



Alcohol drinking among adolescents with native-Swedish and non-European immigrant background: the importance of parental attitudes and peer attitudes for acculturation

Björn Johnson & Robert Svensson

To cite this article: Björn Johnson & Robert Svensson (2020): Alcohol drinking among adolescents with native-Swedish and non-European immigrant background: the importance of parental attitudes and peer attitudes for acculturation, *Drugs: Education, Prevention and Policy*, DOI: [10.1080/09687637.2020.1822293](https://doi.org/10.1080/09687637.2020.1822293)

To link to this article: <https://doi.org/10.1080/09687637.2020.1822293>



© 2020 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 16 Sep 2020.



Submit your article to this journal [↗](#)



Article views: 489





View related articles [↗](#)



View Crossmark data [↗](#)

Alcohol drinking among adolescents with native-Swedish and non-European immigrant background: the importance of parental attitudes and peer attitudes for acculturation

Björn Johnson^a  and Robert Svensson^b 

^aDepartment of Social Work, Malmö University, Malmö, Sweden; ^bDepartment of Criminology, Malmö University, Malmö, Sweden

ABSTRACT

In this study, we examine differences in alcohol drinking between first- and second-generation non-European immigrant and native-Swedish adolescents. We also examine whether parental and peer attitudes toward alcohol are associated with the acculturation of drinking habits among adolescents with an immigrant background. The study is cross-sectional and based on a school survey conducted in 2016–2019 in eight municipalities in southern Sweden. The sample consists of 3743 adolescents in year 9 of compulsory education, aged 14–15 years, of which 538 (14.4%) had a non-European immigrant background. Non-European immigrant adolescents reported significantly lower levels of drinking than native-Swedish adolescents. Second-generation immigrants reported a higher level of consumption than first-generation immigrants, and among first-generation adolescents, drinking was more prevalent the longer the adolescents had resided in Sweden, which suggests acculturation of drinking habits. This acculturation is mainly related to changes in peer attitudes toward alcohol. Immigrant adolescents with a longer stay in Sweden reported having friends with more positive attitudes toward alcohol. Among first-generation immigrants, drinking was more common among boys than girls. These differences were primarily found among immigrant adolescents with a relatively short period of residence in Sweden, which suggests that acculturation occurs more quickly among boys than among girls.

ARTICLE HISTORY

Received 3 March 2020
Revised 1 September 2020
Accepted 8 September 2020

KEYWORDS

Alcohol; adolescents; non-European immigrants; acculturation; peer attitudes; parental attitudes

Introduction

Alcohol use in adolescents is a risk behavior associated with a number of negative consequences, including risk for accidents, health-related problems, criminality, and other forms of deviant behavior (Babor et al., 2010; Emmers et al., 2015; Room et al., 2005; Viner, 2005; Viner & Taylor, 2007). The risk of developing dependency problems later in life is greater for people with an early debut in alcohol use (Emmers et al., 2015; McCambridge et al., 2011). It is therefore important to prevent alcohol use among adolescents (Emmers et al., 2015; Foxcroft & Tsertsvadze, 2012). To this end, knowledge is required on how alcohol use varies among different groups of adolescents and how these variations may be explained. In this article, we compare drinking habits among adolescents of non-European immigrant backgrounds with those of adolescents of Swedish background. Our focus is directed at acculturation – how adolescents of immigrant background acquire the drinking-related values and habits that are found among native Swedish adolescents – and the significance of parental and peer attitudes for these phenomena.

Cross-cultural variations in drinking behaviors

There are substantial differences in social norms and values regarding alcohol between different countries and cultural

spheres, which are reflected in major differences in alcohol use. Communities are often characterized by ‘collective drinking cultures’ (Skog, 1985), that is, shared social and cultural norms that influence different consumption groups in a similar way.

‘Drinking culture’ has no established definition but has been conceptualized in various ways in the social science literature. The term usually refers to ‘norms around patterns, practices, use-values, settings, and occasions in relation to alcohol and alcohol problems’ (Savic et al., 2016, p. 280), norms that operate at different levels in a society or in sub-groups of society. Perceived in this broad way, drinking cultures affect, among other things, who drink, when, where and how they drink, how much they drink, why they drink, and how they act in connection with drinking (Savic et al., 2016).

Much of the research on drinking cultures has had a ‘macro-sociological’ focus, where cultural differences between countries, societies, or cultural spheres have been investigated (Savic et al., 2016). In that context, a distinction has often been drawn between ‘wet’ and ‘dry’ drinking cultures (Room, 2010), but this categorization has been criticized for being too simple. Room and Mäkelä (2000) have proposed categorizing drinking cultures based on two dimensions, regularity of drinking and extent of drunkenness. Based on

these two dimensions there are major differences between different European countries – levels of acceptance for drunkenness are higher in Nordic and Anglo-Saxon countries, whereas the regularity of drinking is higher in Southern European countries. People from African and Asian countries tend to drink in smaller numbers, less often, and to drink smaller quantities than Europeans and North Americans. This is the case for both adults and adolescents (WHO, 2018). Alcohol consumption is lowest in the Muslim countries of North Africa and South-West Asia, which is linked to the Koran's ban on alcohol (Abebe et al., 2015; Ghandour et al., 2009). In several of these countries, alcohol use is illegal for the Muslim population.

Adolescent drinking and migration

Differences in drinking norms and drinking behaviors between different ethnic groups in multicultural societies have aroused a relatively large research interest (Savic et al., 2016). Over recent decades, migration has resulted in greater ethnic and cultural diversity in many European countries. People who migrate are often influenced by the drinking cultures that characterize their countries of origin, and this also affects their attitudes toward drinking in their new countries. Studies from the UK, the Netherlands, Norway, Spain, Sweden, and several other European countries have shown that adolescents who have migrated from countries in Africa and Asia drink to a lesser extent than the native population (Abebe et al., 2015; Amundsen, 2012; Amundsen et al., 2005; Barsties et al., 2017; Creemers et al., 2017; Denscombe, 1995; Skogen et al., 2018; Sordo et al., 2015; Svensson, 2010; Svensson & Hagquist, 2010; van Tubergen & Poortman, 2010). This is particularly true for adolescents who have migrated from Muslim countries (Abebe et al., 2015; Amundsen, 2012; Amundsen et al., 2005; Skogen et al., 2018; Sordo et al., 2015; van Tubergen & Poortman, 2010). These adolescents and their families have been born and raised in 'abstinent societies' (Room & Mäkelä, 2000) with highly restrictive drinking cultures. Studies often report gender differences, with a higher prevalence and frequency of drinking among boys than girls. This gender gap tends to be larger among non-European immigrant adolescents compared with native adolescents (Amundsen, 2012; Amundsen et al., 2005; Svensson & Hagquist, 2010).

Acculturation over time and across generations

Although research has consistently reported differences in alcohol consumption and drunkenness between adolescents born in European countries and adolescents with a background in countries outside Europe, several studies have found that these differences tend to decrease over time. The longer the period since arrival in the receiving country, the more similar immigrant adolescents' alcohol habits become to those of native-born adolescents (Amundsen et al., 2005; Sordo et al., 2015). Similar patterns have also been found across immigrant generations. In a number of studies, second-generation immigrants – that is, adolescents born in

the receiving country to parents who have migrated from countries with a more restrictive drinking culture – have reported alcohol habits that are more similar to those of the native population (Amundsen et al., 2005; Svensson, 2010; Svensson & Hagquist, 2010). Differences in drinking between native adolescents and second-generation immigrants tend to be larger for girls than for boys (Amundsen et al., 2005; Svensson & Hagquist, 2010). A Dutch study that examined the associations between alcohol consumption and interethnic marriage found that adolescents with one parent who had been born abroad drank more than adolescents with two foreign-born parents (van Tubergen & Poortman, 2010). However, there are also studies that have not found any differences between immigrant generations (Abebe et al., 2015).

Changes in immigrants' drinking patterns over time and across generations have been explained by reference to acculturation (Amundsen et al., 2005; Hamilton et al., 2009; Sordo et al., 2015), a concept that refers to the way in which individuals' cultural patterns are influenced through direct contacts with individuals from other cultural groups (Ward & Geeraert, 2016). Acquiring the drinking-related values and habits that are found among peers in the new country may be an expression of integration (Svensson & Hagquist, 2010). In a study on drinking among two generations of non-Western immigrants in Oslo, Norway, Amundsen (2012) showed that high levels of cultural competence regarding the culture of the receiving country and high levels of social interaction with Norwegians were both associated with higher alcohol consumption. High levels of cultural competence in the culture of the country of origin were associated with lower levels of alcohol consumption.¹

Parental and peer mechanisms for acculturation

How acculturation occurs in relation to the drinking of immigrant adolescents has not been sufficiently studied. The existing research usually mentions the significance of parents and peers, but only a small number of studies have examined the role played by such factors.

At a more general level, parental values and behaviors are of major significance for adolescents' drinking behavior. Many studies have identified parental modeling behavior and parental approval as clear risk factors. At the same time, parental monitoring, limiting the supply of alcohol to adolescents, and several other restrictive parental strategies have been shown to lead to reductions in drinking among young people (Donovan, 2004; Ryan et al., 2010; Yap et al., 2017).

As was mentioned earlier, many adolescents of immigrant backgrounds have grown up in restrictive alcohol cultures, in which they have been socialized to refrain from drinking. Adolescents who act in breach of such norms may be reprimanded or punished by their parents, which may impede acculturation (van Tubergen & Poortman, 2010). On the other hand, adolescents often learn the language, norms, and values of their new society more quickly than their parents, which may undermine the authority of their parents. If this were to result in weakened parental responsibility, the

preventive significance of parents in relation to alcohol consumption may decline (Walsh et al., 2014).

Four European studies have examined the significance of parents in relation to drinking among adolescents of immigrant background. One Norwegian study indicated that low levels of parental monitoring appeared to have a greater impact on drinking among ethnic Norwegian adolescents than among adolescents of immigrant background (Amundsen et al., 2005). A subsequent Norwegian study examined the significance of social control and trust in the parent-adolescent relationship. Higher levels of both trust and social control were associated with lower levels of drinking, but these factors could not explain differences in alcohol consumption between different ethnic groups (Abebe et al., 2015). A Dutch study examined the significance of parental solicitation, parental control, and child disclosure for alcohol (and cannabis) use among native Dutch and non-Western immigrant adolescents, respectively. Although ethnic differences were found regarding both the sources of parental knowledge and the frequency of alcohol use, the relations between these variables were similar for both native and immigrant adolescents (Delforterie et al., 2016). Finally, another Dutch study examined the significance of parental permissiveness for drinking among adolescents from different ethnic groups. Parental permissiveness had similar positive associations with alcohol use in all ethnic groups, but the levels of alcohol use were higher among native Dutch adolescents than among adolescents from minority groups (Creemers et al., 2017).

Relations with peers constitute one of the most prominent explanatory factors in relation to young people's alcohol habits. Research has consistently shown that associating with peers who use alcohol or have a positive attitude toward drinking increases the likelihood of alcohol consumption (Ali & Dwyer, 2010; Donovan, 2004; Leung et al., 2014; Lundborg, 2006).

The significance of peer factors for drinking behaviors and acculturation among adolescents of immigrant backgrounds has not been clarified, however. Only a couple of studies have examined this issue in the European context. A Swedish study that compared peer effects between different ethnic groups indicated that adolescents from non-European countries were influenced by alcohol use among non-Swedish peers but not Swedish peers (Svensson, 2010). A Dutch study examined the significance of affiliations with alcohol-using peers in relation to drinking among adolescents from different ethnic groups. Such affiliations were positively associated with alcohol consumption in all groups and were not affected by the level of parental permissiveness (Creemers et al., 2017).

In addition to the European studies described above, an Israeli study has examined drinking among adolescents of Israeli, Ethiopian, and Former Soviet Union (FSU) backgrounds. In this context, the drinking patterns were reversed, and acculturation occurred in the form of a reduction in the drinking of adolescents of Ethiopian and FSU background. The study indicated that peer associations were more important than parental monitoring in explaining variations in the drinking of adolescents from these two groups. For Israeli adolescents, peer associations and parental monitoring were equally important (Walsh et al., 2014).

Objectives and hypotheses

As is shown by the review above, more research is needed on drinking habits among adolescents of immigrant background, not least with regard to the acculturation process and the significance of parents and peers in relation to this process.

The study's first objective is to examine differences in alcohol consumption between first- and second-generation non-European immigrant and native-Swedish adolescents. Two measures of alcohol consumption will be employed, having drunk alcohol and frequency of drunkenness during the past 12 months. We will also examine whether alcohol consumption among non-European adolescents may be associated with aspects of acculturation. Length of residence in Sweden and immigrant generation will be used as proxies for acculturation. Gender differences will be considered in all analyses. Based on previous research on ethnic and cross-cultural differences in drinking habits, we hypothesize that:

Hypothesis 1: Adolescents of non-European immigrant backgrounds will report lower levels of alcohol use and drunkenness than native-Swedish adolescents.

Based on previous research on the acculturation of drinking habits, we hypothesize that:

Hypothesis 2: Alcohol use and drunkenness among adolescents of non-European immigrant background will be associated with acculturation, with higher levels being reported by adolescents who have been in Sweden for longer periods of time and by adolescents who are second-generation immigrants.

The second objective of the study is to analyze whether parental and peer attitudes toward alcohol are associated with the acculturation of drinking habits among adolescents of immigrant background. As we have mentioned above, the few existing studies in this area have focused on parental monitoring and affiliations with alcohol-using peers. We will instead focus on parental and peer attitudes, respectively, and will examine how these are related to acculturation. Gender differences will be considered in these analyses as well.

Previous research on acculturation and migration shows that adolescents often learn the norms and values of the new society more quickly than adults (Rasmi et al., 2015; Telzer, 2010). Based on this finding, we hypothesize that:

Hypothesis 3: Parental attitudes toward adolescent drinking will be more restrictive among parents to first- and second-generation immigrants than among parents to native-Swedish adolescents. Among parents to first-generation immigrants, attitudes toward alcohol will be relatively stable, regardless of the time spent in Sweden.

Because of this, we also hypothesize that:

Hypothesis 4: The acculturation of drinking habits among first-generation immigrant adolescents will be related to differences in peer attitudes toward alcohol, rather than to differences in parental attitudes.

This hypothesis is in line with the Israeli study mentioned above, which stressed the importance of peer influences in predicting alcohol use among immigrant adolescents from Ethiopia or the FSU (Walsh et al., 2014).

Methods

Data

The study employs a cross-sectional design and is based on self-report data from school pupils. The data are drawn from the Öckerö project (Svensson & Johnson, 2020), an evaluation of an alcohol and drug prevention method. The project includes an annual self-report study conducted at 17 secondary schools in eight small municipalities in the county of Skåne. Skåne is Sweden's most southerly county with a population of approximately 1.4 million. The eight municipalities have between 13,000 and 19,000 inhabitants, a total of 125,000 altogether.

The survey was conducted in all classes in years 7–9 (i.e. 12–15 years of age), the final 3 years of secondary school. The survey was conducted at the beginning of the autumn term in each of four successive years, 2016–2019. In this study, we employ data on adolescents in year 9 (aged 14–15 years), a total population of 4747 adolescents.² The non-response rate was 13.4%. Following the exclusion of adolescents with certain national backgrounds, the study is based on 3743 respondents. The ethnic background of the adolescents is described in more detail below, in the section 'Independent variables.'

Data were collected with the help of an anonymous online survey that was introduced to the class members by researchers and assistants working in the project. Having sufficient Swedish language skills was a prerequisite for participation in the study. The survey was answered during lesson time and took an average of 30 min to complete. Before completing the survey, the students were given detailed information about the purpose of the study. They were also informed that their participation was voluntary and anonymous. The study has been approved by the Regional Ethical Review Board in Lund (application no. 2018/88).

The Swedish context is well-suited to a study on alcohol use among immigrant and native adolescents. During the past three decades, Sweden has evolved from an ethnically homogenous society into a multicultural society. Sweden is among the European countries with the highest proportion of foreign-born persons in the population – with this proportion having increased from 9% in 1990 to 19% in 2018 according to Statistics Sweden. In 2018, the total proportion of individuals of immigrant background (persons who were born in another country or in Sweden to one or two foreign-born parents) was slightly over 32%. Sweden is also among the European countries that have received the largest numbers of migrants from Muslim countries viewed in relation to population size.

Measures

Dependent variables

Two measures of alcohol drinking are used. *Alcohol use* is measured using the following item: 'Have you ever drunk alcohol (the term alcohol refers to medium-strength or strong beer, alcopop, wine or spirits)?' Response options: 0 – no; 1 – yes, once; 2 – yes, more than once. A dichotomous

variable (0 – no or yes, once; 1 – yes, more than once) is employed in the analyses. *Frequency of drunkenness past 12 months* is measured using the following item: 'How many times during the past 12 months have you drunk alcohol so that you have felt intoxicated?' Response options: 0 – never; 1 – once; 2 – 2 to 3 times; 3 – 4 to 5 times; 4 – 6 to 10 times; 5 – more than 10 times. A dichotomous version of this variable (0 – never, 1 – one or more times) is employed in the bivariate analyses, while the original ordinal version is employed in the multivariate analyses. Alcohol use more than once and the frequency of drunkenness are correlated $r=0.66$.

Independent variables

National background and length of residence in Sweden.

The respondents were asked where they had been born (response options: 1 – in Sweden; 2 – in Denmark, Finland, Iceland or Norway; 3 – in another country in Europe; 4 – in a country outside Europe) and how long they had lived in Sweden (response options: 1 – my whole life; 2 – between 0 and 2 years; 3 – between 2 and 5 years; 4 – more than 5 years). The adolescents were also asked where their mothers and fathers were born respectively (response options: 1 – in Sweden; 2 – in Denmark, Finland, Iceland or Norway; 3 – in another country in Europe; 4 – in a country outside Europe). Based on the responses to these items, the national background has been categorized on the basis of four groups: *First-generation non-European immigrants* ($n=364$, 9.7% of the sample) are individuals who were born in a country outside Europe to two non-European parents.³ *Second-generation non-European immigrants* ($n=174$, 4.6% of the sample) are individuals who were born in Sweden to at least one parent of non-European background.⁴ The *Swedish background* group ($n=3205$, 85.6% of the sample) is comprised of individuals who were born in Sweden (with the exception of second-generation non-European immigrants) and others who have lived their whole lives in Sweden. The group *Others* ($n=371$) has been excluded from this study.⁵ Four dummy variables have been created, for first- and second-generation immigrants (reference category: Swedish background), and for lengths of residence in Sweden of 0–2 years and 2–5 years respectively (reference category: more than 5 years).

Parental attitudes toward alcohol are measured by an additive index comprised of two items: 'For my parents, it's okay (1) if I drink alcohol (2) if I get drunk.' Response options: 1 – strongly disagree; 2 – somewhat disagree; 3 – neither agree nor disagree; 4 – somewhat agree; 5 – strongly agree. The two items are correlated $r=0.73$. The index has a range of 2–10, with low values indicating that parents have negative attitudes toward alcohol. A standardized version of this variable (Z-scores) is employed in the multivariate analyses.

Peer attitudes toward alcohol are measured by an additive index comprised of two items: 'The friends I most like to spend time with think that it's totally okay to (1) drink a beer at the weekend (2) get drunk.' Response options: 1 – strongly disagree; 2 – somewhat disagree; 3 – somewhat agree; 4 – strongly agree. The two items are correlated $r=0.85$. The

index has a range of 2–8, with low values indicating friends with negative attitudes toward alcohol. A standardized version of the scale (Z-scores) is employed in the multivariate analyses.

Control variables

Gender and mental health are employed as control variables. At the general level, there are no clear gender differences in alcohol consumption among young people in Sweden (CAN 2018). Gender differences are found in many countries, however, with girls engaging in lower levels of drinking than boys (WHO, 2018); these include several of the most common countries of origin among Swedish immigrants. It is therefore essential to include a gendered perspective in analyses of acculturation and alcohol use (Amundsen et al., 2005).

Gender is coded as 0 for girls and 1 for boys. As regards mental health, research has shown that symptoms of depression are associated with an increased risk for alcohol consumption and for alcohol-related problems during adolescence and early adulthood (Marmorstein, 2009; Pedrelli et al., 2016; Stone et al., 2012). Depression, anxiety, and other types of mental ill-health are often considerably more prevalent among persons with a refugee background (Tinghög et al., 2017), and it is, therefore, important to take mental health into consideration in the current study.

Mental health is measured by a summative index comprised of six items: (1) 'I often feel unhappy and low;' (2) 'I often worry about the future;' (3) 'I often feel anxious and worried;' (4) 'I often experience stomach aches or headaches;' (5) 'I often feel lonely;' (6) 'I have difficulty sleeping and eating.' Response options: 1 – strongly disagree; 2 – somewhat disagree; 3 – somewhat agree; 4 – strongly agree. The index allows for one missing value. The alpha for the index is 0.88. Low values indicate good mental health. A standardized version of the index (Z-scores) is employed in the multivariate analyses.

Statistical analysis

To begin with we examined differences in having used alcohol and drunkenness (which was dichotomized for the purposes of this analysis), firstly between adolescents of Swedish background and first- and second-generation immigrants respectively, secondly among first-generation immigrants based on their length of residence in Sweden. Gender differences were analyzed for all groups. Significance tests were conducted using the χ^2 -test and Fisher's exact test.

We then used ANOVA to examine differences in parental attitudes toward alcohol and peer attitudes toward alcohol. Once again, we analyzed differences between adolescents of Swedish background and first- and second-generation immigrants respectively, and among first-generation immigrants based on their length of residence in Sweden. Again, gender differences were analyzed for all groups. Significance tests were conducted using the *F*-test. Differences between groups were examined with the Scheffe post-hoc test.

Thereafter, we conducted multivariate analyses of alcohol use and drunkenness for different groups based on national background. Logistic regression analysis was employed to estimate ORs and 95% CIs for alcohol drinking, whereas ordinal logistic regression (GLM) was employed to estimate ORs and 95% CIs for drunkenness. Peer attitudes, parental attitudes, gender, and mental health were included in all models. For first-generation immigrants, two dummy variables measuring the length of residence in Sweden were also added to the models in a second step. Missing data were dealt with using listwise deletion.

Finally, we conducted stepwise multivariate analyses of alcohol use, by gender. Logistic regression analysis was employed to estimate ORs and 95% CIs. The first model included dummy variables for first- and second-generation immigrants and for gender and mental health as control variables. In the second model, we added dummy variables for the length of residence in Sweden. Peer attitudes toward alcohol were added in the third model, and finally, in the fourth model, we added parental attitudes toward alcohol. Missing data were dealt with using listwise deletion. Similar stepwise analyses were also conducted for drunkenness (using ordinal logistic regression). The results of the analyses for drunkenness were very similar to those obtained for alcohol use, and they are therefore not presented in the article.

Since we are aware of the problems associated with comparing the coefficients from logistic regression between different models and groups (Mood, 2010), we also conducted the multivariate analyses of alcohol use using linear regression (Breen et al., 2018; Mood, 2010). These analyses produced results very similar to those obtained using logistic regression, and they are therefore not presented in the article.

All analyses were conducted using SPSS version 25.

Results

Drinking habits by national background and length of residence

Table 1 presents prevalence figures for alcohol use and drunkenness in the study population, by national background. Alcohol use is significantly less common among first-generation immigrants than among adolescents of Swedish background (the reference category). For second-generation immigrants, there are no significant differences in relation to adolescents of Swedish background. Gender differences (not presented in the table) were noted among adolescents of Swedish background, with alcohol use being significantly more common among girls than among boys (41.9 and 37.6%, respectively, χ^2 -test $p=0.013$). No significant gender differences were found among either first- or second-generation immigrants.

Table 1. Drinking by national background (χ^2 -test).

| National background | <i>n</i> | Alcohol use | Drunkenness |
|-----------------------------|----------|-----------------|-----------------|
| Swedish background | 3205 | 39.8 (ref) | 33.4 (ref) |
| Second generation immigrant | 174 | 33.3 (0.090) | 25.3 (0.026) |
| First generation immigrant | 364 | 12.1 (0.000) | 12.4 (0.000) |

Table 2. Drinking among first generation immigrants by length of residence in Sweden (χ^2 -test).

| Length of residence in Sweden | <i>n</i> | Alcohol use | Drunkenness |
|-------------------------------|----------|----------------|-----------------|
| More than 5 years | 94 | 26.6 (ref) | 19.1 (ref) |
| 2–5 years | 129 | 6.2 (0.000) | 10.9 (0.081) |
| Less than 2 years | 139 | 7.2 (0.000) | 8.6 (0.019) |

Drunkenness is significantly less common among first- and second-generation immigrants than among adolescents of Swedish background. Gender differences (not presented in the table) were noted among adolescents of Swedish background and among first-generation immigrants, but not among second-generation immigrants. Among adolescents of Swedish background, drunkenness is significantly more common among girls than among boys (36.0 and 30.8%, respectively, χ^2 -test $p=0.002$). Among first-generation immigrants, drunkenness is significantly less common among girls than among boys (8.2 and 16.2%, respectively, χ^2 -test $p=0.022$).

Table 2 presents the prevalence figures for alcohol use and drunkenness among first-generation immigrants, by the length of residence in Sweden. Alcohol use is significantly less common among those who have lived in Sweden for less than 2 years and among those who have lived in Sweden for 2–5 years than it is among those who have lived in Sweden for more than 5 years (the reference category). A similar tendency is found in relation to drunkenness, although here the differences are only significant for the group who have lived in Sweden for less than 2 years. Gender differences (not presented in the table), were found in the two groups with shorter periods of residence. Differences in the prevalence of drunkenness between girls and boys are substantial, both for adolescents who have lived in Sweden for 0–2 years (3.0 and 14.3%, respectively, Fisher's Exact test $p=0.031$) and adolescents with 2–5 years of residence (3.5 and 16.9%, respectively, Fisher's Exact test $p=0.021$). Similar tendencies are also found in relation to alcohol use, although here the differences are not significant. No significant gender differences can be seen among adolescents who have lived in Sweden for more than 5 years.

Parental and peer attitudes toward alcohol by national background and length of residence

Table 3 presents mean values and standard deviations for parental attitudes toward alcohol and peer attitudes toward alcohol, by national background. In both cases, significant differences were found between adolescents of different backgrounds. Regarding parental attitudes, mean levels are consistently low, which indicates that most adolescents perceive their parents to have very restrictive attitudes. A post-hoc test (Scheffe, not presented in the table) showed, however, that adolescents of Swedish background report less restrictive parental attitudes than both first-generation immigrants ($p<0.000$) and second-generation immigrants ($p=0.002$). No significant differences were noted between first-generation and second-generation immigrants ($p=0.490$). No gender differences were found in any of the groups examined.

Table 3. Attitudes toward alcohol in the study population by national background (ANOVA).

| Attitude variables and national background | <i>n</i> | Mean | SD | <i>F</i> -test (<i>p</i> -value) |
|--|----------|------|------|--------------------------------------|
| Parental attitudes toward alcohol | 3715 | 3.04 | 1.74 | 27.614 (0.000) |
| Swedish background | 3192 | 3.13 | 1.77 | |
| Second-generation immigrant | 172 | 2.66 | 1.52 | |
| First-generation immigrant | 351 | 2.46 | 1.49 | 65.767 (0.000) |
| Peer attitudes toward alcohol | 3713 | 4.02 | 2.23 | |
| Swedish background | 3185 | 4.16 | 2.24 | |
| Second-generation immigrant | 171 | 4.07 | 2.34 | 2.34 |
| First-generation immigrant | 357 | 2.76 | 1.61 | |

Table 4. Attitudes toward alcohol among first generation immigrants by length of residence in Sweden.

| Attitudes and length of residence in Sweden | <i>n</i> | Mean | SD | <i>F</i> -test (<i>p</i> -value) |
|---|----------|------|------|--------------------------------------|
| Parental attitudes toward alcohol | 349 | 2.46 | 1.48 | 0.045 (0.956) |
| More than 5 years | 95 | 2.49 | 1.55 | |
| 2–5 years | 122 | 2.43 | 1.53 | |
| Less than 2 years | 132 | 2.45 | 1.41 | 12.116 (0.000) |
| Peer attitudes toward alcohol | 355 | 2.75 | 1.61 | |
| More than 5 years | 94 | 3.44 | 2.12 | |
| 2–5 years | 123 | 2.52 | 1.34 | 1.34 |
| Less than 2 years | 138 | 2.50 | 1.29 | |

Mean values were also low for the peer attitudes variable, which indicates that restrictive attitudes dominate in all groups. However, a post-hoc test (Scheffe, not presented in the table) showed that first-generation immigrants have peers with more restrictive attitudes than adolescents of Swedish background ($p<0.001$) and second-generation immigrants ($p<0.001$). No significant differences were found between adolescents of Swedish background and second-generation immigrants ($p=0.872$). Gender differences were noted among adolescents of Swedish background, with girls reporting peers to have less restrictive attitudes than boys (4.25 and 4.06 respectively, ANOVA-test $p=0.013$). No significant gender differences were found among first- and second-generation immigrants.

Table 4 presents mean values and standard deviations for parental attitudes toward alcohol and peer attitudes toward alcohol for first-generation immigrants, by the length of residence in Sweden. Regarding parental attitudes there are no significant differences – first-generation immigrant adolescents perceive their parents to be similarly restrictive irrespective of how long they have lived in Sweden. There are however significant differences regarding peer attitudes. A post-hoc test (Scheffe, not presented in the table) showed that adolescents with more than 5 years of residence in Sweden have less restrictive peers than adolescents who have lived in Sweden for 2–5 years ($p<0.001$) and adolescents with less than 2 years of residence in Sweden ($p<0.001$). No significant differences were noted between the latter two groups ($p=0.995$). No gender differences were found for either parental attitudes or peer attitudes.

Multivariate analyses of drinking habits among adolescents of different national background

Table 5 presents logistic regression analyses of alcohol use for adolescents of different national backgrounds. For

adolescents of *Swedish background*, positive peer attitudes toward alcohol are associated with higher levels of drinking. There is also a significant association with parental attitudes, with higher levels of drinking being found among adolescents whose parents have less restrictive attitudes. Mental health is also significantly associated with drinking in this group of adolescents, with somewhat higher levels of drinking being noted among adolescents with poorer mental health. There are no gender differences among adolescents of Swedish background. The associations are similar among *second-generation immigrants*, with higher levels of drinking being found among adolescents whose peers are more positive toward alcohol and among those whose parents have less restrictive attitudes. No significant differences were found in this group regarding mental health, however. Finally, among the *first-generation immigrants*, only one significant association was found, with higher levels of drinking being noted among adolescents whose peers have more positive attitudes toward alcohol. When dummy variables for the length of residence in Sweden are included in the analysis of first-generation immigrants, both of these variables (representing residence lengths of less than 2 years and 2–5 years, respectively) are significantly associated with lower levels of drinking by comparison with adolescents in the reference category (more than 5 years of residence). In this analysis, mental health is also significantly associated with higher levels of drinking, while the gender variable is on the verge of reaching statistical significance.

Table 6 presents GLM ordered logistic regression models for the frequency of drunkenness among adolescents of different national backgrounds. For adolescents of *Swedish background*, the associations are very similar to those presented in Table 5. For *second-generation immigrants* there is a clear association between peer attitudes and drunkenness, but not between parental attitudes and drunkenness. For *first-generation immigrants*, the results are similar with regard to peer attitudes (with more liberal attitudes being associated

with higher levels of drunkenness) and parental attitudes (no significant association), but here there is also a significant association with mental health, with higher levels of drunkenness being noted among adolescents with poorer mental health. When dummy variables for the length of residence in Sweden are included in the analysis, the associations with mental health and peer attitudes remain, and the gender variable also becomes significant, with considerably higher levels of drunkenness being noted among boys than girls within the group of first-generation immigrants. The dummy variables for the length of residence are not significant in this analysis, however.

Multivariate analyses of alcohol use among girls and boys

Tables 7 and 8 present stepwise logistic regression analyses of alcohol use for girls and boys respectively. Model 1 shows that drinking is lower among first-generation immigrants than in the reference category (adolescents of Swedish background). This is the case for both girls and boys. For second-generation immigrants, levels of drinking are significantly lower among boys, but not among girls.

When dummy variables for the length of residence in Sweden are included in Model 2, these variables are significantly associated with lower levels of drinking among girls, by comparison with the reference category (more than 5 years of residence). Among boys, the associations are weaker and not significant. For both girls and boys, the odds ratios increase for the first-generation immigrant dummy variable, and the level of significance declines, which indicates that the effects of first-generation immigrant status are moderated by the length of residence.

When peer attitudes are included in Model 3, this variable is strongly associated with alcohol use for both girls and boys. At the same time, the significant associations for the first-generation dummy variable disappear. For girls, the

Table 5. Alcohol use by national background – binomial logistic regression.

| | Swedish background (3094 individuals) | | | Second generation (169 individuals) | | | First generation (325 individuals) | | | First generation + (325 individuals) | | |
|------------------------|--|-----------|-------|--|-----------|-------|---------------------------------------|-----------|-------|---|-----------|-------|
| | OR | 95% CI | p | OR | 95% CI | p | OR | 95% CI | p | OR | 95% CI | p |
| Gender (boy) | 1.00 | 0.81–1.24 | 0.981 | 0.45 | 0.17–1.18 | 0.106 | 1.62 | 0.71–3.69 | 0.248 | 2.26 | 0.92–5.56 | 0.077 |
| Mental health (Z) | 1.18 | 1.06–1.30 | 0.002 | 1.26 | 0.78–2.04 | 0.337 | 1.27 | 0.88–1.83 | 0.203 | 1.60 | 1.08–2.38 | 0.019 |
| Peer attitudes (Z) | 3.03 | 2.77–3.32 | 0.000 | 2.35 | 1.62–3.40 | 0.000 | 3.03 | 2.14–4.29 | 0.000 | 2.53 | 1.77–3.63 | 0.000 |
| Parental attitudes (Z) | 2.09 | 1.90–2.30 | 0.000 | 3.49 | 1.69–7.22 | 0.001 | 1.09 | 0.82–1.45 | 0.545 | 1.16 | 0.86–1.56 | 0.342 |
| 2–5 years | | | | | | | | | | 0.19 | 0.06–0.54 | 0.002 |
| Less than 2 years | | | | | | | | | | 0.19 | 0.06–0.54 | 0.002 |
| Nagelkerke | 0.53 | | | 0.54 | | | 0.33 | | | 0.40 | | |

Table 6. Frequency of drunkenness past 12 months by national background – GLM ordered logistic regression.

| | Swedish background (3089 individuals) | | | Second generation (169 individuals) | | | First generation (325 individuals) | | | First generation + (325 individuals) | | |
|------------------------|--|-----------|-------|--|-----------|-------|---------------------------------------|-----------|-------|---|-----------|-------|
| | OR | 95% CI | p | OR | 95% CI | p | OR | 95% CI | p | OR | 95% CI | p |
| Gender (boy) | 1.04 | 0.86–1.25 | 0.698 | 0.74 | 0.31–1.76 | 0.496 | 2.21 | 0.94–5.21 | 0.069 | 2.45 | 1.01–5.91 | 0.047 |
| Mental health (Z) | 1.16 | 1.06–1.26 | 0.001 | 1.04 | 0.68–1.59 | 0.870 | 1.48 | 1.04–2.11 | 0.031 | 1.61 | 1.10–2.36 | 0.015 |
| Peer attitudes (Z) | 3.59 | 3.29–3.92 | 0.000 | 2.32 | 1.64–3.30 | 0.000 | 3.58 | 2.52–5.09 | 0.000 | 3.29 | 2.26–4.79 | 0.000 |
| Parental attitudes (Z) | 1.43 | 1.34–1.52 | 0.000 | 1.26 | 0.94–1.68 | 0.128 | 0.98 | 0.75–1.30 | 0.915 | 1.00 | 0.76–1.31 | 0.999 |
| 2–5 years | | | | | | | | | | 0.66 | 0.24–1.80 | 0.416 |
| Less than 2 years | | | | | | | | | | 0.54 | 0.19–1.54 | 0.250 |

Table 7. Alcohol use for girls – binomial logistic regression (1788 individuals included).

| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | |
|------------------------|---------|-----------|----------|---------|-----------|----------|---------|-----------|----------|---------|-----------|----------|
| | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> |
| First generation | 0.16 | 0.10–0.28 | 0.000 | 0.52 | 0.27–1.00 | 0.052 | 0.73 | 0.31–1.71 | 0.468 | 0.86 | 0.35–2.07 | 0.729 |
| Second generation | 0.83 | 0.53–1.32 | 0.443 | 0.83 | 0.53–1.31 | 0.429 | 0.92 | 0.51–1.67 | 0.791 | 1.23 | 0.67–2.24 | 0.501 |
| 2–5 years | | | | 0.05 | 0.01–0.40 | 0.005 | 0.06 | 0.01–0.58 | 0.015 | 0.01 | 0.00–0.18 | 0.002 |
| Less than 2 years | | | | 0.13 | 0.02–0.48 | 0.002 | 0.21 | 0.05–0.89 | 0.034 | 0.12 | 0.02–0.56 | 0.007 |
| Peer attitudes (Z) | | | | | | | 3.58 | 3.19–4.03 | 0.000 | 3.12 | 2.76–3.52 | 0.000 |
| Parental attitudes (Z) | | | | | | | | | | 2.01 | 1.77–2.29 | 0.000 |
| Mental health (Z) | 1.53 | 1.38–1.69 | 0.000 | 1.53 | 1.38–1.69 | 0.000 | 1.35 | 1.20–1.53 | 0.000 | 1.28 | 1.13–1.46 | 0.000 |
| Nagelkerke | 0.10 | | | 0.12 | | | 0.50 | | | 0.56 | | |

Table 8. Alcohol use for boys – binomial logistic regression (1800 individuals included).

| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | |
|------------------------|---------|-----------|----------|---------|-----------|----------|---------|-----------|----------|---------|-----------|----------|
| | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> |
| First generation | 0.25 | 0.15–0.39 | 0.000 | 0.42 | 0.21–0.86 | 0.017 | 0.54 | 0.24–1.23 | 0.142 | 0.91 | 0.40–2.05 | 0.817 |
| Second generation | 0.57 | 0.35–0.95 | 0.030 | 0.57 | 0.35–0.94 | 0.029 | 0.47 | 0.25–0.88 | 0.018 | 0.56 | 0.28–1.12 | 0.099 |
| 2–5 years | | | | 0.48 | 0.18–1.31 | 0.155 | 0.81 | 0.26–2.50 | 0.713 | 0.54 | 0.17–1.76 | 0.307 |
| Less than 2 years | | | | 0.42 | 0.15–1.22 | 0.113 | 0.66 | 0.19–2.23 | 0.499 | 0.47 | 0.13–1.64 | 0.235 |
| Peer attitudes (Z) | | | | | | | 3.40 | 3.04–3.80 | 0.000 | 2.86 | 2.54–3.22 | 0.000 |
| Parental attitudes (Z) | | | | | | | | | | 2.04 | 1.80–2.32 | 0.000 |
| Mental health (Z) | 1.23 | 1.10–1.38 | 0.000 | 1.24 | 1.11–1.39 | 0.000 | 1.09 | 0.94–1.26 | 0.248 | 1.05 | 0.90–1.22 | 0.524 |
| Nagelkerke | 0.04 | | | 0.05 | | | 0.44 | | | 0.52 | | |

shorter periods of residence remain significantly associated with lower levels of drinking, but for boys, the odds ratios for these dummy variables approach 1. We interpret this as indicating that drinking is associated with peers' attitudes among first-generation immigrants and that this association is stronger among boys than among girls. Interestingly, the inclusion of peer attitudes does not affect the odds ratios and significance levels noted for second-generation immigrants; being a second-generation immigrant remains associated with lower levels of drinking among boys, but not among girls.

When parental attitudes are included in Model 4, this variable is also strongly associated with alcohol use (although the odds ratios are smaller than for peer attitudes). There is no association between alcohol use and the dummy variable for first-generation immigrant status in this model either, but for girls, the variables measuring the length of residence in Sweden remain significant. For boys, the significant association between drinking and second-generation immigrant status disappears.

Discussion

In this article, we have examined differences in alcohol consumption among adolescents of non-European immigrant background and adolescents of native Swedish background. We have also studied the significance of acculturation, operationalized in terms of length of residence in Sweden and immigrant generation, for alcohol habits among adolescents of non-European background. Finally, we have examined the significance of parental and peer attitudes toward alcohol for this acculturation process.

Our first hypothesis, that adolescents with a non-European immigrant background would report lower levels of drinking than native-Swedish adolescents, is clearly supported by our results. The bivariate analyses show that alcohol use and drunkenness are significantly less common among first-generation

immigrants than among adolescents of Swedish background. This is very much in line with the findings of previous research in Sweden (Svensson, 2010; Svensson & Hagquist, 2010) and other European countries (Abebe et al., 2015; Amundsen, 2012; Amundsen et al., 2005; Barsties et al., 2017; Creemers et al., 2017; Denscombe, 1995; Skogen et al., 2018; Sordo et al., 2015; van Tubergen & Poortman, 2010). Drunkenness is also less common among second-generation immigrants than among adolescents of Swedish background, but the differences between these groups regarding alcohol use are not significant.

Our second hypothesis, that alcohol use and drunkenness among adolescents with a non-European immigrant background would be associated with acculturation, is also supported by our results. Among first-generation immigrants, levels of drinking increase the longer the adolescents' period of residence in Sweden, a finding that is also in line with previous research (Amundsen et al., 2005; Sordo et al., 2015). Levels of alcohol consumption are higher among second-generation than first-generation immigrants, which has also been found in previous research (Amundsen et al., 2005; Svensson, 2010; Svensson & Hagquist, 2010; van Tubergen & Poortman, 2010). However, following controls for mental health and gender, it is only among boys that levels of alcohol use are significantly different from those found among adolescents of Swedish background. This finding differs from the results of previous studies, where differences between native adolescents and second-generation immigrants have been found to be greater for girls than for boys (Amundsen et al., 2005; Svensson & Hagquist, 2010).

Our third hypothesis, that parental attitudes toward adolescent drinking would be more restrictive among parents of first- and second-generation immigrants than among parents of native-Swedish adolescents was confirmed by the results. In line with this hypothesis, we also found that attitudes among parents of first-generation immigrants were stable,

regardless of the time spent in Sweden. This is a new and important finding, which indicates that parental attitudes are of little significance regarding explaining the acculturation of drinking habits among non-European immigrant adolescents. Thus, the increase in drinking found among first-generation immigrants as their length of residence in Sweden increases is not due to their parents' attitudes becoming less restrictive.

As was noted in the introduction, there is research indicating that the degree of parental permissiveness is of major importance for variations in drinking among young people, irrespective of ethnic group affiliation (Creemers et al., 2017). However, restrictive parental attitudes are probably an important explanation for the generally low levels of drinking among non-European immigrant adolescents (Barsties et al., 2017; van Tubergen & Poortman, 2010). The fact that no association was noted between parental attitudes and drinking among first-generation immigrants in the current study is probably due to the fact that restrictive attitudes toward alcohol are so dominant among parents in this group that the variation in attitudes is too small in relation to the outcome measure.

Our fourth hypothesis, that the acculturation of drinking habits among first-generation immigrant adolescents would be related to changes in peer attitudes toward alcohol, was also confirmed by the results. The longer first-generation immigrants have been resident in Sweden, the more liberal they report their peers' attitudes to alcohol to be. We interpret this as indicating that over time, many immigrant adolescents come to associate with a broader social circle, which also includes adolescents of Swedish background. Regarding second-generation immigrants, no differences were found in peer attitudes by comparison with adolescents of Swedish background. The stepwise multivariate analyses also indicate that acculturation is in part due to changing patterns of socialization with peers. When peer attitudes were included in the logistic regression models the associations between alcohol consumption and first-generation immigrant status disappeared. Among boys, the association between alcohol consumption and length of residence in Sweden also disappeared.

A similar association was noted in the Israeli study mentioned earlier, although the drinking pattern was reversed. There, acculturation occurred in the form of adolescents with a background in Ethiopia and the FSU adapting by reducing their alcohol consumption so that it approached the lower-level drinking patterns found among Israeli adolescents. There too, peers were of more significance than parental attitudes (Walsh et al., 2014).

Gender differences were only found among first-generation immigrants, where drinking was more common among boys than girls. These differences were primarily found among adolescents who had lived in Sweden for less than 5 years, which indicates that boys adapt more quickly than girls to Swedish drinking habits. Gender differences have been noted in several previous studies, but gender differences in patterns of acculturation have only been discussed in a few of these (Amundsen et al., 2005; Svensson, 2010). It seems likely that having a Muslim background constitutes a greater obstacle

to drinking among girls than among boys (Amundsen et al., 2005). As was noted earlier, the absence of gender differences among second-generation immigrants differs from the findings of some previous research, which has noted a tendency for girls to drink less than boys (Amundsen et al., 2005; Svensson & Hagquist, 2010). One possible explanation is that these adolescents have grown up in small municipalities with a relatively small proportion of adolescents of immigrant background⁶ – and that childhood conditions of this kind may produce a greater pressure for cultural adaptation by comparison with a childhood spent in ethnically segregated metropolitan municipalities, where individuals of immigrant background may be able to maintain their own cultural practices to a greater extent.

Previous research indicates the presence of a reciprocal association between high levels of alcohol consumption and various types of depressive symptoms during adolescence, and that this association is stronger among girls than among boys (Marmorstein, 2009; Pedrelli et al., 2016). In our study, poor mental health was positively associated with both alcohol use and drunkenness, particularly among girls. Groupwise comparisons showed that the association was stronger among first-generation immigrants than among adolescents of Swedish background, but no significant association was found among second-generation immigrants. Previous Swedish research has indicated that persons of refugee background are often characterized by high levels of mental ill-health (Tinghög et al., 2017). In some adolescents with a refugee background, it is possible that depressive symptoms or other types of mental ill-health may lead to an increased tendency to use alcohol for self-medication purposes. From a public health perspective, the association between drinking habits and mental ill-health may therefore be worth noting, even though drinking is relatively uncommon among first-generation immigrants.

Limitations

One important limitation is that the current study is based on cross-sectional data. This means that we are unable to establish temporal ordering or to draw clear conclusions about causal relationships. The results on acculturation over time are based on reports from individuals with varying periods of residence and must therefore be viewed as more tentative than would be the case if they had been based on the longitudinal analysis. The study nonetheless largely confirms the findings of previous research.

Another limitation is that the study is based on self-report data. If participants are confident that their responses will be confidential, self-report data on alcohol consumption are regarded as having enough levels of validity and reliability for most research purposes (Del Boca & Darkes, 2003). Bias may however occur if there are systematic variations in the social desirability of drinking, for example in relation to the participants' ethnic or religious backgrounds. There is a lack of research on this type of potential bias, which makes it difficult to assess the size of the associated risks.

The measures of parental and peer attitudes toward alcohol are based on the perceptions of the study participants, and it is therefore impossible to know to what extent they correspond to the actual attitudes of parents and peers. We do not view this as a methodological problem, however, since it is perceived attitudes that are relevant in the context of this study.

We have not been able to control for socioeconomic status (e.g. the parents' income and education), since we do not have access to such data. However, previous Swedish studies suggest that socioeconomic differences in drinking habits do not usually occur among adolescents in secondary school (Landberg & Sommerland, 2014). Such differences become apparent later in life, and then primarily in relation to risk consumption (Sundin et al., 2018).

A further limitation is that we lack information on which countries the individual participants come from. We also lack information on the participants' possible religious backgrounds. As was mentioned earlier, however, Sweden has long been characterized by high levels of immigration from Muslim countries, and we may therefore assume that a large majority of the first-generation non-European immigrants have this type of background (see endnote 1 for more information on the countries of origin of immigrant adolescents in the municipalities included in the study). This problem is even more notable for second-generation immigrants (see endnote 2), which should be taken into consideration when interpreting the results of the study.

Conclusions

We have studied differences in alcohol drinking habits between first- and second-generation non-European immigrant and native-Swedish adolescents. We have also studied whether drinking habits among non-European adolescents are associated with aspects of acculturation. In line with previous research, we have shown that non-European immigrant adolescents report significantly lower levels of drinking than native-Swedish adolescents. Alcohol consumption is more common among second-generation than first-generation immigrants, and among first-generation immigrants, drinking increases the longer the adolescents have been residents in Sweden, which suggests a process of acculturation in relation to drinking habits.

How this process of acculturation occurs in relation to immigrant adolescents' drinking has not been studied sufficiently. Our principal contribution has been to examine whether acculturation is associated with parental and peer attitudes toward alcohol. Our results indicate that changes in drinking habits among immigrant adolescents are first and foremost related to changes in peer attitudes toward alcohol, that is, that over time, the adolescents tend to acquire new friends who have a more positive attitude toward drinking alcohol.

Among first-generation immigrants, drinking is more common among boys than among girls. These differences were primarily found among adolescents with a short period of residence in Sweden, which suggests that acculturation

occurs more quickly among boys than among girls. Among first-generation immigrants, there is also a clear association between drinking and poor mental health.

Notes

1. Acculturation may also be a bi-directional process that also influences the native population (Sznitman et al., 2013). With regard to adolescents' drinking behavior, this has been noted in school studies, in which schools having a high proportion of Muslim students has been associated with lower levels of drinking among both immigrant and native adolescents (Amundsen et al., 2005; van Tubergen & Poortman, 2010).
2. The Öckerö project follows two cohorts of school youths through their final three years of secondary school. At the school level, the project employs a longitudinal approach, but since the questionnaires are completed anonymously, it is not possible to follow individual participants longitudinally. In order to avoid including the same individuals more than once, we have restricted the study to data provided by students in year 9.
3. We have collected data from Statistics Sweden on the countries of origin of the relevant year groups of students in the eight municipalities included in the study. The most common countries of origin among persons born outside Europe ($n=524$) were Syria (47.1%), Afghanistan (14.7%) and Iraq (8.4%). Among the seven most common birth countries, only one (Thailand) does not have Islam as its dominant religion. Thus, a very substantial majority of the youths born outside Europe come from Muslim countries.
4. With regard to this group, we do not have access to statistics regarding the parents' countries of origin. Since the mid-1980s, Sweden has been characterized by relatively high levels of refugee and family-reunion immigration, and among those who have migrated from countries outside Europe, many have arrived from Muslim countries such as Iran, Iraq, Lebanon, Somalia and Syria. However, non-European immigrants also include large numbers from countries such as Chile, Thailand and Vietnam (Byström & Frohnert, 2017). This means that a majority of the second-generation immigrants in our study probably have parents of Muslim background, but that the proportion of Muslim parents among second-generation immigrants is unlikely to be as high as the corresponding proportion among first-generation immigrants.
5. The group *others* is comprised of (1) persons born in Denmark, Finland, Iceland, Norway or some other European country, and who have not lived their whole lives in Sweden, (2) persons born in a country outside Europe, but who do not have two non-European parents.
6. The proportion of youths of non-European background (first- or second-generation) varied between 9% and 19% in schools in the eight municipalities included in the study. However, many of these youths had come to Sweden during the past 5 years.

Acknowledgments

We would like to thank all participants in the study, as well as our project assistants. We would also like to thank Dr. Torkel Richert for his detailed reading of earlier drafts and for his suggestions for this article.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the the Public Health Agency of Sweden, Malmö University and the County Administrative Board of Skåne.

ORCID

Björn Johnson  <http://orcid.org/0000-0002-1601-2706>
 Robert Svensson  <http://orcid.org/0000-0002-6080-2780>

References

- Abebe, D. S., Hafstad, G. S., Brunborg, G. S., Kumar, B. N., & Lien, L. (2015). Binge drinking, cannabis and tobacco use among ethnic Norwegian and ethnic minority adolescents in Oslo, Norway. *Journal of Immigrant and Minority Health, 17*(4), 992–1001. <https://doi.org/10.1007/s10903-014-0077-9>
- Ali, M. M., & Dwyer, D. S. (2010). Social network effects in alcohol consumption among adolescents. *Addictive Behaviors, 35*(4), 337–342. <https://doi.org/10.1016/j.addbeh.2009.12.002>
- Amundsen, E. J. (2012). Low level of alcohol drinking among two generations of non-Western immigrants in Oslo: A multi-ethnic comparison. *BMC Public Health, 12*, 535. <https://doi.org/10.1186/1471-2458-12-535>
- Amundsen, E. J., Rossow, I., & Skurtveit, S. (2005). Drinking pattern among adolescents with immigrant and Norwegian backgrounds: A two-way influence? *Addiction, 100*(10), 1453–1463. <https://doi.org/10.1111/j.1360-0443.2005.01177.x>
- Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., Grube, J., Hill, L., Holder, H., Homel, R., Livingston, M., Österberg, E., Rehm, J., Room, R., & Rossow, I. (2010). *Alcohol: No ordinary commodity*. (2nd ed.). Oxford University Press.
- Bartsties, L. S., Walsh, S. S., Huijts, T., Bendtsen, P., Molcho, M., Buijs, T., Vieno, A., Elgar, F. J., & Stevens, G. W. J. M. (2017). Alcohol consumption among first- and second-generation immigrant and native adolescents in 23 countries: Testing the importance of origin and receiving country alcohol prevalence rates. *Drug and Alcohol Review, 36*(6), 769–778. DOI: 0.1111/dar.12624 <https://doi.org/10.1111/dar.12624>
- Breen, R., Karlson, K. B., & Holm, A. (2018). Interpreting and understanding Logits, Probits, and other nonlinear probability models. *Annual Review of Sociology, 44*(1), 39–54. <https://doi.org/10.1146/annurev-soc-073117-041429>
- Byström, M., & Frohnert, P. (2017). *Invandringens historia: Från "folkhemmet" till dagens Sverige*. Delegationen för migrationsstudier (Delmi).
- Creemers, H. E., Spanakis, P., Delforterie, M. J., & Huizink, A. C. (2017). Alcohol use of immigrant youths in The Netherlands: The roles of parents and peers across different ethnic backgrounds. *Drug and Alcohol Review, 36*(6), 761–768. <https://doi.org/10.1111/dar.12555>
- Del Boca, F. K., & Darkes, J. (2003). The validity of self-reports of alcohol consumption: State of the science and challenges for research. *Addiction, 98*(2), 1–12. <https://doi.org/10.1046/j.1359-6357.2003.00586.x>
- Delforterie, M. J., Verweij, K. J., Creemers, H. E., van Lier, P. A., Koot, H. M., Branje, S. J., & Huizink, A. C. (2016). Parental solicitation, parental control, child disclosure, and substance use: Native and immigrant Dutch adolescents. *Ethnicity & Health, 21*(6), 535–550. <https://doi.org/10.1080/13557858.2015.1126562>
- Denscombe, M. (1995). Ethnic group and alcohol consumption: The case of 15-16-year-olds in Leicestershire. *Public Health, 109*(2), 133–142. [https://doi.org/10.1016/S0033-3506\(05\)80007-1](https://doi.org/10.1016/S0033-3506(05)80007-1)
- Donovan, J. E. (2004). Adolescent alcohol initiation: A review of psychosocial risk factors. *The Journal of Adolescent Health, 35*(6), 529.e7–529.e18. <https://doi.org/10.1016/j.jadohealth.2004.02.003>
- Emmers, E., Bekkering, G. E., & Hannes, K. (2015). Prevention of alcohol and drug misuse in adolescents: An overview of systematic reviews. *Nordic Studies on Alcohol and Drugs, 32*(2), 183–198. <https://doi.org/10.1515/nsad-2015-0019>
- Foxcroft, D. R., & Tsertsvadze, A. (2012). Universal alcohol misuse prevention programmes for children and adolescents: Cochrane systematic reviews. *Perspect Public Health, 132*(3), 128–134. <https://doi.org/10.1177/1757913912443487>
- Ghandour, L. A., Karam, E. G., & Maalouf, W. E. (2009). Lifetime alcohol use, abuse and dependence among university students in Lebanon: Exploring the role of religiosity in different religious faiths. *Addiction, 104*(6), 940–948. <https://doi.org/10.1111/j.1360-0443.2009.02575.x>
- Hamilton, H. A., Noh, S., & Adlaf, E. M. (2009). Adolescent risk behaviours and psychological distress across immigrant generations. *Canadian Journal of Public Health = Revue Canadienne de Sante Publique, 100*(3), 221–225.
- Landberg, J., & Sommerland, N. (2014). Socioekonomiska skillnader och droganvändning [Socio-economic differences and drug use]. In A. Englund (Ed.), *Skolelevers drogvanor* (pp. 116–128). CAN.
- Leung, R. K., Toumbourou, J. W., & Hemphill, S. A. (2014). The effect of peer influence and selection processes on adolescent alcohol use: A systematic review of longitudinal studies. *Health Psychology Review, 8*(4), 426–457. <https://doi.org/10.1080/17437199.2011.587961>
- Lundborg, P. (2006). Having the wrong friends? Peer effects in adolescent substance use. *Journal of Health Economics, 25*(2), 214–233. <https://doi.org/10.1016/j.jhealeco.2005.02.001>
- Marmorstein, N. R. (2009). Longitudinal associations between alcohol problems and depressive symptoms: Early adolescence through early adulthood. *Alcoholism, Clinical and Experimental Research, 33*(1), 49–59. <https://doi.org/10.1111/j.1530-0277.2008.00810.x>
- McCambridge, J., McAlaney, J., & Rowe, R. (2011). Adult consequences of late adolescent alcohol consumption: A systematic review of cohort studies. *PLoS Medicine, 8*(2), e1000413. <https://doi.org/10.1371/journal.pmed.1000413>
- Mood, C. (2010). Logistic regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review, 26*(1), 67–82. <https://doi.org/10.1093/esr/jcp006>
- Pedrelli, P., Shapero, B., Archibald, A., & Dale, C. (2016). Alcohol use and depression during adolescence and young adulthood: A summary and interpretation of mixed findings. *Curr Addict Rep, 3*(1), 91–97. <https://doi.org/10.1007/s40429-016-0084-0>
- Rasmi, S., Chuang, S. S., & Hennig, K. (2015). The acculturation gap-distress model: Extensions and application to Arab Canadian families. *Cultural Diversity & Ethnic Minority Psychology, 21*(4), 630–342. <https://doi.org/10.1037/cdp0000014>
- Room, R. (2010). Dry and wet cultures in the age of globalization. *Salute e Società, 9*(3), 229–238. <https://doi.org/10.3280/SE52010-SU3015-ing>
- Room, R., Babor, T., & Rehm, J. (2005). Alcohol and public health. *The Lancet, 365*(9458), 519–530. [https://doi.org/10.1016/S0140-6736\(05\)17870-2](https://doi.org/10.1016/S0140-6736(05)17870-2)
- Room, R., & Mäkelä, K. (2000). Typologies of the cultural position of drinking. *Journal of Studies on Alcohol, 61*(3), 475–483. <https://doi.org/10.15288/jsa.2000.61.475>
- Ryan, S. M., Jorm, A. F., & Lubman, D. I. (2010). Parenting factors associated with reduced adolescent alcohol use: A systematic review of longitudinal studies. *The Australian and New Zealand Journal of Psychiatry, 44*(9), 774–783. <https://doi.org/10.1080/00048674.2010.501759>
- Savic, M., Room, R., Mugavin, J., Pennay, A., & Livingston, M. (2016). Defining “drinking culture”: A critical review of its meaning and connotation in social science research on alcohol problems. *Drugs: Education, Prevention and Policy, 23*(4), 270–282. <https://doi.org/10.3109/09687637.2016.1153602>
- Skog, O. J. (1985). The collectivity of drinking cultures: A theory of the distribution of alcohol consumption. *British Journal of Addiction, 80*(1): 83–99.
- Skogen, J. C., Bøe, T., Sivertsen, B., & Hysing, M. (2018). Use of alcohol, tobacco and illicit drugs among ethnic Norwegian and ethnic minority adolescents in Hordaland county, Norway: The youth@hordaland-survey. *Ethnicity & Health, 23*(1), 43–56. <https://doi.org/10.1080/13557858.2016.1246422>
- Sordo, L., Indave, B. I., Vallejo, F., Belza, M. J., Sanz-Barbero, B., Rosales-Statkus, M., Fernández-Balbuena, S., & Barrio, G. (2015). Effect of country-of-origin contextual factors and length of stay on immigrants’ substance use in Spain. *The European Journal of Public Health, 25*(6), 930–936. <https://doi.org/10.1093/eurpub/ckv144>
- Stone, A. L., Becker, L. G., Huber, A. M., & Catalano, R. F. (2012). Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors, 37*(7), 747–775. <https://doi.org/10.1016/j.addbeh.2012.02.014>
- Sundin, E., Landberg, J., & Ramstedt, M. (2018). *Socioekonomiska skillnader i beroende och utsatthet för andras användning av alkohol*,

- narkotika och tobak [Socio-economic differences in addiction and exposure to the use of alcohol, narcotic drugs and tobacco by others]. CAN.
- Svensson, M. (2010). Alcohol use and social interactions among adolescents in Sweden: Do peer effects exist within and/or between the majority population and immigrants? *Social Science & Medicine*, 70(11), 1858–1864. <https://doi.org/10.1016/j.socscimed.2010.01.046>
- Svensson, M., & Hagquist, C. (2010). Adolescent alcohol and illicit drug use among first- and second-generation immigrants in Sweden. *Scandinavian Journal of Public Health*, 38(2), 184–191. <https://doi.org/10.1177/1403494809353822>
- Svensson, R., & Johnson, B. (2020). Internet use and adolescent drinking. *Drug and Alcohol Dependence*, 213, 108138. <https://doi.org/10.1016/j.drugalcdep.2020.108138>
- Sznitman, S. R., Baron-Epel, O., & Boker-Keinan, L. (2013). Convergence of drinking patterns of young Russian immigrants and veteran Israelis decades after mass immigration: Results from a bidirectional acculturation model. *Journal of Studies on Alcohol and Drugs*, 74(3), 437–446. <https://doi.org/10.15288/jsad.2013.74.437>
- Telzer, E. H. (2010). Expanding the acculturation gap-distress model: An integrative review of research. *Human Development*, 53(6), 313–340. <https://doi.org/10.1159/000322476>
- Tinghög, P., Malm, A., Arwidson, C., Sigvardsdotter, E., Lundin, A., & Saboonchi, F. (2017). Prevalence of mental ill health, traumas and postmigration stress among refugees from Syria resettled in Sweden after 2011: A population-based survey. *BMJ Open*, 7(12), e018899. <https://doi.org/10.1136/bmjopen-2017-018899>
- van Tubergen, F., & Poortman, A. R. (2010). Adolescent alcohol use in the Netherlands: The role of ethnicity, ethnic intermarriage, and ethnic school composition. *Ethnicity & Health*, 15(1), 1–13. <https://doi.org/10.1080/13557850903373908>
- Viner, R. (2005). Co-occurrence of adolescent health risk behaviors and outcomes in adult life: Findings from a national birth cohort. *Journal of Adolescent Health*, 36(2), 98–99. <https://doi.org/10.1016/j.jadohealth.2004.11.012>
- Viner, R. M., & Taylor, B. (2007). Adult outcomes of binge drinking in adolescence: Findings from a UK national birth cohort. *Journal of Epidemiology and Community Health*, 61(10), 902–907. <https://doi.org/10.1136/jech.2005.038117>
- Walsh, S. D., Djalovski, A., Boniel-Nissim, M., & Harel-Fisch, Y. (2014). Parental, peer and school experiences as predictors of alcohol drinking among first and second generation immigrant adolescents in Israel. *Drug and Alcohol Dependence*, 138, 39–47. <https://doi.org/10.1016/j.drugalcdep.2014.01.024>
- Ward, C., & Geeraert, N. (2016). Advancing acculturation theory and research: The acculturation process in its ecological context. *Current Opinion in Psychology*, 8, 98–104. <https://doi.org/10.1016/j.copsyc.2015.09.021>
- WHO. (2018). Global status report on alcohol and health 2018. *World Health Organization*. https://www.who.int/substance_abuse/publications/global_alcohol_report/gsr_2018/en/
- Yap, M. B. H., Cheong, T. W. K., Zaravinos-Tsakos, F., Lubman, D. I., & Jorm, A. F. (2017). Modifiable parenting factors associated with adolescent alcohol misuse: A systematic review and meta-analysis of longitudinal studies. *Addiction*, 112(7), 1142–1162. <https://doi.org/10.1111/add.13785>