, 000–000, 2018)

THE ISSUE OF SOCIAL DISPARITY in health is high on the political agenda (Blas & Kurup, 2010; Marmot et al., 2012), and there is ample evidence that unhealthy behaviors are generally more prevalent in less advantaged groups (Cutler & Lleras-Muney, 2010; Pampel et al., 2010). Such associations have also been found in studies of adolescents (Hanson & Chen, 2007). Moreover, youth in lower social strata have an increased risk of externalizing behaviors and a range of other poor outcomes (Devenish et al., 2017). However, the question of whether youth drinking varies by parents' socioeconomic status (SES) is clouded with uncertainty. Specifically, reviews of this literature show that positive, negative, and statistically nonsignificant associations have been found (Hanson & Chen, 2007; Kwok & Yuan, 2016; Wiles et al., 2007), and it is unclear whether certain adolescent drinking behaviors are more likely than others to correlate inversely with SES.

The socioeconomic patterning of adult drinking is complex, but hazardous drinking and alcohol-related harm are generally far more prevalent in lower than in higher SES groups (Collins, 2016; Schmidt et al., 2010). Furthermore, there is evidence to suggest that the more deviant and harmful the drinking behavior in question, the steeper is the inverse social gradient (Mäkelä et al., 2015).

Scarce research has assessed whether a similar pattern is present among adolescents, but a few studies seem to point in that direction. Legleye et al. (2013) focused mainly on the group of past-month drinkers in their study of French 17-year-olds and found that the likelihood of infrequent binge drinking barely varied across socioeconomic groups. However, low parental SES was associated with a moderately increased risk of regular binge drinking and with a relatively strongly increased risk of frequent binge drinking. Such a differential impact of socioeconomic background also emerged in analyses of the frequency of alcohol use (Janssen,

2016). Moreover, a Norwegian study showed that low parental SES was related more strongly to alcohol use by early teen youth as compared with mid-teen youth, whereas socioeconomic background did not make any difference among older teenagers (Pape et al., 2017). Thus, the more age-inappropriate the drinking, the stronger was the statistical impact of low parental SES. However, other studies indicate that youth in lower social strata are not necessarily more likely to engage in aberrant or risky forms of alcohol use (Charitonidi et al., 2016; Kendler et al., 2014; Melotti et al., 2013), and a recent review of the literature on socioeconomic background and adolescent binge drinking found no consistent pattern of association between the two (Kwok & Yuan, 2016).

We pursued the issue by analyzing data from the above-mentioned study of Norwegian adolescents. Pape et al.'s (2017) analyses of this data set showed that both drinking and drunkenness were more prevalent in lower than in higher social strata, but they did not test whether the strength of the inverse SES effect on each of the two outcomes differed. In contrast to previous research that sheds light on the issue in question, we used a broad range of drinking outcomes and assessed whether the impact of socioeconomic background showed systematic variation. Specifically, our research aim was to examine whether low SES was more strongly related to more harmful and deviant forms of alcohol use by youth.

## **Method**

### *Sample and design*

In the period 2004–2006, annual school surveys were conducted in 16 municipalities in Norway. The main initial purpose was to evaluate a community-based prevention project targeted at alcohol use and related harm. Nine of the municipalities participated in the prevention project, and seven were included as controls. The latter were selected to match the intervention

municipalities with respect to factors such as population size and degree of urbanization (Pape et al., 2007). The evaluation study found no effects of the prevention project on adolescent drinking behavior (Rossow et al., 2011).

The present study relies on data from the 2006 survey. The target sample included full cohorts of junior and senior high school students in the 16 municipalities, and 82 of 91 schools took part in the study. The response rate at the participating schools was 86%. A written informed parental consent was required for students in junior high school, whereas a passive parental consent was required for the senior high school students. At each school, one of the employees was in charge of data collection. Anonymous paper-and-pencil questionnaires were distributed and filled out in the classroom under the supervision of a teacher.

Our analyses comprised students ages 14–17 years. After we excluded those who failed to report either of their parents' educational attainment (5.6%) and those who had missing data on lifetime or past-year drinking (1.0%), the sample included 12,966 respondents. The majority (60%) had consumed alcohol in the past 12 months, and analyses of outcomes that presuppose drinking in the past year were restricted to this group. The proportion of boys was 50.2% in the full sample and 47.0% among the past-year drinkers. In both samples, slightly more than 9 in 10 reported that both parents were born in Norway or another Nordic country.

### *Measures*

*Drinking outcomes.* Alcohol use, and in particular drinking to intoxication, is more deviant among younger than among older teenagers. Therefore, we performed age-specific analyses of the full sample, applying lifetime measures of drinking (“ever consumed more than a couple of sips”) and intoxication (“ever felt clearly intoxicated”) as outcomes. In analyses of the past-year drinkers, we used semi-continuous measures of the frequency of alcohol use and the

frequency of intoxication in the past 12 months. For both measures, we performed this scale transformation: *no times* (coded 0), *1–4 times* (2.5), *5–10 times* (7.5), *about once a month* (12), *2–3 times a month* (30), *about once a week* (52), and *more than once a week* (104). Respondents who had been drinking also responded to four separate questions about alcohol-induced vomiting, hangover symptoms (headache or nausea the day after), motor impairment (“been so drunk that you could not stand upright”), and blackout (“been somewhere without remembering how you got there”) in the past year. Hangover was most prevalent (59%), whereas blackout was least prevalent (31%), and we used dichotomous measures of both (0 vs.  $\geq 1$  times). We also constructed a measure of any symptoms of excessive drinking (0 vs.  $\geq 1$  episode of vomiting, hangover, motor impairment or blackout), as well as a measure of having experienced either of these symptoms frequently (0–10 vs.  $\geq 11$  times).

*Parental socioeconomic status.* Parents’ educational level was our main indicator for socioeconomic background. Previous analyses of the data set showed that a relatively small group with low-educated parents differed markedly from those with medium- or high-educated parents with respect to drinking (Norström et al., 2017; Pape et al., 2017). Whether the parents’ educational level was high or medium barely made a difference, implying that the main social divide was between the lowest parental education group and all the others. Therefore, we distinguished between low educational level (one parent had vocational training, whereas the other had no post-compulsory education, or both had no post-compulsory education) (6%) and middle/high level (all others) (94%) in the present study. This dichotomous indicator of SES is identical to that used by Norström et al. (2017). In addition, we applied a measure of parental marginal socioeconomic position, which was coded as “1” if at least one of the parents was an unemployed social welfare recipient (9%) and “0” otherwise (91%). The overlap between the

low SES groups was modest; 22% of those with low-educated parents reported marginal socioeconomic position, whereas 16% of those in the latter group had low-educated parents.

### *Statistical analyses*

We assessed associations between each of the two indicators for low parental SES and the drinking outcomes using Poisson regression. This estimation procedure is feasible for both dichotomous and count outcomes (Zou, 2004) and provides easily interpretable results in the form of relative risks. Moreover, we compared SES coefficients across pairs of more versus less harmful drinking outcomes with the Wald tests for nonlinear models (Clogg et al., 1995) and the *-suest* postestimation command in Stata (StataCorp, College Station, TX).

Specifically, in the age-specific analyses of the full sample, we tested whether the relative risk of low SES on any drinking (less deviant) differed significantly from the relative risk of low SES on any intoxication episodes (more deviant). We used the same approach when analyzing the subsample of past-year drinkers, applying the following three pairs of drinking outcomes: (a) the frequency of drinking versus the frequency of intoxication, (b) mild symptoms of excessive drinking (hangover) versus severe symptoms (blackout), and (c) any symptoms versus frequent symptoms of excessive drinking. Both the initial Poisson estimators and the Wald tests of cross-model hypotheses were estimated using clustered standard errors because of the clustered sampling at the school level (i.e., *vce [cluster school]*) (Williams, 2000).

We assessed the associations between socioeconomic background and the drinking outcomes at the bivariate level. Initial analyses showed that neither of the SES indicators varied by gender, and they also did not vary by age in the subsample of past-year drinkers. Other initial analyses showed that the overall pattern of association between SES and the drinking outcomes

was the same for boys and girls (although the relative risk of low SES was generally somewhat larger for boys). Thus, to strengthen statistical power, we analyzed the genders together.

## Results

Low parental education was associated with an elevated lifetime prevalence of alcohol use among the 15- and 16-year-olds and with an elevated lifetime prevalence of intoxication in all age groups apart from the 17-year-olds (Table 1). Moreover, the inverse statistical impact of parental education was significantly stronger for intoxication than for alcohol use among the 14-year-olds but not among older age groups. Marginal socioeconomic position was also related to any drinking as well as any intoxication episodes, but only among the 14- and 15-year-olds. Its impact on each of the two drinking outcomes showed no statistically significant variation in any age group.

### [COMP: Table 1 about here]

The subsequent analyses were confined to adolescents at all ages (14–17 years) who had consumed alcohol in the past year ( $n = 7,796$ ). For this group, parental education was related inversely to all the drinking outcomes except for hangover symptoms (Table 2). Moreover, the parameters were significantly higher for the frequency of intoxication than for the frequency of drinking, for severe symptoms of excessive drinking (blackout) as compared with mild symptoms (hangover), and for frequent symptoms as compared with any symptoms of excessive drinking. A similar pattern emerged when we used marginal socioeconomic position as an alternative indicator of low socioeconomic background, but its statistical impact on alcohol-induced blackout did not differ significantly from that on hangover symptoms.

### [COMP: Table 2 about here]

## Discussion

The present study of 14- to 17-year-olds in Norway expanded the research literature on social patterning of adolescent drinking, providing evidence of systematic variations in the impact of low parental SES on different drinking behaviors. Generally, parents' education was inversely related to the drinking outcomes, and significantly more strongly to outcomes that captured more risky or deviant forms of consumption. A similar but somewhat less clear pattern emerged when we applied an alternative indicator for low parental SES.

Early teen drunkenness may be considered highly age inappropriate, and the impact of low parental education on lifetime intoxication was significantly greater than the impact on lifetime use of alcohol among the 14-year-olds. The results for older teenagers were different: the strength of the inverse association between parental education and each of the two lifetime drinking outcomes did not vary among the 15- and 16-year-olds, whereas there were no associations among the 17-year-olds. In analyses of the past-year drinkers, we compared the SES coefficients across three pairs of outcomes (e.g., any vs. frequent symptoms of excessive drinking) and found that low parental education was consistently more strongly related to more aberrant drinking behaviors.

In a summary of research on socioeconomic patterning of adult drinking in Finland, Mäkelä et al. (2015) also reported that the inverse impact of SES was stronger for more hazardous forms of alcohol use. However, such associations may in part reflect downward social mobility because of persistent heavy drinking and related harm (Schmidt et al., 2010). Understandably, reverse causality is not an issue in studies of adolescents—whose class position relies on their parents' social standing.

The literature on SES variations in alcohol use by youth is highly inconsistent, and several studies have not found an inverse association between the two (Hanson & Chen, 2007;

Kwok & Yuan, 2016; Wiles et al., 2007). However, our results corroborated those of a few previous studies that shed light on the question of whether low parental SES is more strongly related to more risky or deviant forms of adolescent drinking (cf. Janssen, 2016; Legleye et al., 2013). A pattern similar to our findings has also been found in studies of cannabis and tobacco use by youth (Grotvedt et al., 2008; Legleye et al., 2011, 2012). For instance, Legleye et al. (2012) found an inverse social gradient in cannabis use that did not emerge until measures on frequent, heavy, and problematic use were applied as outcomes.

From a preventive perspective, it is evidently important to identify the causes and contributing factors underlying the observed association between low parental SES and more risky adolescent drinking. Scarce research has addressed this issue, but a study from New Zealand indicated that the association in question reflected differential exposure to risk factors for heavy drinking such as weak attachment to parents, familial alcohol problems, and peer approval of drinking (Droomers et al., 2003). Pape et al. (2017) also approached the issue of potential underlying mechanisms and found that the elevated risk of low SES on both early and heavy adolescent drinking vanished when accounting for indicators of suboptimal parenting, alcohol-related parental permissiveness, and exposure to parental drunkenness. Their tentative conclusion was that “measures to curb social inequality in adolescent drinking should target a broad range of parenting skills and practices” (p. 798).

#### *Methodological considerations and suggestions for future research*

We analyzed data from a large general population survey with a high response rate, and the data set allowed us to assess the statistical impact of two different indicators for low parental SES on a range of drinking outcomes. However, all the data were adolescent reported, implying measurement errors that reduce the precision of our estimates.

Many previous studies have also relied on adolescents' information about their parents' social standing, and comparisons of adolescent- and parent-reported data on parents' SES have generally revealed moderate to high concordance (Ensminger et al., 2000; Lien et al., 2001; Looker, 1989). Moreover, nonresponse to items on perceived parental SES tends to be quite prevalent, yet this was not the case in our study.

Very few studies have examined whether low SES is more strongly related to more aberrant forms of alcohol use by youth. Hence, there is a need to validate our findings and to assess whether a similar pattern as that which we observed is present in countries that differ from Norway with respect to social welfare and income inequality, as well as adolescent drinking practices and related norms. Moreover, to inform strategies and measures to curb alcohol-related health inequalities, there is a need for better understanding of the underlying mechanisms that produce SES differences in harmful drinking behavior at an early age.

### *Conclusion*

This study showed that parents' social standing was related inversely to a range of measures on alcohol use by youth and that the statistical impact of low SES was generally stronger for more risky or deviant drinking behaviors.

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TABLE 1. Lifetime prevalence of alcohol use and drinking to intoxication by age and indicators for parental socioeconomic status. Percentages, relative risks with 95% confidence interval (CI), and the cross-model Wald test for differences between relative risks.

Variable	14-year-olds		15-year-olds		16-year-olds		17-year-olds	
	Alcohol	Intoxication	Alcohol	Intoxication	Alcohol	Intoxication	Alcohol	Intoxication
<b>Parental education</b>								
High/middle	36.2%	15.3%	56.6%	35.3%	74.1%	57.3%	84.8%	73.1%
Low	43.7%	27.4%	69.1%	45.4%	86.3%	68.8%	84.6%	74.9%
Relative risk	1.21 (N.S.)	1.79***	1.22***	1.29**	1.17***	1.20**	1.00 (N.S.)	1.02 (N.S.)
[95% CI]	[0.98, 1.49]	[1.31, 2.43]	[1.10, 1.36]	[1.07, 1.53]	[1.07, 1.26]	[1.05, 1.38]	[0.93, 1.07]	[0.95, 1.10]
Wald test	$\chi^2 = 13.92, p < .001$		$\chi^2 = 0.55$ (N.S.)		$\chi^2 = 0.26$ (N.S.)		–	
<b>Marginal socioeconomic position</b>								
No			35.8%	15.4%	56.7%	35.2%	74.7%	57.7%
Yes	46.0%	22.0%	64.8%	44.1%	76.5%	61.7%	86.2%	73.6%
Relative risk	1.28**	1.43**	1.14**	1.25***	1.02 (N.S.)	1.07 (N.S.)	1.02 (N.S.)	1.00 (N.S.)
[95% CI]	[1.09, 1.50]	[1.13, 1.79]	[1.04, 1.26]	[1.10, 1.42]	[0.95, 2.55]	[0.94, 1.21]	[0.97, 1.07]	[0.95, 1.07]
Wald test	$\chi^2 = 1.12$ (N.S.)		$\chi^2 = 3.11$ (N.S.)		–		–	
<i>n</i>	2,995		3,223		3,482		3,266	

Notes: N.S. = not significant.

\*\* $p < .01$ ; \*\*\* $p < .001$ .

TABLE 2. The alcohol users' past-year frequency of drinking and intoxication episodes, and symptoms of excessive drinking by indicators for parental socioeconomic status. Means (*SD*), percentages, relative risks (RR) with 95% confidence interval (CI), and the cross-model Wald test for differences between RRs.

<i>M (SD)</i>	Frequency of alcohol use <i>M (SD)</i>	Frequency of intoxication %	Hangover %	Blackout %	Any symptoms <sup>a</sup> of excessive drinking %	Frequent symptoms <sup>b</sup> of excessive drinking
<b>Parental education</b>						
High/middle	17.7 (22.0)	10.6 (17.9)	58.8%	31.1%	67.5%	11.4%
Low	25.1 (31.5)	17.7 (29.1)	61.9%	37.4%	72.3%	20.5%
Relative risk	1.42***	1.68***	1.05 (N.S.)	1.20**	1.07*	1.80***
[95% CI]	[1.24, 1.62]	[1.39, 2.02]	[0.98, 1.12]	[1.07, 1.36]	[1.01, 1.14]	[1.47, 2.20]
Wald test	$\chi^2 = 17.66, p < .001$		$\chi^2 = 6.32, p = .012$		$\chi^2 = 22.97, p < .001$	
<b>Marginal socioeconomic position</b>						
No			18.0 (22.5)	10.8 (18.5)	58.7%	31.1% 67.6% 11.6%
Yes	20.7 (26.1)	14.0 (23.7)	62.0%	35.8%	71.4%	15.6%
Relative risk	1.15**	1.30***	1.05 (N.S.)	1.15*	1.06 (N.S.)	1.34***
[95% CI]	[1.03, 1.26]	[1.13, 1.49]	[0.98, 1.13]	[1.02, 1.29]	[0.99, 1.12]	[1.17, 1.53]
Wald test	$\chi^2 = 10.49, p = .0012$		$\chi^2 = 2.68$ (N.S.)		$\chi^2 = 14.07, p < .001$	
<i>n</i>	7,796		7,718		7,705	

Notes: N.S. = not significant. <sup>a</sup>Hangover, vomiting, motor impairment and/or blackout; <sup>b</sup>11+ times.  
\**p* < .05; \*\**p* < .01; \*\*\**p* < .001.