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Alcohol use and social interactions among adolescents in Sweden: Do peer effects exist within and/or between the majority population and immigrants?

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ABSTRACT

Are adolescents who attend schools with a high level of alcohol use and binge drinking more likely to use alcohol and binge drink themselves? This paper analyzes peer effects in adolescent drinking based on a survey of 13,070 adolescents conducted in Sweden in 2005. The empirical analysis uses a multi-level logistic model to account for non-observable heterogeneity between the schools and the results show that attending a school with a high level of alcohol use and frequent binge drinking is a strong predictor of alcohol use and binge drinking for the individual. Hardly any significant interaction effects are detected, implying that peer influence is similar across different adolescent sub-groups. Looking at adolescents with different ethnic backgrounds, it is found that the drinking-pattern of the Swedish majority population has a significant effect on drinking by Swedish individuals and immigrants from Nordic and European countries, but no effect on drinking by immigrants from non-European countries.
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Introduction

A large body of research by social scientists shows that the behavior of peers is an important predictor of adolescent behavior, often referred to as peer effects, (Becker, 1996; Coleman, 1990; Crane, 1991) and/or a contagion model (Monshouwer et al., 2007; Wilcox, 2003). Regarding alcohol use, this implies that the probability of an adolescent drinking alcohol is positively associated with the prevalence of alcohol use among peers (Clark & Lohéac, 2007; Gaviria & Raphael, 2001; Lundborg, 2006; Norton, Lindrooth, & Ennet, 1998). Further, it has been argued that peer effects are more important among adolescents compared to the adult population, i.e., adolescents pay more attention to the behavior of their peers (Lewitt, Coate, & Grossman, 1981), which has several interesting potential welfare implications. For example, Becker (1992) showed that peer effects (and addiction) would increase the absolute value of price elasticity, which implies a higher sensitivity to price changes. Further, peer effects may serve to amplify the effects of interventions to reduce alcohol use (Lundborg, 2006, p. 215). A particular intervention that reduces alcohol use for a specific adolescent may also reduce alcohol use among the peers of the adolescent, implying a further reduction in alcohol use (social multiplier).

There are many different arguments for why peer behavior is an important influence on individual behavior; Rice and Sutton (1998) highlight three: (1) pay-off interactions, (2) social norms, and (3) limited information. Pay-off interactions (Hirshleifer, 1995) refer to the direct impact that a consumption decision by one member of the reference group has on others making the same decision, i.e., getting drunk is more fun if a friend is drunk at the same time. Social norms refer to the fact that the individual does not wish to deviate from the average behavior of the reference group, perhaps due to fear of social sanctions. Limited information concerns the fact that individuals may look at behavior among individuals in the reference group to guide them on the costs and benefits of different activities. A 15-year old without experience of alcohol may observe that his peers seem to have a good time and enjoy themselves when they are drunk. This may imply that the 15-year old updates his/her beliefs about the benefits of alcohol use.

This paper uses a large Swedish dataset on adolescents' alcohol use to analyze the possible existence of peer effects on alcohol use and possible interaction effects in peer effects, and to extend the literature on whether, and if so in what manner, peer effects work in the same way across adolescents among different immigrant groups and the majority population. The main research questions in the paper are:

(1) Are adolescents who attend a school with a high share of peers who use alcohol more likely to use alcohol themselves?
(2) Is the influence of peer behavior equally strong among girls/boys, Swedish majority population adolescents, immigrant adolescents and adolescents who live with a single parent? It has been suggested, for example by Steinberg (1987), that peers

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become more important for adolescents with weaker family ties, which for example may be the case for adolescents living with a single parent.

(3) Are Swedish students affected similarly by Swedish and non-Swedish peers' alcohol use? Are non-Swedish students (from Nordic, European and non-European countries) affected similarly by Swedish and non-Swedish peers' alcohol use?

As for research question (1), Lundborg (2006) recently showed strong peer effects on binge drinking among Swedish adolescents in a medium-sized city on the south coast of Sweden (Trelleborg). Apropos interaction terms, i.e, research question (2), he found that girls were less affected by peer behavior with regards to binge drinking. This paper uses more representative data from three Swedish regions with different geographic and socioeconomic characteristics and the focus is on both alcohol use and binge drinking. Further, research question (3) is motivated by the fact that Sweden has evolved over the last 30 years from an ethnically homogenous society into a multicultural society. The proportion of first and second generation immigrants living in Sweden is approx. 16 percent of the Swedish population (SCB, 2005), making Sweden one of the European countries with the largest proportion of foreign-born in the population (SCB, 2006). Immigration and immigrants may of course imply altering social norms in alcohol use if these immigrant groups differ in their attitudes and norms with respect to alcohol use. During the last 20–30 years, for example, many western countries have had a large immigration inflow from Muslim countries, where alcohol use is very low or non-existent (WHO, 2008). A study on adolescents in Norway has shown that a larger share of Muslim immigrants in a school is associated with a lower alcohol use among the ethnic Norwegian adolescents in the same school (Amundsen, Rossow, & Skurtveit, 2005). A somewhat different result was found in the Netherlands, where a larger share of immigrant adolescents in a school only decreased the alcohol use among other immigrant adolescents, but not among the ethnic Dutch adolescents (Monshouwer et al., 2007).

The rest of the paper is structured as follows. Section two describes the data used and shows some summary statistics of the outcome and explanatory variables. The third section discusses the empirical problems and the statistical model used in this paper. Section four shows the results, while the last section concludes the paper with a discussion.

Data

The survey

The analysis is based on data collected in the late spring of 2005 from adolescents in all the "junior high schools" (compulsory school grade 7–9) of 24 municipalities in 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 regions were chosen so as to include the adolescents of three distinctly different geographical areas of equal population size. The questionnaire for regions (i) and (ii) was named "Ung 2005" ("Young 2005") while in region (iii) it was titled "Ung i Värmland" ("Young in Värmland"). Although not identical, many of the questions in the two questionnaires were the same. The questionnaires were administrated in late April in all three regions and were targeted at students in grade 7 and grade 9 (generally 13–14 and 15–16 years old, respectively). The data collection was carried out using a self-administrated questionnaire that the students answered anonymously in the classroom. Participation was voluntary and data collection was approved by an ethics committee carried out in accordance with the research-ethics principles in social science research as stipulated by the Swedish Research Council.

The response rate of 89.1%, which gives a sample of 15,613 adolescents, is based on individual dropouts from the survey, implying that non-participation of entire classes is not included. Hence, also including attrition due to other reasons would imply a lower participation rate. Excluding respondents with missing data on some of the variables used in the analysis, the final dataset consists of 13,070 adolescents.

Dependent and independent variables

Table 1 below shows the dependent as well as the independent variables used in the analysis. Two outcome variables are used in the paper: (1) *Alcohol use*, which is a binary variable equal to one if the adolescent has used alcohol during the current school year (2004/05), and (2) *Frequent Binge Drinking*, which is a binary variable equal to one if the adolescent drank a large amount of alcohol at least once a month or more during the school year (2004/05). This is defined in the survey as equal to or more than 17.5 cL of strong liquor (1/4 of a full-sized bottle or 1/2 of a half-sized bottle), or one bottle of wine, or four large bottles (50 cL) of full-strength cider, or four large bottles of full-strength beer, or six large bottles of medium-strength beer at any one time.

Table 1
Summary statistics.

	Description	Mean	S.D.
Outcome variables			
Alcohol use	=1 if respondent has used alcohol	0.33	0.47
Frequent binge drinking	=1 if significantly drunk once a month or more	0.17	0.38
Explanatory variables			
Swedish	=1 if born Swedish & Swedish parents	0.78	0.41
1st generation	=1 if born outside Sweden	0.08	0.27
Nordic	In a Nordic country	0.01	0.08
Europe (non-Nordic)	In an European (non-Nordic) country	0.03	0.18
Non-European	In a non-European country	0.04	0.19
2nd generation	=1 born in Sweden & non-Swedish parents	0.14	0.34
Nordic	Parents from a Nordic country	0.04	0.21
Europe (non-Nordic)	Parents from an European (non-Nordic) country	0.05	0.21
Non-European	Parents from a non-European country	0.05	0.22
Girl	=1 if girl	0.50	0.50
School year 7	=1 if attending 7th grade when surveyed	0.51	0.50
School year 9	=1 if attending 9th grade when surveyed	0.49	0.50
Non-working mother	=1 if mother is non-working (sick leave, unemployed etc.)	0.21	0.41
Non-working father	=1 if father is non-working (sick leave, unemployed etc.)	0.11	0.31
Mother smokes	=1 if mother is a smoker	0.26	0.44
Father smokes	=1 if father is a smoker	0.22	0.42
Single parent	=1 if living with a single parent	0.32	0.47
Living in apartment	=1 if lives in rental apartment	0.23	0.42
Peer alcohol use	Proportion of students in the school that have used alcohol	0.33	0.13
Peer binge drinking	Proportion of students in the school that are frequent binge drinkers	0.17	0.09

Notes: Numbers of observations are 13,070. S.D. is the standard deviation.

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