WORKING PAPER

No 8 / 2009

ADOLESCENT ALCOHOL- AND ILLICIT DRUG-USE
IN FIRST AND SECOND GENERATION IMMIGRANTS
IN SWEDEN

Mikael Svensson & Curt Hagquist

Adolescent Alcohol- and Illicit Drug-Use in First and Second Generation Immigrants in Sweden

Mikael Svensson[a, b, *], Curt Hagquist[b]

[a] Dept. of Economics, Swedish Business School, Örebro University, Sweden.
[b] Centre for Research on Child and Adolescent Mental Health, Karlstad University, Sweden

[*] Corresponding author:
Mikael Svensson, E-mail: mikael.svensson@oru.se, Phone: +46-19-30-38-62

Abstract

In this paper adolescent alcohol- and illicit drug-use among 1st and 2nd generation immigrants from Nordic, non-Nordic European and non-European countries were compared with the Swedish majority population. Multilevel logistic regression analysis was performed based on survey data from three different Swedish regions including 24 municipalities sampled in 2005 including 13,070 adolescents. Immigrants from Nordic countries were more likely to use alcohol (OR: 1.10-1.37) while immigrants from non-European countries were less likely to use alcohol (OR: 0.52-0.81), mainly explained by the relatively low use by girls from non-European countries. All immigrant groups were more likely to use illicit-drugs compared to the majority population. Highest drug-use were found among first generation Nordic Immigrants (OR: 3.15-4.17) and non-European immigrants (OR: 2.92-3.13). Consumption patterns among second generation immigrants were more similar to the Swedish majority population, implying more alcohol-use and less illicit drug-use.

Keywords: alcohol, drug use, ethnicity, immigrants, migration, youth.

JEL-code: I12, I18, J15

Conflict of interest: none

1. INTRODUCTION

During the last 30 years Sweden has evolved from an ethnically homogenous society into a multi-cultural society. The share of first- and second-generation immigrants living in Sweden is approx. 16 percent of the Swedish population (1). This makes Sweden one of the European countries with the largest share of foreign-born in the population (2). The major change in the composition of the Swedish population over time may have a large impact on several important public health indicators, including adolescent alcohol- and drug-use, which is the focus of this paper. If alcohol- and drug-use differ by ethnic background, this may serve as an important influence on how to conduct successful public health policy. If e.g. illicit drug-use is more common in some ethnic groups, policy interventions may focus on immigrant-dense neighborhoods and use minority health professionals for implementation of interventions. Further, intervention strategies may need to be adjusted for different cultural backgrounds to improve efficiency (3).

Alcohol- and drug-use may vary by ethnic background due to social and cultural traditions and religious norms that differ within ethnic groups (4). Only looking at the European region we see considerable differences across countries in alcohol- and drug-use (5). Swedish adolescents drink alcohol more or less to the same extent as the average adolescent in Europe (6), but regarding drug-use (cannabis) Sweden stands out as having a very low use among adolescents. Among 15-16 year olds lifetime experience of cannabis was 7 percent in Sweden in 2003, to be compared with an average lifetime experience of 20 percent among adolescents in the participating European countries, and e.g. 38 percent in France and the UK (6).

The trends in alcohol- and drug-use in Sweden show that there was a significant increase in alcohol-use from the late 1980s up until approx. 2000 for boys and up until 2005 for girls. Among boys alcohol-use has been decreasing more or less since 2000 and for girls since 2005. In 2000 the annual consumption of pure alcohol among boys was 5.3 liters, which has decreased to 3.2 liters in 2008. For girls the annual consumption of pure alcohol peaked in 2005 at 3.2 liters, and was in 2008 2.5 liters (7). The trends for illicit-drug use show a somewhat similar pattern, with an increase in use up until approx. 2000 and after that a decrease (although not back to the low levels of the 1980s).

Three papers examining hospital admissions for alcohol- and illicit-drug-related disorders among both adolescents and adults in Sweden have reported differences among ethnic groups (8-10). For hospital-admissions due to alcohol-use, first- and second generation immigrants from Finland were reported to have a higher risk compared to the Swedish majority population, while immigrants from southern Europe, the Middle East and other non-European countries were reported to have a lower risk of hospital admission for alcohol-related disorders (8, 9). Second-generation immigrants from southern Europe, the Middle East and other non-European countries had a higher risk compared to first-generation immigrants from these regions, but still lower compared to the Swedish majority population. Regarding illicit drug-use it has been found that second-generation immigrants have a significantly higher relative risk compared to the Swedish majority population (10). The highest relative risk is found among immigrants from Finland and Eastern Europe.

This study extends the three earlier papers on ethnicity and alcohol- and drug-use among young people in Sweden that have used hospital-admissions due to alcohol- and

illicit drug-abuse (8-10). Those papers capture the prevalence of very high-risk behavior in different immigrants groups, which may not necessarily correlate (or correlate only to a small extent) with general behavior in the different immigrant groups. For example, among the Swedish majority population 0.54% in the youth study group in an earlier paper had an hospital admission due to alcohol use (9). Further, if there are systematic differences between access and use of health care resources between ethnic groups, analysis based on register data of hospital admissions will lead to biased estimates of the importance of ethnic background.

2. METHODS

2.1 The Survey

The analysis is based on data collected among adolescents in the late spring of 2005 in 24 municipalities from three Swedish regions: (i) the southern city of Malmö with 267,000 inhabitants in one municipality, (ii) the mid-northern county of Västernorrland with 244,000 inhabitants in 7 municipalities, and (iii) the mid-southern county of Värmland with 273,000 inhabitants in 16 municipalities. The questionnaire for regions (i) and (ii) were named "Ung 2005" ("Young 2005") while in region (iii) it was titled "Ung i Värmland" ("Young in Värmland"). However, apart from the different names on the first page of the questionnaire, they were otherwise exactly identical. The latter questionnaire, "Ung i Värmland", is a part of a survey that has been conducted approx. every third year in this region since 1988. The questionnaires were administrated in late April in all three regions (at the same time) and was targeted to students in grade 7 and grade 9 (who generally were 13/14 and 15/16 years old at the time of the study).

The regions were chosen as to include adolescents of three distinctly different geographical areas in Sweden, while still being of equal population size. The response rate was 89.1%, which gives a sample of 15,613 adolescents. The response rate is based on individual dropouts from the survey, implying that non-participation of entire classes is not included. Hence, the response rate recorded slightly overestimates the true response rate. Excluding respondents with missing data on some of the variables used in the analysis we have a final dataset of 13,070 adolescents. Analyzing surveys with missing data on some the variables show that there was no correlation between missing data on drug-use and alcohol-use, or between missing data on drug-use and immigrant status. The data collection was done using a self-administrated survey that the student answered anonymously in the classroom. Participation was voluntary and data collection was carried out in accordance with research-ethics principles in social science research as stipulated by the Swedish Research Council.

2.2 Outcome and explanatory variables

The outcome variables used in the empirical analysis are *Drink*, *Frequent Drinking*, and *Drugs*. *Drink* is a binary variable equal to one if the adolescent has used alcohol during the current school year (2004/05). *Frequent Drinking* is a binary variable indicating if the adolescent has been significantly drunk at least 2/month or more. *Drugs* is a binary variable indicating if the adolescent has used illicit-drugs. The adolescents are also asked to indicate which illicit drug, but here we combine all illicit drugs into one variable since almost all reporting illicit drug-use refer to cannabis (hashish or marijuana).

Explanatory variables include whether the adolescent is "Swedish", here defined as born in Sweden with Swedish-born parents. This will be the reference group used as

baseline in the empirical analysis. This includes 78 % of the sample. 1st generation (immigrant) is defined as being born outside of Sweden with parents also born outside of Sweden. 2nd generation (immigrant) is defined as being born in Sweden with at least one parent being born outside of Sweden. This makes up 8 % and 14 % of the sample, respectively. Within first- and second-generation immigrants adolescents are divided into immigrants from Nordic countries, non-Nordic European countries and non-European countries. Table 1 summarizes the data.

[Insert Table 1 here]

If the mother smokes, father smokes and if the adolescents have divorced parents or lives in an apartment is included both as (potential) behavioral influences and as potentially crude proxies for socioeconomic status. For example, smokers are more likely to have a low level of education; this gradient is especially large among women (11, 12). Two variables capturing if the mother and father are not working are also included in some of the analyses (sick-leave, unemployed or in an educational program).

2.3 Statistical approach

Since the data used in this paper is of hierarchical structure, modeling this at the individual level violates the assumption of independent observations in a standard regression framework, as observations within schools and municipalities will be correlated. Failure to account for this will e.g. bias the standard errors. The data used in the paper was sampled by choosing 24 municipalities and then the schools in these municipalities (141 schools), and then students in these schools (13,070 students). To

account for this data structure, a three-level logistic model is estimated, with the individuals being level 1, schools being level 2, and municipalities being level 3. The model can generally be described as follows (13):

$$\text{logit}\left\{\Pr\left(Y_{ijk}=1\middle|\mathbf{x}_{ijk},\varsigma_{jk}^{(2)},\varsigma_k^{(3)}\right)\right\}=\beta_1+\beta_2 x_{2ijk}+...+\beta_{11}x_{11,k}+\varsigma_{jk}^{(2)}+\varsigma_k^{(3)} \tag{1}$$
$$=\left(\beta_1+\varsigma_{jk}^{(2)}+\varsigma_k^{(3)}\right)+\beta_2 x_{2ijk}+...+\beta_{11}x_{11,k},$$

where Y_{ijk} is the outcome variable for individual i in school j and municipality k. In equation (1) $\mathbf{x}_{ijk}$ is a vector containing all covariates at the individual level. The random intercept varying over schools is $\varsigma_{jk}^{(2)}$, and $\varsigma_k^{(3)}$ is a random intercept varying over municipalities. The random effects are assumed to be independent. Hence, the model allows the intercept to vary randomly across schools and municipalities in which individual observations are nested. The random intercept $\varsigma_{jk}^{(2)}$ can be seen as representing effects of omitted characteristics of the school or unobserved heterogeneity, while $\varsigma_k^{(3)}$ represents omitted effects of the municipality or unobserved heterogeneity. As an example, a particular school may have certain environmental characteristics that causally lower alcohol-use among adolescents, which would then be captured by the random effects.

3. RESULTS

3.1 Descriptive Statistics

Table 2 below shows descriptive statistics for the three different outcome variables used in the analysis; *Drink*, *Frequent Drinking* and *Drugs* tabulated for girls and boys and by Swedish, 1st generation and 2nd generation.

[Insert Table 2 here]

Regarding the *Drink*-variable we see that in most groups the girls have used alcohol to a larger extent compared to the boys, except among non-European immigrants, where the opposite is true. First generation immigrants have the lowest alcohol-use, even though Nordic immigrants are an exception, with a higher alcohol-use. Second generation immigrants have a similar pattern as the majority population, even though Nordic immigrants have a higher and non-European immigrants have a lower alcohol-use compared to the majority population. Regarding *Frequent Drinking*, first- and second-generation immigrants have a higher use compared to the majority population. Also, all immigrant groups have a higher *Drug-use* compared to the majority population. First generation Nordic immigrants and non-European immigrants (boys) stand out by having approx. four to five times higher prevalence of drug-use compared to the majority population. Second generation immigrants have a lower share of drug-use, but still higher compared to the majority population.

3.2 Regression Analyses

Table 3 below contains results from six different multi-level models; two models for each outcome variable. The first model for each outcome does not include other covariates apart from immigrant status, sex and school year. The second model also includes other background variables at the individual level.

The results for *Drink* (Model 1 and Model 2) indicate that 1st generation immigrants from non-European countries have a lower likelihood of using alcohol during

the school year (OR: 0.52-0.56) compared to the majority population. This also holds for 2nd generation immigrants from non-European countries, but the difference is lower in magnitude (OR: 0.74-0.81). Perhaps somewhat surprisingly girls are more likely to have used alcohol (OR: 1.13-1.19) and as expected there is a very large impact of students in grade nine (odds-ratio 5.84), i.e. alcohol use increases dramatically between grade 7 and grade 9 (ages 13/14 and 15/16). The difference in OR between Model 1 and Model 2, including other individual covariates, is minor, even though odds ratios tend to mover closer to unity.

[Insert Table 3 here]

The results for frequent drinking (Model 3 and 4) indicate that among 1st generation immigrants there are no statistically significant differences in likelihood of frequent intoxication compared to the majority population. Among 2nd generation immigrants from Nordic countries have a higher likelihood of frequent intoxication (OR: 1.63-1.86). Girls have a lower likelihood of frequent intoxication, as opposed to their higher likelihood of any use of alcohol during the current school year.

Regarding drug-use (Model 5 and 6) the lowest likelihood of drug-use can be found in the Swedish majority population. The highest likelihood of drug-use compared to the majority population can be seen for 1st generation immigrants from the Nordic countries (OR: 3.15-4.17). The results also indicates that non-European immigrants have the second highest relative likelihood of drug-use compared to the majority population, and among immigrant groups non-Nordic European immigrants have the lowest

likelihood of drug-use (but still higher compared to the majority population). Generally, the difference between the Swedish majority population and 2nd generation immigrants is smaller compared to the difference between the Swedes and 1st generation immigrants.

Regarding other covariates, a smoking father and smoking mother increase the likelihood of alcohol- and drug-use. The same result holds for adolescents with divorced parents. Regarding the random effects, the intra-class correlation coefficient (ICC) is a measure that shows the proportion of variance that is explained to between group-differences (13). Based on Model 1, 3 and 5 the ICC for the municipalities are 0.06, 0.08 and 0.06 for *Drink*, *Frequent Drinking* and *Drugs*, respectively. The ICC for the schools and municipalities, i.e. relatedness of students in the same school and municipality, are 0.16, 0.18 and 0.16, respectively. It will always be the case in a three-level model that ICC is higher for students in the same school and municipality, compared to students in the same municipality.

Finally in this section, Table 4 shows the multilevel estimation estimated for boys and girls separately.

[Insert Table 4 here]

Table 4 clearly shows that the main differences among the Swedish majority population and immigrants from non-European countries exist among girls. Especially girls from non-European countries have a lower likelihood of alcohol-use and frequent intoxication, both among 1st and 2nd generation immigrants. The same holds for boys from non-European immigrants, but only among 1st generation.

Regarding drug-use girls that are 1st generation immigrants from Nordic countries stand out as the highest risk group (OR: 4.13), with boys from non-European countries also having a high risk (OR: 3.79). For *Drugs*, all 1st and 2nd generation immigrants (including girls), have a higher likelihood of use compared to the Swedish majority population, although not all differences are statistically significant using standard rules of thumb.

4. DISCUSSION

Using survey data on adolescent alcohol- and illicit drug-use in Sweden this paper shows that there are significant differences in alcohol- and drug-use across different immigrant groups. Generally, the largest differences can be seen between the majority population and 1st generation immigrants. Second generation immigrants tend to be more similar compared to the majority population. Immigrants from non-European countries have a lower likelihood of alcohol-use during the school-year. This relationship is especially strong among girls, for both 1st and 2nd generation immigrants. Regarding frequent intoxication girls from non-European countries have a lower prevalence as well. Second generation immigrants from Nordic countries tend to have a higher likelihood of frequent intoxication (both boys and girls). The most consistent pattern was seen for drug-use, where all immigrant groups have a higher likelihood of use compared to the majority population. Especially high relative likelihood was seen for (i) 1st generation girls from Nordic countries, (ii) 1st generation boys from non-European countries, and (iii) 1st generation boys from non-Nordic European countries. We do not know the specific home countries of the immigrants, but based on aggregate data of immigrants in these regions in 2005 (ages 13-16) in Sweden we know which countries are most common in respective

category (2). Nordic immigrants are from Denmark, Norway and Finland, while non-Nordic European immigrants are mainly from Bosnia & Herzegovina, Serbia, Montenegro, Poland and Turkey. Finally, most non-European adolescent immigrants in the three regions come from Iraq, Iran, Lebanon and Thailand

The qualitative interpretations of the findings are similar to previous Swedish papers using hospital-data to examine the impact of immigrant status on alcohol- and illicit drug-use, even though the differences are smaller in this paper (8-10).

The question that follows based on the results is what the relevant pathways are that links immigrant status to alcohol- and drug-use. The different patterns of alcohol- and drug-use among the ethnic groups may be explained by e.g. different socio-economic conditions in the groups or by different attitudes and norms regarding substance-use. For example, we know that there are large differences in substance use across countries with similar economic living conditions such as Western Europe (6, 14, 15). A quite reasonable hypothesis is that the low prevalence of alcohol-use and frequent intoxication among non-European immigrants found in this paper (mostly from Muslim countries) can partly be explained by religious norms and attitudes to alcohol. Unfortunately, the data available in this paper does not give the opportunity to discriminate further between socio-economic explanations vis-à-vis attitudes and norms to substance-use.

A further very consistent finding in the paper was that having a smoking mother, smoking father and divorced parents were all significantly associated with a higher likelihood of alcohol-use, frequent intoxication and drug-use. The results are in accordance with many previous studies indicating more risk-taking behavior in general among adolescents of divorced parents and with smoking parents (16-18). Given that the

data is of cross-section type (and e.g. suitable instrument for estimating causal effects using instrumental variable regressions is not available) these associations cannot be interpreted as causal effects. For example, it is likely that parental smoking and divorced parents to some extent captures socio-economic status and hence the causal effect may really be between socio-economic status and alcohol- and drug-use. But, this does of course not limit the fact that adolescents with these characteristics are a high-risk group due to their health behavior regarding alcohol- and drug-use and therefore relevant from a prevention perspective.

Finally a cautionary note about using self-reported data on alcohol. In general population studies it has been shown that respondents tend to understate alcohol consumption (19). As discussed by Lundborg (20) and earlier in Olsson (21) this is not necessarily true for adolescents who might instead overstate alcohol use to boost to their peers. By administrating the survey anonymously and not allowing the adolescents to communicate during answering the survey this bias should be minimized. Data from the US has indicated consistency both within a survey and over time for self-reported data from adolescents (22).

5. CONCLUSION

The results on drinking and frequent intoxication among different immigrant groups show that Nordic immigrants, especially 2nd generation, should be a main target for alcohol prevention policy among Swedish adolescents. The results on drug-use also indicate that Nordic immigrants should be a main target for preventive work. Among immigrants from Non-European countries alcohol-use is not a main worry of concern, but they should be a main target for preventive drug-use policy, where their consumption is

significantly higher compared to the majority population. First generation immigrants from non-Nordic European countries also have significantly higher use of illicit-drugs.

REFERENCES

1.   SCB. Statistisk Årsbok (Statistical Yearbook of Sweden). 2005.

2.   SCB. SCB statistikdatabaser: Arbetsmarknad, Befolkning, Utbildning och forskning. 2006.

3.   Finn P. Addressing the needs of cultural minorities in drug treatment. Journal of Substance Abuse Treatment 1994;11:325-37.

4.   Heath D. International Handbook on Alcohol and Culture. Westport, CT: Greenwood Press, 1995.

5.   Gual A, Colom J. Why has alcohol consumption declined in countries of southern Europe? Addiction 1997;92:21-31.

6.   ESPAD. European School Survey on Alcohol and other Drugs http://wwwespadorg/ 2008.

7.   CAN. Drogutvecklingen i Sverige 2008. CAN Rapport 113, Stockholm 2008.

8.   Leao TS, Johansson L-M, Sundquist K. Hospitalization due to Alcohol and Drug Abuse in First- and Second-Generation Immigrants: A Follow-Up Study in Sweden. Substance Use & Misuse 2006;41:283-96.

9.   Hjern A, Allebeck P. Alcohol-related disorders in first- and second-generation immigrants in Sweden: a national cohort-study. Addiction 2004;99:229-36.

10.   Hjern A. Illicit drug abuse in second-generation immigrants: a register study in national cohorts of Swedish residents. Scandinavian Journal of Public Health 2004;32:40-6.

11.   Cavelaars AE, Kunst AE, Geurts JJ, et al. Educational differences in smoking: international comparison. British Medical Journal 2000;Apr 22;320:1102-7.

12.   Giskes K, Kunst AE, Benach J, et al. Trends in smoking behaviour between 1985 and 2000 in nine European countries by education Journal of Epidemiology and Community Health 2005;59:395-401.

13.   Rabe-Hesketh S, Skrondal A. Multilevel and Longitudinal Modeling Using Stata (Second Edition). College Station, Texas: Stata Press, 2008.

14.   OECD. OECD Health Data 2006. 2006.

15.   WHO. Global Information System on Alcohol and Health 2008.

16. Keyes M, Legrand L, Iacono W, McGue M. Parental Smoking and Adolescent Problem Behavior: An Adoption Study of General and Specific Effects. American Journal of Psychiatry 2008;165:1338-44.

17. Jablonska B, Lindberg L. Risk behaviours, victimisation and mental distress among adolescents in different family structures. Social Psychiatry and Psychiatric Epidemiology 2007;42:656-63.

18. Kristjansson AL, Sigfusdottir ID, Allegrante JP, Helgason AR. Parental divorce and adolescent cigarette smoking and alcohol use: assessing the importance of family conflict. Acta Pædiatrica 2008;98:537-42.

19. Cook P, Moore M. Alcohol. In: Culyer A, Newhouse J, eds. Handbook of Health Economics vol 1b. Amsterdam: Elsevier Science, 2000:1629-73.

20. Lundborg P. Young people and alcohol: an econometric analysis. Addiction 2002;97:1573-82.

21. Olsson O. Tillförlitligheten i undersökningar av skolelevers och värnpliktigas drogvanor. Stockholm: CAN (Swedish Council for Information on Alcohol and other drugs) 1992.

22. O'Donnel SA. Inconsistencies over time in young adolescents' self-reports of substance use and sexual intercourse. Substance Use and Misuse 2000;35:1015-34.

TABLES

Table I. *Outcome and explanatory variables*

	Mean	Std. dev.
Outcome variables		
Drink (=1 if used alcohol)	0.329	0.470
Frequent drinking (=1 if significantly drunk 2/month or more)	0.086	0.281
Drugs (=1 if used illicit drugs)	0.056	0.231
Explanatory variables		
Swedish	0.786	0.410
1st Generation	0.077	0.267
Nordic	0.007	0.084
Europe (non-nordic)	0.033	0.180
non-European	0.037	0.189
2nd Generation	0.138	0.345
Nordic	0.046	0.209
Europe (non-nordic)	0.047	0.212
non-European	0.051	0.219
Girl (=1 if yes)	0.496	0.500
School year 7 (=1 if yes)	0.511	0.500
School year 9 (=1 if yes)	0.489	0.500
Non-working mother	0.208	0.406
Non-working father	0.106	0.308
Mother smokes (=1 if yes)	0.256	0.436
Father smokes (=1 if yes)	0.224	0.417
Divorced parents (=1 if yes)	0.316	0.465
Living in apartment (=1 if yes)	0.234	0.424

Notes: Number of observations is 13,070

Table II. *Share of alcohol- and drug-use in sub-groups*

	Drink		Frequent drinking		Drug-use	
	Boys	Girls	Boys	Girls	Boys	Girls
Swedish	31.8 %	34.9 %	8.6 %	8.3 %	4.4 %	4.4 %
1st Generation	26.7 %	28.7 %	10.0 %	6.9 %	17.3 %	8.5 %
Nordic	37.2 %	42.6 %	14.0 %	11.1 %	14.3 %	17.0 %
Europe (non-Nordic)	28.8 %	31.6 %	8.7 %	5.2 %	15.6 %	5.7 %
non-European	23.0 %	23.0 %	10.5 %	7.5 %	19.3 %	9.3 %
2nd Generation	31.9 %	34.8 %	11.3 %	8.0 %	10.0 %	7.7 %
Nordic	33.6 %	43.8 %	15.3 %	12.8 %	8.2 %	8.1 %
Europe (non-Nordic)	32.5 %	35.4 %	10.0 %	6.1 %	10.0 %	8.0 %
non-European	30.1 %	26.2 %	9.1 %	4.9 %	12.4 %	7.3 %

Table III. Results from multilevel mixed-logit estimation, Odds ratios (95% CI)

	Drink		Frequent drinking		Drugs	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Swedish	1	1	1	1	1	1
1st generation						
Nordic	1.31	1.10	1.41	1.07	4.17***	3.15***
	(0.82-2.09)	(0.67-1.82)	(0.75-2.66)	(0.53-2.15)	(2.31-7.52)	(1.62-6.12)
Europe (non-Nordic)	0.88	0.90	0.74	0.73	2.03***	2.02***
	(0.70-1.11)	(0.70-1.17)	(0.50-1.09)	(0.49-1.09)	(1.44-2.86)	(1.41-2.91)
non-European	0.56***	0.52***	1.04	0.90	3.13***	2.92***
	(0.44-0.71)	(0.40-0.68)	(0.74-1.44)	(0.62-1.30)	(2.33-4.19)	(2.10-4.07)
2nd generation						
Nordic	1.37***	1.22*	1.86***	1.63***	1.88***	1.67***
	(1.14-1.65)	(1.01-1.48)	(1.45-2.37)	(1.25-2.12)	(1.38-2.56)	(1.21-2.32)
Europe (non-Nordic)	1.02	0.92	0.82	0.75	1.41*	1.31
	(0.84-1.24)	(0.75-1.13)	(0.60-1.12)	(0.54-1.04)	(1.03-1.92)	(0.94-1.82)
non-European	0.81*	0.74**	0.77	0.68*	1.75***	1.56**
	(0.77-0.99)	(0.60-0.91)	(0.56-1.06)	(0.49-0.96)	(1.31-2.34)	(1.14-2.14)
Girl	1.19***	1.13**	0.88*	0.84**	0.82**	0.76***
	(1.10-1.29)	(1.04-1.23)	(0.78-0.99)	(0.74-0.96)	(0.71-0.96)	(0.65-0.89)
School year 9	5.84***	6.25***	4.08***	4.09***	3.00***	2.99***
	(5.29-6.43)	(5.64-6.93)	(3.54-4.87)	(3.47-4.82)	(2.52-3.58)	(2.49-3.59)
Non-working mother	-	0.96	-	1.11	-	1.01
		(0.86-1.07)		(0.94-1.30)		(0.83-1.22)
Non-working father	-	0.96	-	1.16	-	1.15
		(0.84-1.11)		(0.95-1.42)		(0.92-1.44)
Mother smokes	-	1.94***	-	1.78***	-	1.70***
		(1.76-2.14)		(1.54-2.05)		(1.43-2.03)
Father smokes	-	1.43***	-	1.45***	-	1.49***
		(1.29-1.59)		(1.24-1.68)		(1.25-1.78)
Divorced parents	-	1.78***	-	1.62***	-	2.00***
		(1.62-1.96)		(1.41-1.86)		(1.69-2.36)
Living in apartment	-	0.89	-	0.93	-	1.11
		(0.79-1.01)		(0.78-1.11)		(0.90-1.36)
School rand. eff.	0.39	0.39	0.39	0.39	0.39	0.37
	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.07)
Municipality rand. eff.	0.24	0.23	0.31	0.28	0.25	0.23
	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)	(0.07)
N	13,070	13,070	13,070	13,070	12,914	12,914

Notes: ***$p<0.001$, **$p<0.01$, *$p<0.05$. Random regional- and school effects give the s.d.

Table IV. Odds-ratios for boys and girls separately (95% CI)

	Drink		Frequent drinking		Drugs	
	Boys	*Girls*	*Boys*	*Girls*	*Boys*	*Girls*
Swedish	1	1	1	1	1	1
1st generation						
Nordic	1.13	1.05	1.04	1.14	2.20	4.13***
	(0.53-2.43)	(0.54-2.05)	(0.34-3.13)	(0.46-2.83)	(0.72-6.76)	(1.79-9.52)
Europe (non-Nordic)	0.77	0.97	0.79	0.60	2.67***	1.22
	(0.54-1.11)	(1.67-1.39)	(0.47-1.34)	(0.32-1.14)	(1.69-4.21)	(0.63-2.35)
non-European	0.54***	0.49***	1.05	0.74	3.79***	2.04**
	(0.37-0.77)	(0.33-0.71)	(0.64-1.72)	(0.42-1.31)	(2.47-5.80)	(1.18-3.52)
2nd generation						
Nordic	1.09	1.33*	1.84***	1.46*	1.57	1.76***
	(0.81-1.46)	(1.02-1.74)	(1.27-2.67)	(1.01-2.12)	(0.97-2.55)	(1.13-2.74)
Europe (non-Nordic)	0.83	0.99	0.90	0.59*	1.14	1.65*
	(0.61-1.12)	(0.74-1.32)	(0.58-1.39)	(0.36-0.98)	(0.72-1.82)	(1.03-2.65)
non-European	0.96	0.54***	0.99	0.41***	1.93***	1.26
	(0.72-1.28)	(0.40-0.74)	(0.64-1.53)	(0.23-0.73)	(1.29-2.89)	(0.76-2.08)
School year 9	6.27***	6.60***	4.54***	3.70***	2.91***	3.18***
	(5.45-7.22)	(5.72-7.63)	(3.62-5.66)	(2.94-4.67)	(2.28-3.71)	(2.41-4.18)
Non-working mother	1.00	0.90	1.16	1.07	1.13	0.88
	(0.86-1.16)	(0.77-1.05)	(0.93-1.44)	(0.84-1.35)	(0.88-1.47)	(0.66-1.18)
Non-working father	1.17	0.80*	1.32*	1.01	1.13	1.22
	(0.96-1.43)	(0.65-0.97)	(1.01-1.74)	(0.75-1.36)	(0.83-1.54)	(0.87-1.69)
Mother smokes	2.00***	1.92***	1.83***	1.73***	1.40***	2.06***
	(1.74-2.31)	(1.67-2.21)	(1.50-2.23)	(1.40-2.12)	(1.10-1.79)	(1.60-2.65)
Father smokes	1.39***	1.49***	1.53***	1.37***	1.58***	1.47***
	(1.19-1.61)	(1.28-1.73)	(1.24-1.89)	(1.10-1.70)	(1.23-2.02)	(1.13-1.90)
Divorced parents	1.71***	1.85***	1.39***	1.91***	2.02***	1.97***
	(1.49-1.96)	(1.62-2.12)	(1.14-1.69)	(1.55-2.34)	(1.60-2.54)	(1.53-2.54)
Living in apartment	0.81*	0.96	0.81	1.01	1.14	1.11
	(0.68-0.96)	(0.81-1.15)	(0.63-1.05)	(0.78-1.30)	(0.86-1.50)	(0.81-1.50)
School rand. eff.	0.38	0.45	0.41	0.46	0.40	0.46
(std.err.)	(0.06)	(0.05)	(0.08)	(0.08)	(0.10)	(0.10)
Municipality rand. eff.	0.15	0.29	0.29	0.28	0.32	0.13
(std.err.)	(0.10)	(0.09)	(0.10)	(0.10)	(0.10)	(0.12))
N	6,607	6,463	6,607	6,463	6,507	6,407

Notes: ***p<0.001, **p<0.01, *p<0.05. Random regional- and school effects give the s.d.