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# EXTRACURRICULAR SPORT AND RISK BEHAVIOUR: ARE THEY RELATED?

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# EXTRACURRICULAR SPORT AND RISK BEHAVIOUR: ARE THEY RELATED?[3]

This study focuses on the relationship between extracurricular activity (specifically, group and individual sports) and adolescent drinking behaviour. To examine how participation in sports is related to the frequency and intensity of alcohol consumption we use hierarchical regression analysis. Our sample consists of 2961 students from 29 vocational schools in St. Petersburg. We demonstrate that participation in individual and team sports increases the risk of teenagers being involved in drinking behaviour; however the frequency of regular alcohol consumption is not associated with participation in sports. Students' gender, socio-economic status and cultural capital, as well as residence status (living with parents or in the dorm) were significantly associated with teenage drinking behaviour: females and students living in a dorm were at greater risk of being involved in drinking, while regular alcohol consumption was more prevalent among males and students with a higher socio-economic status.

JEL Classification: Z00

Keywords: vocational schools, extracurricular education, risk behaviour, alcohol consumption, extracurricular sport activity, adolescent and youth.

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[3] The results of the project " School differentiation and its consequences: educational choice ", carried out within the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE) in 2016, are presented in this work.

# Introduction

Extracurricular activities provide an important context for the development for children and youth [Hansen et al., 2003]. In many countries the majority of school-age children are involved in extracurricular activities, and Russia is not an exception [Kosaretsky, 2016; Mahoney et al, 2000]. Sport is the most popular type of extracurricular activity among children and adolescents of all ages [Ivaniushina, Aleksandrov, 2015; Blomfield, Barber, 2009]. While a positive relationship between extracurricular sports and academic achievement has been consistently demonstrated [Broh, 2002; Mahoney et al., 2006; Marsh, 1992], the relationship between extracurricular sport and risk behaviour remains uncertain.

Recent research in the sociology of education shows that extracurricular activities, especially sport, improve the development of non-cognitive skills such as initiative, teamwork, positive relationships, social capital [Covay, Carbonaro, 2010; Larson, 2007]. According to the theoretical framework of positive youth development, if adolescents achieve their potential in non-cognitive and emotional development, then risk behaviours will be drastically reduced [Guilamo-Ramos et al., 2005; Jessor et al, 2003]. However, the empirical evidence for the effect of sports on problem behaviour is contradictory. While some research demonstrates that extracurricular sport is negatively related to alcohol consumption [Elder, 2000; Thorlindsson, Bernburg, 2006], other studies report a positive association between drinking and participation in team sports [Eccles, Barber, 1999; Eccles et al., 2003].

Risk behaviour of young people, especially alcohol consumption, is a common problem for many nations and cultures and is a significant public health concern. Alcohol consumption in childhood and adolescence affects physical and mental health, interfering with education and other spheres of life. A matter of practical importance is finding measures that could prevent children and adolescents from engaging in risk behaviour. Participation in extracurricular activities is considered as an important preventive measure [Blomfield, Barber, 2009; Mahoney, Stattin, 2000].

Alcohol consumption in Russia is high both in the adult population and among youth [Radaev, 2016; Radaev, 2015; Kozireva et al, 2016]. Despite the practical importance, studies of drinking behaviour of Russian adolescents are scarce. Moreover, those few studies that are focused on mid-adolescents were conducted on high school students [Tikhomirova, 2015; Kukanova, 2015]. Though students in vocational schools experience an increased risk of problem behaviour, there are almost no studies conducted on this population.

Our research fills this gap by investigating extracurricular sports as a possible factor protecting vocational school students from drinking behaviour.

## Age and involvement in alcohol consumption

The share of young people who have never tried alcohol grows smaller as age increases [Roshchina 2012; Adamchuck 2014; Sobkin, 2006], and as age increases, the frequency of drinking among teenagers increases [Jokman, 2012]. For this reason, studies focus mainly on the risk behaviour in teenagers from 10 to 18 years of age, i.e. at the period of formation of their alcohol behaviour. Occasionally, studies identify a separate group of young people from 18 to 25 years of age.

In a UK study of adolescents, 10-11 years old, it was found that every eighth student had had at least a few sips of alcohol. However, at this age, it is rare to drink alcohol to the point of intoxication. It is extremely important to note that an early familiarity with alcohol in childhood leads to an underestimation of the potential negative consequences of alcohol consumption. This is because a child who has drunk a small amount of alcohol is more likely to connect alcohol consumption with positive effects, rather than with negative consequences [Maggs, 2015].

Between 11 and 16 years old, the majority of teenagers start drinking alcohol. An analysis of longitudinal data shows that the consumption of alcohol in early adolescence predicts more severe drinking behaviour in young adults. For example, a study of young people in Denmark showed that the degree of involvement in alcohol consumption at 15 determines the drinking behaviour at 19 [Andersen, 2003]. At the same time, about a third of young people (aged from 16 to 26) have not even tried alcohol. However, this share goes down with the age [Roshchina; 2012].

Selling alcohol to minors (under 18 years of age) is prohibited by law in Russia. For teenagers, this limits the options to buy alcohol freely. However, vocational schools provide a context where students with legal access to alcohol drinks and underage students are mixed.

## Gender aspects and involvement in alcohol consumption

Researchers have found differences in the drinking behaviour between men and women [Martynenko, 2014]. There is a large amount of literature on the connection between gender and risk practices. In general, sociologists have noted that females and males have different patterns of alcohol consumption [Nolen-Hoeksema, 2002]. Males tend to consume more alcoholic beverages than females. The amount of alcohol consumed at a time is higher for males than for females. This difference can be explained both by different physiological characteristics, i.e. greater height and body weight for males, and by social factors, i.e. males get more exposure to drinking. Cultural norms support alcohol consumption, up to the point of severe intoxication, because they consider drinking in males and young men as a sign of masculinity [Deutsch,

2014]. Researchers also suggest that parents may have stricter control over females than males. Males have more freedom to do what they consider interesting, and to get involved in risk behaviour. Overall, cultural norms and lower levels of parental control create an environment where males are more susceptible than females. These factors are considered to be the norm not only at an individual level, but they are often considered as a group norm and a way of socialization among male adolescents. For males, a large percentage of male friends can reinforce the idea of drinking as a sign of masculinity and socially approved behaviour [Schulte, 2009]. Other studies have shown that females are more susceptible than males to peer pressure and to the effects of socialization via drinking. In other words, females tend to yield more to peer pressure and suggestions to drink, but this happens only with low levels of parental control [Dick, 2007].

## Extracurricular sport and involvement in alcohol consumption

The attitude of teenagers towards alcohol and risk behaviour is associated with their local environment. Many researchers agree that young people from families with a high socioeconomic status [Goodman, 1999; Richter 2013] who live in cities [Coomber, 2011; Pettigrew, 2012; Jonkman, 2014] consume less alcohol. But is there anything to partially compensate for the lack of higher education in the family and for unfavourable living conditions, which would help to reduce the involvement of teenagers in practices of risk behaviour?

Involvement of students in extracurricular activities can work as a preventative and provide a positive impact on the development of children by forming healthy habits, taking up their free time and fostering a sense of social responsibility [Wichstrom, 2009]. The more teenagers are involved in various activities, the less likely they are to be involved into practices of risk behaviour, and, in particular, the less often they tend to drink [Kort-Butler, 2015]. But are all types of extracurricular activities equally efficient in performing this compensatory function? For example, there is no consensus among researchers regarding how sports are connected to the frequency of alcohol consumption in adolescence. Can sports serve as preventive measures for practices of risk behaviour? Some studies have not found any relationship between involvement in extracurricular sports and the alcohol consumption of adolescents [Kirkcaldy, 2002]. Other studies suggest that structured extracurricular sports can reduce the frequency of alcohol consumption among adolescents [Elder, 2000; Thorlindsson, Bernburg, 2006]. A third group of researchers has shown that sports activities of teenagers increase the likelihood of their involvement in alcohol use [Eccles, 1999, 2003]. There is no consensus on exactly how sports are connected to alcohol use in adolescents and youth. In order to analyse this connection, we should examine in detail features and types of extracurricular sports.

As any extracurricular activity, sport can be structured or unstructured. For example, playing football with peers in a residential courtyard is an unstructured activity, which will be very different from playing football in a club or structured group with regular training, or in a permanent team with a coach. Another parameter of sports is that they can be individual or team-based. Team sports imply interaction between team members in order to achieve a common goal, whereas an individual sport implies working to achieve personal results. To establish the role of extracurricular sports for development of children, it is important to consider these two main parameters. In analysing the relationship between alcohol consumption and involvement of teenagers in sports, it is usual to take into account the specific types of activities.

Some studies have not found any connection between sports and alcohol consumption. German sociologists did not find any relationship between frequency of beer consumption and involvement of teenagers 14-16 years old in structured sports activities [Kirkcaldy, 2002]. However, there are relatively few studies that do not find an effect of extracurricular sports activities on alcohol use.

A large number of studies on adolescents from various countries have shown that involvement in sports may work as a preventive measure and reduce the frequency of alcohol consumption among young people. These results are expected, because usually it is assumed that sports are aimed at improving physical health and promote healthy habits. The main point of this idea is that participation in extracurricular sports generates lower levels of alcohol consumption, and forms habits that are not harmful to health. For example, US studies of the health of the youth examined the connection between the involvement of teenagers in structured team sports and the frequency of substance use. The authors of the study have found that structured team sports reduce the frequency of substance use, including alcohol, among US adolescents 14-17 years old [Elder, 2000].

In Iceland, researchers concluded that structured sports reduce the level of alcohol consumption among adolescents who have been classified as belonging to a risk group because of an adverse social context (such as single-parent families, low levels of parental control, having friends who drink). However they also found that, on the contrary, informal and unstructured sports activities increase the likelihood of alcohol use among the youth, even in comparison with the adolescents not involved in sports [Halldorsson, 2014].

A study conducted among Australian teenagers 12-13 years old showed that, for teenagers from the families of low socioeconomic status, participation in structured team sports is a protective mechanism against their involvement in alcohol consumption. At the same time, structured team sports increases the likelihood of alcohol and marijuana use for all adolescents not belonging to a risk group [Modecki, 2014].

To summarize, a number of studies have found a positive effect of structured team sports on adolescents, especially for those who are in a more vulnerable situation. However, it has also been found that unstructured and informal sports in peer groups of adolescents, in contrast, increase their involvement in alcohol use behaviour. Sports and alcohol are both tools of socialization among adolescent peers.

Many researchers have concluded that regular physical exercise and sports are associated with an increase in alcohol consumption [Dunn, Wang, 2003; Fredricks, Eccles, 2005; Hoffmann, 2006]. The adolescents involved in sports drink more alcohol than the adolescents who do not do any sports or who are not engaged in any other kind of extracurricular activities [Darling et.al., 2005]. For adolescents 12-13 years old and high school students, their involvement in sports leads to a sharp increase in the level of alcohol consumed in high school [Denault et.al., 2009]. Adolescents from 12 years old involved in sports more often mention their alcohol use than their peers [Lorente, 2004; Mays, 2010; Bedendo, Noto, 2015].

Structured team sports increase the likelihood of alcohol consumption. Teenagers involved in structured team sports are more susceptible to alcohol abuse than their peers regularly involved in individual sports [Zhou et.al., 2015; Kulesza et.al., 2014]. In addition, involvement in structured sports that require endurance increases the likelihood of drinking as compared to sports activities that require strength and technical skills. A study based on the data of the National Longitudinal Study of Adolescent Health shows that the involvement of adolescents in sport workouts increases the volume of alcohol consumption. However, this relates to adolescents who are only involved in sports . The level of alcohol consumption sharply decreases if the adolescents are also involved in other types of extracurricular activities [Mays, 2010].

Moreover, a long-term effect from structured team sports activities connected to the frequency of alcohol consumption has been found. A longitudinal study based on data collected from the Michigan Study of Adolescent Life Transitions study found that if a student is engaged in any kind of structured team sports in grade 10, this increases the frequency of alcohol consumption (to the point of intoxication) in grade 12 [Wichstrom, 2009]. Adolescents involved in team sports have more drinking friends, which also affects their behaviour and increases their frequency of alcohol consumption [Eccles, Barber, 1999]. Adolescents eventually copy alcohol use behaviour through structured team sports activities by engaging in physical activities with their alcohol-drinking peers. This occurs through two mechanisms: friendships and group affiliation [Fujimoto, Valente, 2013].

In other words, structured team sports activities may increase the likelihood of alcohol consumption among adolescents. However, if these adolescents are involved in other kinds of activities, apart from sports, this may reduce the amount of alcohol consumed. Structured team

sports may also have a long-term effect by increasing the volume of alcohol consumption later in life.

The varying results of the effect of structured team sports on alcohol use behaviour in adolescents can be explained in several ways. Firstly, the notion of "sports" encompasses many diverse kinds of activities; they include a wide range of specific activities; physical activities can be aimed at developing very different competencies; different structure and organization of sports clubs in groups in different countries [Halldorsson, 2014]. Secondly, researchers focus on different populations of adolescents. Adolescents who attract their attention represent different age groups and have a different family background. In addition, it is important to consider the effect of peer environment on the behaviour of adolescents.

## Social context and alcohol consumption

The involvement of adolescents in alcohol use behaviour is connected to the influence of family members and peers. Parental control can efficiently lower the probability of alcohol use by adolescents, both during the period of direct control, and in later life. If parents monitor their children in early adolescence, by the time they start their studies at college or university, they will be consuming less alcohol [Arria, 2008; Strunin, 2013].

The behaviour of the parents is also a model to follow. In families where adolescents observe alcohol use behaviour in adults, this kind of behaviour can be considered normal. In families of a low socioeconomic status, excessive alcohol consumption by the parents affects the alcohol use behaviour of adolescents [Vermeulen-Smit, 2012; Van Der Vorst, 2010]. Parents have an impact on their children not only directly (by setting an example and through imitation), but also indirectly. Such impacts include situations when adolescents spend their free time as they wish, due to a lack of parental control and a high level of loyalty towards the actions of the teenager [Benjet, 2014].

Increased peer influence is a characteristic feature of adolescence. As a result, adolescents may get involved in use of psychoactive substances as a result of their desire to imitate their peers, or even under their pressure [Dielman 1987; Alekhin, 2011]. The involvement of adolescents in alcohol use is often associated with conformist behaviour within a group of friends who drink alcohol. This is the reason for the potential effect of team sports activities on an increased alcohol consumption among adolescents [Halldorsson, 2014].

When analysing alcohol use behaviour in adolescents, it is necessary to take into account the environment where they study. The Social Ecological theory suggests that all individuals within a specific social context are affected by a range of contextual-level factors (micro-system, meso-system, macro-system) [Bronfenbrenner, 1981, pp. 9-10; Sudhinaraset et.al., 2011]. The peer

environment of the adolescents is directly connected to their alcohol use behaviour. Students who continue their studies in high school have higher levels of social and professional family status, motivation and desire to get higher education. Among adolescents who leave school after the 9th grade in order to get vocational education, many of them come from families with a low socio-professional status and without higher education. Thus, students of colleges and technical schools are in a zone of a greater health risk than high school students, because of the unfavourable educational and social environment [Van Hautte, 2010]. Also it is important to take into account not just the context in which adolescents find themselves without choosing, but also their circle of friends, which they choose. The social learning theory says that social relationships and interactions shape and form individual behaviour through direct conditioning, observing, modelling and (or) imitating the behaviour of friends [Akers et.al., 1979; Hoffmann, 2006; Kim et.al., 2013; Fujimoto, Valente, 2013]. Therefore, based on this theory, the propagation of the alcohol use behaviour is a direct imitation of successful behaviour of others. Imitation occurs not just through the direct influence of friends, but also through the sense of belonging to a group. Adherence to the group norms (even if outside of a circle of friends), "following the crowd", can be a very strong factor for changes in the adolescent behaviour [Fujimoto, Valente, 2013].

## The Current study

This study describes the relationship between the involvement of adolescents in drinking behaviour and extracurricular sports, while controlling for important peer and family characteristics. We believe that doing sports in clubs and groups helps to propagate risk behaviour among adolescents. It was not our goal to test the ideas of the social learning theory; however we suggest that, in certain peer circles, sports activities create the environment where mechanisms of social learning take place. At the same time, we realize that there are also micro-system characteristics (Social Ecological framework; the family context and peers in college) that may be associated with alcohol use behaviour and which can affect the choice of the sports activity of teenagers.

In our study, we analysed two aspects of the alcohol use behaviour. First, we examined the involvement of adolescents in drinking behaviour, i.e. whether they have tried, or regularly drink, any alcoholic beverages. Secondly, we looked at the frequency of alcohol use among the adolescents who use alcohol.

We assume that structured sports activities as joint fun activity will increase the likelihood of adolescent involvement in alcohol use behaviour and increase the frequency of alcohol

consumption (Hypothesis 1). We consider several aspects of involvement in extracurricular sports. Firstly, we analyse only structured sports (for any kind of sports) and their connection to alcohol use behaviour. Structured sports suggest that adolescents attend them on a regular bases and play in the same team of peers. Secondly, we are interested in the connection between team and individual structured sports, on the one hand, and the fact of adolescent involvement in alcohol use behaviour and the frequency of alcohol consumption, on the other. We assume that the probability of frequent alcohol consumption is higher among adolescents involved team sports, compared to that of their peers involved in individual sports or not involved in any kind of sports.

In this study we also consider the influence of the social environment, i.e., family and peers. Family characteristics are measured through their socioeconomic status and cultural capital. Additionally, we take into account the place of living of the adolescents during their college studies, i.e., with parents or on their own. If adolescents from families with a high socioeconomic status live with their parents, the probability of their involvement in alcohol use will be lower than for adolescents from families with low socioeconomic status who rent an apartment or live in a dormitory of their educational institution (Hypothesis 2). We describe the peer environment by the percentage of the peers in the group (classmates) who use alcohol, and by the gender composition of the groups. The more classmates using alcohol, the higher the likelihood that an adolescent will also be using alcohol (Hypothesis 3). At the same time, since alcohol use behaviour is different for males and females, we take into account the gender composition of the groups.

In addition to the main factors of interest, we also take into account the gender and age of the adolescents and families characteristics, since these are also connected to alcohol consumption levels. We believe that male students are more often involved in alcohol use behaviour and use alcohol more often than females (Hypothesis 4). Since adult students have no legal restrictions in their access to alcohol, we believe that they are more often involved in alcohol use behaviour, and use alcohol more often than minors (Hypothesis 5). As a result, young people with different access to alcoholic beverages are in the same context, in other words minors find themselves in an environment where alcohol use is widely accepted [Alekhine, Loktev 2011; Koveshnikov 2014].

# Data and methods

## Data[4]

In 2014, the HSE Laboratory of Sociology in Education and Science, with support from the Centre of Fundamental Studies HSE, conducted a large-scale survey of industrial technical schools, colleges, and high schools of St. Petersburg. The survey involved 29 educational institutions, with 169 groups of the first and final years. The survey was taken by 2961 students (aged from 14 to 30) who were admitted to colleges after the 9th grade of secondary school.

We used a sample of colleges for this study which reflected the actual distribution of educational institutions with primary and secondary vocational education among all the educational institutions in the city. For each college, we randomly selected three of the available specialties, within which we selected one group from the first year and one group from the final year. In this way, we conducted a total survey for 6 groups in every selected college.

Technical colleges are characterized by the predominance of specialties that are traditionally considered to be "masculine", such as electricians, mechanics, ship builders, carpenters. Specialties available mostly for females, or for both genders equally, are much rarer in technical colleges. For this reason, our sample included 2,278 males and 659 females.

The questionnaires were self-administered and included questions about the educational and professional plans of students, their academic performance and academic success, socio-demographic information such as ethnic and migration status, parental education and employment, student alcohol and smoking behaviour, and extracurricular activities (such as sports, science subjects and arts).

## Description of the variables

*Individual characteristics (variables of the first level)*

*Age of students* was coded as "0" for students between 14 and 17 years of age (minors), and as "1" for students between 18 and 30 years of age (adults).

Structured extracurricular sports were coded by variable: with "0" for "not involved in sports", "1" for individual sports (skating, martial arts, etc.) and "2" for team sports (football, volleyball, etc.). If students were engaged in both types of sports, they were coded for the sport on which they spent more time (more attended classes per week).

We asked respondents to describe their drinking behaviour: "How often do you drink … strong drinks? beer? wine? and canned cocktails?" We offered the following response categories:

[4] The results of the project "School differentiation and its consequences: educational choice" (TZ-34), carried out within the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE) in 2016, are presented in this work.

1 for “never”, 2 for “a couple of times per month or less often”, and 3 for “once a week or more often”. The coefficient of drinking behaviour was calculated based on the frequency of alcohol consumption without regard to the type of beverage. We looked at the fact of alcohol consumption rather than at consumption of specific beverages. If the students were characterized as “drinking occasionally” at least one kind of beverage, their behaviour was classed as “rare alcohol consumption.” If the students were characterized as “drinking regularly” at least one kind of beverage, their behaviour was classed as “regular consumption of alcohol.” For this analysis, we constructed two dependent variables**:**

(1) “**Alcohol consumption**” variable: binary with 0 for “doesn’t drink”, and 1 for “drinks”.

(2) “**Consumption frequency**” variable: binary with 0 for “occasionally” (a couple of times per month or less), and with 1 for “regularly” (once a week or more).

The socioeconomic status of the student’s family was identified through an open-ended question on the occupation of parents or guardians. We adapted the questionnaire developed by the Programme for International Student Assessment (PISA) and included the question “Main occupation of your mother (or a similar person in your life)?" We asked the same question about the father or a similar person in the life of the adolescents. After that, we coded the students’ answers according to the International Standard Classification of Occupations (ISCO-2008). We assigned each occupation a 4-digit code, which reflects the level of education, skills required for this occupation, and the level of responsibilities. After that, the ISCO codes were converted to International Socio-Economic Index of Occupational Status (ISEI-2008). ISEI is a scale that ranks each profession by the total score of income and education [Ganzeboom, Treiman, 1996].

The cultural capital of the student’s family was defined as the number of books (except textbooks) at home. It was measured on a scale from 1 to 8, where 1 was “less than 15 books (half of a shelf or less)”, and 8 was “more than 1000 books (over thirty shelves)”.

Parental control: “0” was “living with parents / relatives / guardians”, and “1” was “lives on one’s own at the dormitory, at one’s own place, or at a rented place”.

*Characteristics of educational groups (variables of the second level)*

Colleges and students groups at colleges have different gender composition. Depending on the chosen specialty, there are groups that consist of males only, or females only, or mixed groups. We have taken these differences into account and included one more variable: the percentage of males in the group.

The percentage of students in the group who drink alcoholic beverages (“percentage of use”).

**Method of analysis**

For the analysis of hierarchical data we used multi-level hierarchical regression. A multi-level analysis allows us to evaluate the impact of variables of different levels (individual level variables and group level variables) on the dependent variable. It also takes into account the inter-level effects, i.e. a combined effect of the variables of the first and second levels [Hox, 2010]. For our study, we selected this method in order to evaluate the influence of individual characteristics of students within the group context.

Since our dependent variables are binary (0 or 1) and we are interested in the probability that a teenager is involved in the alcoholic use behaviour (yes = 1, no = 0), we use hierarchical generalized linear modelling with a Bernoulli distribution [Raudenbush, Bryk, 2002].

# Results

## Descriptive statistics

Table 1 contains the description of the data. Since the educational institutions in our survey were mostly technical, the majority of respondents were represented by males: N=2,278 (78%). This gender composition reflects composition of males and females in technical vocational education [Gokhberg et.al., 2016]. The average age of students was 17 years, with the age range from 14 to 30 years old. There were 9 students under 15 years old, and 14 students over 22 years old.

**Tab. 1. Descriptive statistics of data (N=3,083).**

| **Variable*** | **Percentage** | **% of missing** |
|---|---|---|
| % of males | 78% | 0.8% |
| **Place of living:** | | |
| dormitory | 8% | 4.6% |
| own / rented home | 7% | |
| with parents | 85% | |
| | **Mean (sd, min - max)** | |
| Age | 17.2 (1.55, 14-30) | 0.6% |
| SES family | 44.8 (11.69, 16-89) | 18.7% |

Most students lived with their parents, N = 2,396 (85%). Only 8% of the students were in college dormitories, N = 221. Some students rent their accommodation or have their own home, separately from their parents, N = 207 (7%). For the purpose of our analysis, we combined two groups of students: those who live in a dormitory and those that have their own or rented accommodation, because our models revealed that the fact living on one's own, without parental control, is more important than the specific place of living.

Socioeconomic status measured as ISEI varied from 16 (corresponding to the unskilled workers, such as loaders or janitors) to 89 (high-status positions, such as directors or individual entrepreneurs). The average ISEI of the students' families was 45 (corresponding to cashier, shop salespersons, nurse, etc.). It is significantly lower than in high school (10-11 grades) [Ivaniushina et.al., 2016]. Many students (19.7%) do not know the occupation of their parents / guardians. For educational research this rate of missing data is quite common [Dong, Peng, 2013].

Table 2 shows a description of the group parameters. Only two variables of the second level show a strong correlation, the percentage of adults and the percentage of the students who use alcohol (P. Correlation = .56; sig. = .000).

**Tab. 2. Descriptive statistics of group level (N=169).**

| | **Mean (sd, min - max)** |
|---|---|
| SES group | 44.5 (4.19; 35-57) |
| % of males | 76% (31.76; 0-100) |
| % of majors | 47% (42.32; 0-100) |
| % of students involved in sports | 47% (14.36; 8-77) |
| % of students who have tried alcohol | 65% (16.50; 14-100) |
| % of students who use alcohol regularly | 28% (16.56; 0-75) |
| % of students living on their own in dorms | 8% (18.81; 0-100) |
| % of students living on their own at own / rented home | 9% (10.25; 0-50) |

*Sports activities*

46.9% (N = 1,552) of students are involved in some type of sports. Sports are distributed equally among male minors and adults. Table 3 shows the corresponding percentages for each age category.

**Tab. 3. Sport activities among males and females, minors and young adults.**

| Categories | **No sports activities** | **Sports activities** |
|---|---|---|
| Minors (N = 1,718) | 52.7% | 47.3% |
| Adults (N = 1,186) | 53.8% | 46.2% |
| | | chi-sq.=.35, sig.=.553 |
| Males (N = 2,320) | 50.5 % | **49.5%** |
| Females (N = 695) | **62.0%** | 37.0% |
| | | chi-sq.=26.62, sig.=.000 |

There is a significant gender effect: males are more often involved in sports activities than females. Only 37% females are involved in any kind of sports activities, against about a half of males.

As we described earlier, there are individual and team sports. 62.4% students are involved in individual sports, such as figure skating, speed skating, martial arts, fencing, etc. 37.6% students are involved in team sports, such as football, volleyball, basketball, and others. A comparison of the age groups has shown no difference in the percentage of students involved in these two kinds of sports: 61% of minors and 64% of adults prefer individual sports activities.

The gender effect is also clearly visible here as well: males prefer team sports more often than females do. Females are more likely to choose individual types of sports. Table 4 shows a breakdown of gender percentages in both types of sports.

**Tab. 4. Team and individual sports activities among males and females.**

| Categories | Team sports | Individual sports |
|---|---|---|
| Males (N = 1,146) | 41.3% | **58.7%** |
| Females (N = 263) | **20.6%** | 79.4% |

chi-sq.=36.69, sig.=.000

*Alcohol Use Behaviour*

Table 5 confirms that alcohol consumption is more common among adult students.

**Tab. 5. Alcohol consumption among adult and minor students.**

| Categories | Do not drink | Drink occasionally | Drink regularly |
|---|---|---|---|
| Minors (N = 1,690) | **43.0%** | 43.8% | 13.2% |
| Adults (N = 1,178) | 24.3% | **52.0%** | **23.8%** |

chi-sq.=122.13, sig.=.000

52% of adults and 44% of minors consume alcohol occasionally, and 24% and 13% respectively, use alcohol regularly.

While comparing the alcohol use behaviour between males and females (Table 6), it is necessary to pay special attention to alcohol use among females. The percentage of students who have never tried alcohol is smaller among females than among males, 31% against 37%, respectively. Occasional alcohol consumption among females is much higher, but regular consumption is lower. For males, the situation is exactly the opposite. The percentage of males who have never tried alcohol is higher. However, if males consume alcohol, they do it more regularly than females do.

**Tab. 6. Alcohol consumption among males and females.**

| Categories | Do not drink | Drink occasionally | Drink regularly |
|---|---|---|---|
| Males (N=2,219) | 36.5% | 44.6% | 19.0% |
| Females (N=642) | **31.0%** | **55.8%** | **13.2%** |

chi-sq.=26.72, sig.=.000

A comparison of age groups for males and females separately did not revealed any significant difference (Figure 1). The situations are similar for both genders: adult males (chi-sq.= 93.97, sig. = .000) and females (chi-sq. = 29.21, sig. = .000) consume alcoholic beverages more often than their underage classmates. Also, among adult (chi-sq. = 14.72, sig. = .001) and minor (chi-sq. = 10.74, sig. = .005) students, females are more often familiar with alcohol, but males use alcohol more regularly.

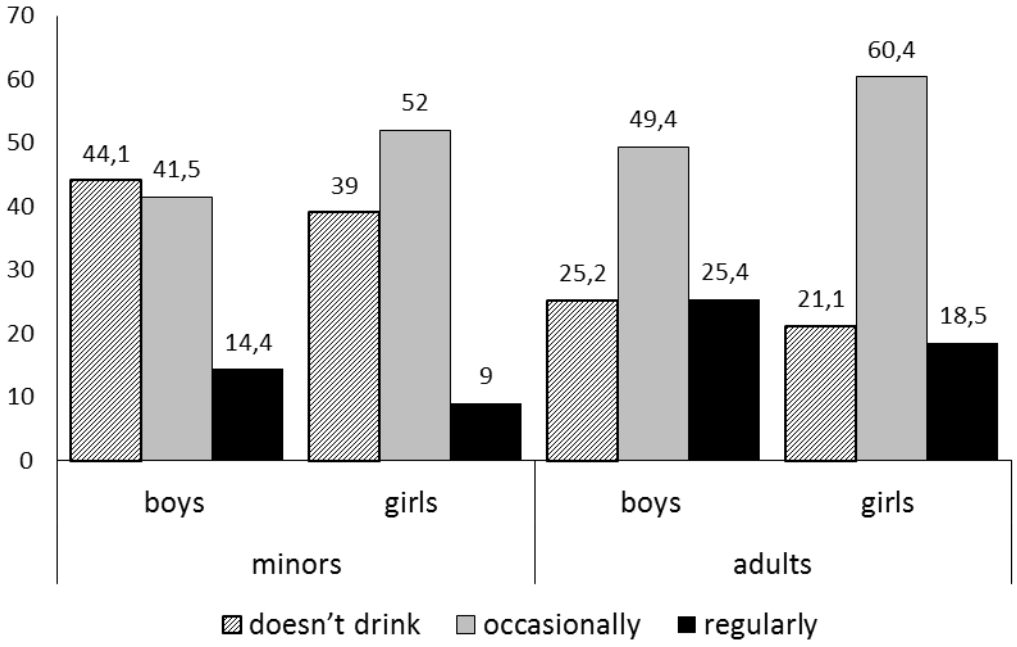


**Fig. 1. Alcohol consumption among adult and minor students by the gender (%).**

Males and females are involved in different kinds of sports. However, consumption of alcohol beverages is more common among females, regardless of their involvement in sport (chi-sq.= 6.33, sig. = .176). Figure 2 shows that the percentages of students who consume alcohol are similar for all categories of females. For males, the situation is somewhat different. Males who

do not consume alcohol are more common among those who are not involved in any sports, and vice versa: the percentage of students who consume alcohol is higher among males involved in team sports (chi-sq.= 12.32, sig. = .015).

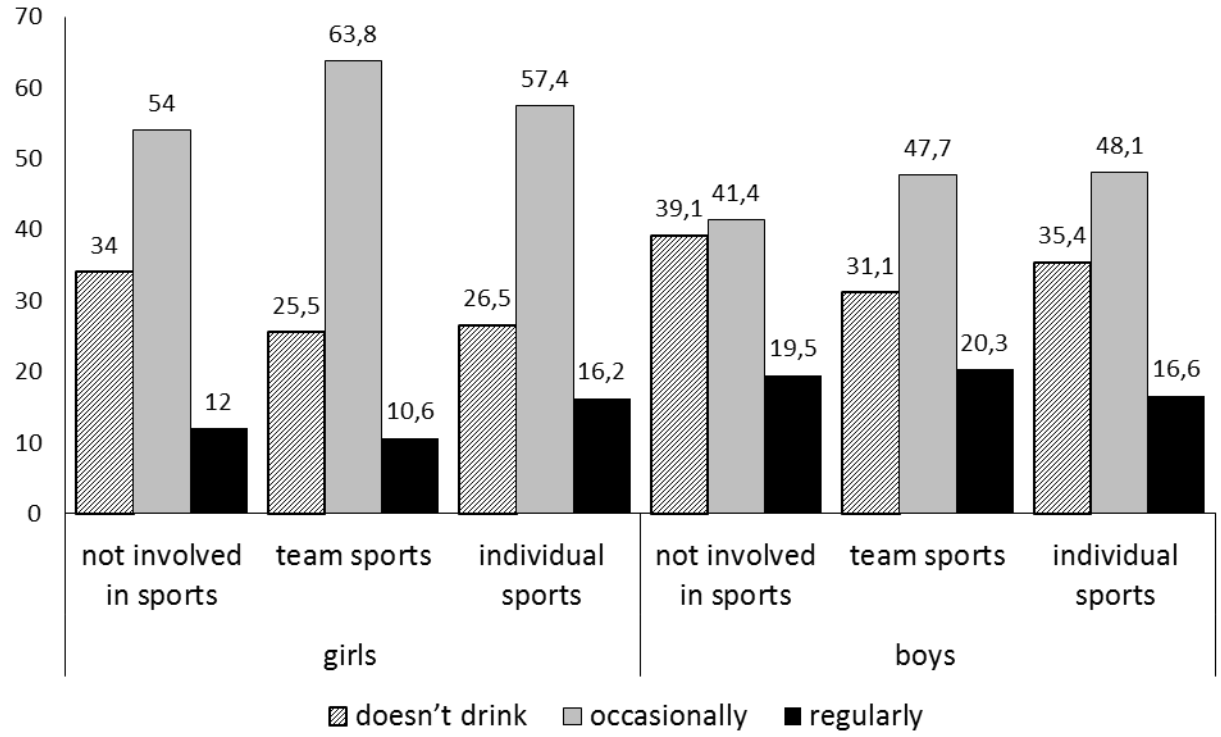


**Fig. 2. Alcohol consumption among males and females involved in sports activities (%).**

For students involved in individual sports, the percentage of males and females who consume alcohol on a regular basis is similar, 16%. In contrast, other categories demonstrate the main effect: females have tried alcohol more often, but males use alcohol more regularly.

## Results of Multi-level hierarchical regression

The results of the assessment of the connection between participation in sports activities and alcohol use are presented in the tables below. We have built two series of models: (1) the dependent variable is the fact of alcohol consumption (yes/no); (2) the dependent variable is the frequency of alcohol consumption. The preliminary analysis included constructing numerous models with different interactive effects at the first level, along with inter-level effects. For example, we tested interaction effects, such as "socio-economic status" and "sport", and "cultural capital" and "sport". They all were insignificant. The summary tables show only significant effects.

*Analyses of "involvement in drinking behaviour"*

Initially, we built a model without predictors in order to verify the variations between groups (Table 7, Model 1.0). We found that, for a "typical" group with u0j = 0, average log-odds of "involvement in drinking" (γ00) = 0.644 and the odds ratio = 1.90. Thus, the probability of "involvement in drinking" (φ) in a "typical" group in the sample would be 0.66 [Raudenbush, Bryk, 2002, pp. 297-302].

In Model 1.1, involvement in sports is a significant predictor for drinking behaviour (Table 7, Model 1.1). The positive and significant coefficients show that sports activities increase the likelihood of involvement in alcohol use behavior for the students involved in sports. The odds ratio for students involved in individual sports is 1.19 [exp (0.172) = 1.19], and for students involved in team sports this value is 1.29 [exp (0.260) = 1.29]. In other words, the odds of being involved in drinking behaviour within the group of students involved in team or individual sports are higher than the odds of being involved in drinking within the control group. However, there is no significant difference between team and individual sports activities.

Model 1.2 examined the effect of sports controlling for student socio-demographic characteristics (Table 7, Model 2): gender, age, family socioeconomic status and cultural capital, and place of living. Students involved in alcohol consumption are less common among males. The odds of meeting a boy who consumes alcohol are 0.77 to 1 against girls. The odds of being involved in alcohol use behaviour is also lower for minors compared to their adult counterparts (1 to 2).

The socioeconomic status and cultural capital of their family were not significant factors in these models. However, living separately from parents or guardians will increase the likelihood of adolescent involvement in alcohol use behaviour. The odds ratio is 1.39 for the adolescents who live on their own compared to those who live at home.

Next, we introduce group variables of the second level, the percentage of males in groups and the percentage of alcohol-consuming students in groups (Table 7, Model 1.3). As shown earlier, the gender composition of the groups varies greatly between groups, and the alcohol behaviour in males is different from that in females. However, the effect of the gender composition on behaviour in adolescents has a low significance, at just a 6% level. At the same time, the percentage of alcohol-using classmates has been found to be a significant predictor. The higher the percentage of alcohol-consuming students in the group, the greater is the likelihood that adolescents will be consuming alcohol as well.

When taking into account the second level effect, the percentage of drinking students in the group, the effect of age disappears. This can be explained by the fact that alcohol consumption is

strongly connected to the age, and in the groups with adult students the percentage of alcohol consuming students is higher.

With the control factors of individual and team sports, the verifiable effect of sports activities on drinking behaviour does not disappear. The students involved in sports groups (both individual and team sports) are more likely to become involved in alcohol behaviour.

**Tab. 7. Relation between individual and group characteristics and alcohol consumption. Results from multi-level analyses in HLM.**

| | **Model 1.0** Est. (s.e.) | **Model 1.1** Est. (s.e.) | **Model 1.2** Est. (s.e.) | **Model 1.3** Est. (s.e.) |
|---|---|---|---|---|
| INTRCPT | 0.644 (0.057)*** | 0.548 (0.068)*** | 0.329 (0.138)** | 0.824 (0.139)*** |
| % males in the group | | | | 0.004 (0.002) |
| % of alcohol-consuming students in the group | | | | 0.049 0.002)*** |
| | | | | |
| **Sports:** | | | | |
| No sports activities (base) | | | | |
| Team | | 0.260 (0.123)* | 0.399 (0.147)** | 0.339 (0.151)* |
| Individual sports | | 0.172 (0.083)* | 0.247 (0.092)** | 0.191 (0.097)* |
| **Place of living:** | | | | |
| With parents (base) | | | | |
| On one's own | | | 0.327 (0.140)** | 0.363 (0.134)** |
| **Age:** | | | | |
| Minor, <18 yo (base) | | | | |
| Adult, >18 yo | | | 0.725 (0.116)*** | 0.059 (0.088) |
| **Gender:** | | | | |
| Females (base) | | | | |
| Males | | | -0.263 (0.129)* | -0.350 (0.134)** |
| **Socio-Economic Status of the Family** | | | -0.007 (0.004) | -0.008 (0.004) |
| **Cultural capital of the family** | | | 0.033 (0.023) | 0.039 (0.025) |

*Analyses of "frequency of alcohol consumption"*

In the next series of models we tested the effect of individual and team sports on the frequency of alcohol consumption. These models include only students who consume alcohol. The results for this series of models are shown in Table 9. Model 2.0 demonstrates that the odds of finding an adolescent who consumes alcohol on a regular basis, in a typical group is 27% of the sample.

Models 2.1 and 2.2 included only the variables of the first level. In Model 2.1, the effect for the category of individual sports is important at a 6% level of significance. Students involved in individual sports are less likely to consume alcohol on a regular basis than those who are not involved in any sports activities. However, we did not found any connection between team sports activities and the frequency of alcohol consumption.

In Model 2.2, with the control of different parameters, the effect of sports activities on alcohol use behaviour disappears. When taking into account other factors, the connection between individual and team sports activities becomes insignificant. The socio-demographic characteristics of the students is statistically significant. Minor and adult male students are more likely to consume alcohol regularly. For males, this odds ratio is 1.52, compared to that of females. For adults, the odds ratio is 1.88, compared to that of minors. Family characteristics, such as a high socioeconomic status and the higher family cultural capital, show a positive connection with the regular alcohol consumption among college students. Table 9 shows that an increase in SES by 1 leads to the growth in log-odds by 0.019, which corresponds to the odds ratio of 1.02. Therefore, with other conditions being equal (i.e. if the only difference between students were in the socioeconomic status of their families), the students from families of a high socioeconomic status are more likely to consume alcohol on a regular basis. Similarly, a large number of books at home is positively connected to regular alcohol consumption.

In Model 2.3, we introduce variables of the second level. The gender composition of groups is not a significant predictor of regular alcohol consumption, and it also is not associated with an involvement in alcohol consumption. The percentage of alcohol-consuming students in groups is positively related to the odds of alcohol consumption among adolescents on a regular basis; a large percentage of alcohol-consuming students in a group increases the likelihood of regular alcohol consumption among students. Individual characteristics, such as team or individual sports activities, or place of living, were not found to be significant.

The inclusion of the variables of the second level makes the age effect disappear. Similarly to Model 1.3, this is due to the fact that alcohol consumption is strongly correlated with age.

The inclusion of the variables of the second level does not diminish the importance of the gender effect, i.e. that the males are more likely to consume alcohol on a regular basis than

females. Higher family socioeconomic status and cultural capital also increase the likelihood of regular alcohol consumption.

**Tab. 9. Relation between individual and group characteristics and frequency of alcohol consumption. Results from multi-level analyses in HLM.**

| | **Model 2.0** Est. (s.e.) | **Model 2.1** Est. (s.e.) | **Model 2.2** Est. (s.e.) | **Model 2.3** Est. (s.e.) |
|---|---|---|---|---|
| INTRCPT | -.979 (0.062) *** | -.931 (0.075)*** | -1.631 (0.184)*** | -1.789 (0.240)*** |
| % males in the group | | | | -0.005 (0.003) |
| % of alcohol-consuming students in the group | | | | 0.014 (0.005) *** |
| | | | | |
| **Sports:** | | | | |
| No sports activities (base) | | | | |
| Team | | 0.010 (0.133) | -0.094 (0.159) | -0.116 (0.161) |
| Individual sports | | -0.214 (0.112) **.** | -0.233 (0.139) | -0.241 (0.139) |
| **Place of living** | | | | |
| With parents (base) | | | | |
| On one's own | | | 0.029 (0.189) | 0.030 (0.186) |
| **Age:** | | | | |
| Minor, <18 yo (base) | | | | |
| Adult, >18 yo | | | 0.419 (0.129)*** | 0.216 (0.145) |
| **Gender:** | | | | |
| Females (base) | | | | |
| Males | | | 0.633 (0.173)*** | 1.923 (0.236)*** |
| **Socio-Economic Status of the Family** | | | 0.019 (0.006)*** | 0.019 (0.006)*** |
| **Cultural capital of the family** | | | 0.067 (0.029)* | 0.068 (0.028)* |

## Discussion

The objective of our study was to examine the connection between extracurricular sports and alcohol use behaviour in adolescents. We assumed that the role of sport activities in drinking behaviour of adolescents would be twofold: on the one hand, being an additional environment for socialization with peers, it should create conditions that would facilitate the involvement of the adolescents in alcohol use behaviour (through the mechanisms described in the Social learning theory [Akers et.al., 1979; Hoffmann, 2006; Kim et.al. 2013]). On the other hand, being a health preserving behaviour, sports should help in lowering the risk of involvement in drinking behaviour [Wichstrom, 2009; Kort-Butler, 2015]. Our results have shown that the effect of extracurricular sports activities as an adolescence socializing environment that increases risk behaviour is stronger and more stable than their effect as health preserving behaviour. These results can be extrapolated on students of technical vocational schools, but not on the entire population of students of relevant age.

We analysed the relationship between alcohol consumption and sports, controlling for individual socio-demographic characteristics and group characteristics of the college environment. We examined two aspects of drinking behaviour: involvement in alcohol use behaviour (students drink or do not drink), and the pattern of alcohol consumption for those who drink (rarely vs. often). We have found that the involvement of students in alcohol use behaviour and the frequency of alcohol consumption are connected to sports in different ways. In addition, the characteristics of the context are also connected differently to the drinking involvement and to frequency of alcohol use behaviour.

Reviews of studies of the relationships between sports and drinking behaviour in adolescents and young adults demonstrated that the effects described in many papers are often directly contradictory [Lisha, Sussman, 2010; Martens et.al., 2006]. Some studies demonstrate that the formal activity, regardless of the kind of sport, reduces the risk of alcohol abuse [Elder, 2000; Thorlindsson, Bernburg, 2006]. While several studies show that structured sports activities promote alcohol consumption in adolescents, and that teenagers involved in structured team sports are at a greater risks of alcoholization than the teenagers who prefer individual sports [Mays, 2010; Zhou et.al., 2015; Kulesza et.al., 2014]. Our data show that students involved in sports activities at clubs, be that individual or team sports, are more likely to consume alcohol than their peers who are not involved in any sports at all. The effect of structured team sports activities is stronger than that of individual structured activities, but this difference is not significant.

We were unable to examine the effect of propagation of alcohol use behaviour on the adolescents whose peers are involved in team sports. However, we tested the relationship between drinking behaviour and the percentage of classmates involved in alcohol consumption in groups. The observed effect is positive: a higher percentage of alcohol consuming students leads to a higher risk of adolescent involvement in alcohol use behaviour, and is also associated with regular consumption. The research suggests that peer influence in the immediate environment of a teenager can be very compelling, as adolescents tend to adhere to conformist behaviour and have a strong sense of belonging to a group, which can propagate a variety of behaviour patterns, including drinking behaviour [Halldorsson, 2014; Fujimoto, Valente, 2013; Thorlindsson, Bernburg, 2006].

We might conclude that organized sports have a health preserving effect if they reduce the frequency of alcohol consumption by adolescents. The health preserving effect from individual sports activities, which was discovered in Model 2.1, was very low and disappeared with the introduction of control variables. However, since individual structured sports are supposed to have less peer pressure than team sports, it may turn out that, under certain conditions, individual sports might work as a preventive measure against alcohol abuse in teenagers.

We did not find any significant differences in the effects of sports on drinking behaviour between adults and minors, or between males and females. Our results show that the basic demographic characteristics are the key factors that determine differences in the drinking behaviour of the adolescents. The gender-related differences in drinking behaviour found in our study confirm the results obtained in other studies [Nolen-Hoeksema, 2002]. Females are more frequently involved in alcohol use behaviour than males, but males more often consume alcohol on a regular basis. Earlier research noted that, generally speaking, males have more peers in their environment who consume alcohol on a regular basis [Wiesner et.al. 2007]. It is very likely that these gender differences are due to different norms of acceptable behaviour for females and for males, and to different levels of parental control over adolescents of both genders [Deutsch, 2014; Schulte, 2009].

Age is one of the most important predictors for adolescent involvement in drinking behaviour. Previous studies also conclude that the removal of age-related restrictions increases the percentage of the alcohol-consuming youth [Roshchina, 2012]. Our results show that the removal of age restrictions not only increases the degree of involvement but also increases the frequency of alcohol consumption. In addition, the percentage of alcohol-consuming adult students creates a context for all other college students: the higher the percentage of such students in a group, the greater the odds of students from all age groups getting involved in drinking behaviour and consuming alcohol on a regular basis.

Family characteristics comprise factors that affect, specifically, the frequency of alcohol consumption, not the degree of involvement in drinking behaviour. Young people start drinking alcohol regardless of the socioeconomic status and cultural capital of their families. Living at home with parents is the only limiting factor. This effect can be explained partly by the fact that parents exercise more control over the adolescents living at home [Benjet, 2014]. However, living at home does not affect the frequency of alcohol consumption. An unexpected finding is that regular alcohol consumption is more common among the adolescents from families with higher socioeconomic status and cultural capital. There are several possible explanations. First, children from families with greater resources are able to afford alcohol more often than children from families of a low socioeconomic status. Second, these children have a different structure of consumption: they can consume alcohol on a regular basis, but not to a point of intoxication. Certainly, these assumptions will need to be examined further. Some of the previous studies confirm that higher socioeconomic status and cultural capital of families can be positively correlated with substance use, including alcohol use [Ludden, Eccles, 2007; Wiesner et.al., 2007; Maggs et.al., 2015].

Our results indicate some problems in the organization of extracurricular activities for adolescents. We demonstrate that participation in extracurricular sports, instead of promoting a healthy lifestyle, leads to increased engagement in drinking behaviour. It would be advisable to develop and introduce special anti-alcohol programs not only in vocational schools, but also in organizations providing extracurricular activities.

The limitations of our study are related to the fact that we left out two important aspects: (1) the frequency of sports activities, which may be indicative of different attitudes of adolescents towards sports; (2) the structure of alcohol consumption, and, in particular, just how often the adolescents reach the point of intoxication, which is possible even during occasional alcohol consumption, what kinds of drinks they consume, and how often they consume them. In addition, lack of information on drinking behaviour in the adolescents' families is another major limitation, as is the lack of data on alcohol consumption by their friends. Each of the above mentioned limitation can be a topic for further studies.

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