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## **With Whom Did You Drink Last Time? An Analysis of Adolescents' Alcohol Use**

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### **Authors' contributions**

*Author KK wrote the first draft of the manuscript and performed the statistical analysis.  
Author AM assisted with the statistical analysis and contributed in writing the results,  
discussion and conclusion. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Aims:** Adolescents' use of alcohol in Europe is high. In this paper aspects of adolescents' alcohol use, namely differences in gender, age and country clusters concerning social context of drinking, are examined.

**Study Design:** A secondary analysis of the survey data.

**Place and Duration of Study:** Adolescents from 25 European countries (N = 57,771) filled in the Second International Self-Report Delinquency Study (ISRD-2) survey in 2006.

**Methodology:** A sub-sample from the larger ISRD-2 sample was drawn by selecting students from grades 7 to 9 in the age from 12 to 16. The dependent variables were social context of drinking light and strong alcohol, and last time use of alcohol. The independent variables were gender, age and country clusters (Northern, Western, Southern and Eastern Europe).

**Results:** Alcohol was used more with peers. Boys consumed alcohol more likely alone compared to girls. In Northern and Western Europe the proportion of drinking with peers was relatively high; in Southern Europe drinking with parents was high; in Southern and Eastern Europe drinking alone was high. The proportion of those adolescents who drank alcohol alone or with parents decreased by age; those who drank it with peers increased by age. Drinking alone in younger age is more prevalent in boys. A larger amount of alcohol was drunk with peers compared to alone or with parents.

**Conclusion:** Many prevention programs aim at family and/or school as important actors;

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however, for at least some group of adolescents an individual approach is needed.

*Keywords: Alcohol use; social context of drinking; adolescents.*

## 1. INTRODUCTION

Adolescent alcohol use is related to a variety of problem behaviours, including drinking and driving, risky sex, violence [1] and also suicidal behaviour [2]. Alcohol use among adolescents in Europe is high and largely influenced by social and environmental factors [3]. Among 12 to 16-year-old students in grades seven to nine 60.6% had drunk alcohol in their lifetime and 27.7% in last month [4]. Adolescents often consumed light alcohol (beer and/or wine, 59.6% in lifetime and 26.5% in last month), however, the number of students who consumed strong alcohol (spirits) frequently was also high - one out of every three students (34%) has drunk strong alcohol at least once and 13% has done so in the last month [4]. Similar results have been found in other surveys [5].

In the current paper social context of drinking alcohol is examined. It is known that adolescents mostly consume alcohol with peers [4]. However, we are interested in more-in-depth analysis of other social drinking contexts (i.e. drinking alone, with family members or other adults) in different regions of Europe. Thus, a brief literature overview of social context of alcohol use is given followed by information about clustering different European countries.

### 1.1 Social Context of Drinking

The social context of drinking refers to the immediate situational, temporal, and motivational factors that influence drinking behaviour [6-8]. In the literature several social contexts of drinking have been identified [6-7] such as: (i) socially facilitated drinking (e.g., drinking at a party with friends to have a good time); (ii) peer acceptance (e.g., to gain approval of the group, act older or to fit in); (iii) emotional pain (e.g., to forget about personal problems); (iv) drinking in family (e.g., in family celebrations or religious events); (v) sex seeking (e.g., to gain courage to talk to someone); and (vi) drunk driving.

The issue of social context of drinking has been widely studied among different groups, i.e. adults, young adults and also adolescents. Gronkjaer et al. [9] examined alcohol use in Denmark and found that alcohol use is perceived as legitimate in many social contexts with few being defined as inappropriate. For example, drinking alone was mostly associated with having alcohol-related problems (e.g. problems in controlling drinking behaviour); however, drinking socially played an important role in people's considerations of legitimate use and seems to overrule the actual alcohol amount consumed. They conclude that the social context of drinking is crucial in people's perception of the legitimacy of their alcohol use, leaving the alcohol amount less important. Beck et al. [10] found that among college students alcohol abusers were less likely to drink in a family context than were non-problem drinkers. Depressed students drank alcohol significantly less frequently in a context of social facilitation but more in a context of emotional pain. Wells et al. [11] examined 17 to 21-year-olds and found that drinking in public locations away from home was found to be significantly associated with a greater likelihood of fights after drinking among females. Concerning gender differences, Kuposov et al. [12] found in Russia among 14 to 17-year-olds that high intensity drinking girls were likely to drink in most social contexts, whereas high intensity drinking boys were more likely to drink to control stress (i.e., drinking alone).

The concept of drinking alcohol with the family has two sides [13]. On one hand, harm-minimization policies suggest that alcohol use is a part of normal adolescent development and that parents should supervise their children's use to encourage responsible drinking. For example, parental supervision is hypothesized to be related to more moderate drinking among adolescents in countries with harm-minimization policies which support learning responsible drinking patterns in supervised settings [14-15].

On the other hand, zero-tolerance policies suggest that all underage alcohol use should be discouraged (as consuming alcohol is illegal for minors in many countries, especially those younger than 16 years of age). It has been noted that supervised use of alcohol (e.g., parental provision of alcohol at parties or at home) is associated with risky use [16-17] and subsequent drinking over time [18-19]. Komro et al. [19] report that at the age of 12, parental provision of alcohol, the availability and accessibility of alcohol at home, and parental report of providing alcohol to their children were associated with significant increase in the young adolescents' alcohol use. These results indicate that it is risky for parents to allow children to drink during early adolescence and they conclude that when these findings are considered together with the risks associated with early onset of alcohol use, it is clear that parents play an important role in alcohol prevention.

McMorris et al. [13] found that supervised alcohol use results in higher levels of alcohol use which oppose to predictions derived from harm-minimization policy. Their findings challenge the harm-minimization hypothesis according to which supervised alcohol use or early-age alcohol use will reduce the development of adolescent alcohol problems. Van der Vorst et al. [20] note also that adolescents' alcohol use increases over time, regardless of settings or with whom they drink; thus, the prevention workers should focus on making parents more aware of their role in delaying the age at drinking onset.

## **1.2 Clustering Countries**

In classifying countries involved in the Second International Self Report-Delinquency Study (ISRD-2) the idea of different national welfare regimes was used [21-22]. This approach is formed using the principle that all individuals provide for their needs by producing essentially goods and services in three different ways: 1) they work on the market place and get paid; 2) they pay taxes to the state and they may expect in return important public services and income transfers; and 3) civil society (charities) and the family offer services and support [21-22]. Esping-Andersen [21,23] has categorised societies into three: the social democratic model (Scandinavian countries); the liberal model (Anglo-Saxon countries); and the corporatist model (continental Europe) for a closer description of the categories see [24]. More lately, Latin or Southern model [25-27] along with Post-Socialist model [28-29] were added to the typology.

Using the Esping-Anderson typology elaborated by Saint-Arnaud and Bernard [22] the countries were grouped into four country clusters: Western Europe (Germany, France, Belgium, the Netherlands, Austria, Ireland and Switzerland); Northern Europe (Finland, Sweden, Norway, Denmark and Iceland); Southern Europe (Spain, Italy, Portugal and Cyprus); and finally Eastern Europe (Czech Republic, Poland, Hungary, Estonia, Lithuania, Slovenia, Bosnia-Herzegovina, Armenia, and Russia).

However, the way we classified countries differ from the classification of Saint-Arnaud and Bernard in several aspects. First, Iceland which originally belongs to the cluster of liberal model, is placed into the Northern European cluster. Second, Ireland (also liberal welfare

regime) is placed into the Western-Europe cluster as it is the only Anglo-Saxon country in our sample. Third, two countries which were not part Saint-Arnaud's and Bernard's analyses are placed respectively to the Western European cluster (Switzerland) and Southern Europe (Cyprus).

### **1.3 Current Study**

It has been found previously in analyzing ISRD-2 data that adolescents tend to consume alcohol more often with their peers and in Southern Europe adolescents tend to consume alcohol more often with their parents than in other regions [3]. In this paper in the secondary analysis of ISRD-2 data the differences in gender, age and country clusters concerning social context of drinking are examined. We are interested in two aspects, (i) prevalence, i.e. with whom the light and strong alcohol was consumed and (ii) incidence, i.e. the quantity of alcohol consumed last time in terms of social context.

## **2. METHODS**

### **2.1 Participants**

In this study adolescents from 25 European countries (N = 59,351, see Table 1 for the list of the countries) participated by filling in the ISRD-2 survey in 2006. The ISRD-2 is a comparative study on youth crime and victimization which includes questions concerning alcohol use or other substance abuse [30]. For the purposes of the current analysis a sub-sample (N = 57,771) from the larger ISRD-2 sample was drawn by selecting 7<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> grade students in the age from 12 to 16. In the current paper we conducted a secondary analysis of the data focusing solely on the use of alcohol. The access to the data was gained by the second author of the study from the ISRD-2 consortium as she was involved in the data collection in one of the participating countries.

### **2.2 Variables**

There were two dependent variables in our study. First, the social context of drinking alcohol last time (see Table 1 for the proportions regarding different countries). This variable regarding light alcohol had four choices in the survey – drinking alone, with parents, with other adults, or with peers. Concerning strong alcohol there were three choices: alone, with other adults, or with peers. Second, last time incidence, i.e. how much light alcohol (beer, wine) was consumed. This variable consisted of answers to three questions: glasses of wine consumed; small bottles (330ml) of long drink, cider or beer consumed; and cans or large bottles (500ml) of beer consumed. For stronger alcohol (spirits) the number of shots was asked (one shot is 40 ml of alcohol). Independent variables in the current analysis were gender, age and country clusters (Northern, Western, Southern, and Eastern Europe).

**Table 1. Social context of drinking for light and strong alcohol in different countries in percentages**

	Light Alcohol			Strong Alcohol			
	Alone	With parents	With adults	With peers	Alone	With adults	With peers
Armenia	12.3	33.2	27.6	26.9	15.9	59.3	24.8
Austria	3.9	15.0	14.2	66.9	4.5	25.4	70.1
Belgium	5.2	26.9	13.5	54.3	6.8	37.0	56.1
Bosnia-Herzegovina	10.4	23.1	17.1	49.4	16.0	39.2	44.8
Czech Republic	9.4	29.9	14.4	46.3	12.1	27.6	60.3
Cyprus	11.2	40.8	15.4	32.6	12.2	45.8	42.0
Denmark	2.2	22.2	5.0	70.6	2.6	24.9	72.5
Estonia	5.7	14.6	15.4	64.3	5.1	20.7	74.2
Finland	6.2	25.1	5.6	63.1	7.1	16.7	76.1
France	5.3	32.0	18.8	43.9	9.1	26.1	64.8
Germany	3.3	18.9	15.3	62.5	3.2	22.7	74.1
Hungary	9.4	27.1	10.8	52.7	7.3	25.0	67.7
Iceland	7.6	13.5	5.9	73.0	2.2	13.5	84.3
Ireland	4.3	16.9	9.2	69.6	5.8	13.8	80.4
Italy	5.3	38.8	7.7	48.1	6.2	23.0	70.8
Lithuania	5.2	18.9	8.7	67.3	5.4	18.1	76.5
Netherlands	4.6	27.3	13.2	54.8	6.3	40.3	53.4
Norway	5.8	10.5	5.8	77.9	4.2	11.3	84.6
Poland	10.2	16.3	17.7	55.9	11.5	22.4	66.1
Portugal	10.9	24.2	15.1	49.8	10.0	28.2	61.8
Russia	6.1	20.6	6.5	66.8	6.2	15.9	77.8
Slovenia	7.8	34.7	11.9	45.6	10.2	33.7	56.1
Spain	4.9	17.9	6.1	71.0	4.0	10.3	85.7
Sweden	5.3	21.9	9.5	63.4	7.4	19.5	73.2
Switzerland	4.0	17.9	14.9	63.2	5.4	22.8	71.8

### 3. RESULTS AND DISCUSSION

The prevalence of social context of drinking was analysed using chi-square analysis. The incidence was analysed using 2 (gender) by 5 (age) by 4 (country cluster) by 4 (social drinking context) analysis of variance.

#### 3.1 Prevalence of Social Context of Drinking

Chi-square analysis demonstrated that both light and strong alcohol were mostly consumed with peers (respectively,  $\chi^2(3) = 22386.73$ ,  $P < .001$  and  $\chi^2(2) = 11976.24$ ,  $P < .001$ , see Table 2). For light alcohol, there were significant gender differences,  $\chi^2(3) = 160.68$ ,  $P < .001$ , indicating that boys consumed alcohol more likely alone compared to girls. Similar findings were found for strong alcohol,  $\chi^2(2) = 113.05$ ,  $P < .001$ , i.e. the proportion of boys who were drinking strong alcohol alone was higher than for girls whereas the proportion of girls drinking strong alcohol with peers was higher than for boys.

**Table 2. Social context of drinking with gender differences for light and strong alcohol in percentages**

	<b>Light Alcohol</b>	<b>Girls / Boys</b>	<b>Strong Alcohol</b>	<b>Girls / Boys</b>
Alone	6.5 (n=2,182)	4.9 / 8.1	7.0 (n=1,293)	5.1 / 8.8
with parents	23.5 (n=7,865)	24.8 / 22.3	N/A	N/A
with adults	12.4 (n=4,131)	12.0 / 12.7	24.8 (n=4,589)	24.0 / 25.6
with peers	57.6 (n=19,229)	58.2 / 56.8	68.2 (n=12,588)	70.9 / 65.6

Note. N/A – data not applicable

Next, drinking light alcohol in different country clusters was analysed. Significant differences emerged (see Table 3),  $\chi^2(9) = 847.75, P < .001$ . In Northern and Western Europe the proportion of drinking with peers was relatively high. In Southern Europe the proportion of drinking with parents was higher than in other regions. In Southern and Eastern Europe the proportion of drinking alone was higher than in other regions. In Northern Europe the proportion of drinking with other adults was lower than in other regions. Concerning strong alcohol, significant findings in similar direction were present,  $\chi^2(9) = 208.76, P < .001$ .

**Table 3. Social context of drinking between country clusters for light and strong alcohol in percentages**

		<b>Alone</b>	<b>With Parents</b>	<b>With Adults</b>	<b>With Peers</b>
Light Alcohol	NE (n=6,120)	5.0	20.1	6.3	68.6
	WE (n=9,789)	4.3	21.4	3.8	60.5
	SE (n=3,267)	8.6	32.9	11.8	46.7
	EE (n=14,229)	8.3	24.4	14.1	53.3
Strong Alcohol	NE (n=3,862)	5.0	N/A	18.9	76.1
	WE (n=5,562)	5.5	N/A	25.7	68.7
	SE (n=1,729)	8.6	N/A	28.7	62.7
	EE (n=7,318)	8.8	N/A	26.4	64.8

Note. NE – Northern Europe; WE – Western Europe; SE – Southern Europe; EE – Eastern Europe; N/A – data not applicable

In Table 4 the gender differences in country clusters are presented. We can see that the proportion of boys drinking alone is larger than girls in all clusters. In Eastern Europe the proportion of girls drinking with parents is larger whereas in other clusters the differences are smaller. The proportion of girls drinking both light and strong alcohol with peers is larger than of boys. There are no large gender differences in the proportion of drinking light alcohol with other adults but the proportion of boys drinking strong alcohol with adults is larger in Northern and Southern Europe.

**Table 4. Gender differences in social context of drinking between country clusters for light and strong alcohol in percentages**

		<b>Alone Girls / Boys</b>	<b>With parents Girls / Boys</b>	<b>With adults Girls / Boys</b>	<b>With peers Girls / Boys</b>
Light alcohol	NE	3.7 / 6.4	18.7 / 22	5.9 / 6.7	72 / 64.9
	WE	3.1 / 5.4	21.9 / 20.8	13.7 / 14	61.2 / 59.8
	SE	6.6 / 10.4	32.8 / 33	11.7 / 11.9	48.9 / 44.7
	EE	6.3 / 10.3	27.7 / 20.9	13.6 / 14.6	52.4 / 54.2
Strong alcohol	NE	3.6 / 6.2	N/A	15.6 / 22.6	80.7 / 71.3
	WE	4 / 6.9	N/A	25 / 26.5	71.1 / 66.6
	SE	6.2 / 11	N/A	26.4 / 30.8	67.4 / 58.2
	EE	6.5 / 10.9	N/A	27.4 / 25.3	66.1 / 63.7

Note. NE – Northern Europe; WE – Western Europe; SE – Southern Europe; EE – Eastern Europe; N/A – data not applicable

Concerning the adolescents' age (see Table 5), there was a difference for last time light alcohol use,  $\chi^2(12) = 1722.98$ ,  $P < .001$ , namely the proportion of those who drank light alcohol alone or with parents decreased, however, those who drank it with peers increased. The proportion of drinking light alcohol with adults was stable ranging from 11.6% to 13.7%. Significant results emerged in similar direction also for the use of strong alcohol,  $\chi^2(8) = 464.79$ ,  $P < .001$ .

**Table 5. Age differences in social context of drinking for light and strong alcohol in percentages**

	<b>Age</b>	<b>Alone</b>	<b>With Parents</b>	<b>With Adults</b>	<b>With Peers</b>
Light Alcohol	12 (n=1,689)	9.9	45.9	13.6	30.6
	13 (n=7,341)	8.6	33.2	11.6	46.6
	14 (n=11,842)	6.4	23.0	12.1	58.4
	15 (n=10,117)	5.0	16.3	12.7	66.0
	16 (n=2,314)	4.8	11.1	13.7	70.4
	Total (n=33,303)	6.5	23.6	12.4	57.5
Strong Alcohol	12 (n=562)	14.4	N/A	41.6	44.0
	13 (n=3,101)	9.1	N/A	32.9	58.0
	14 (n=6,415)	7.6	N/A	25.3	67.1
	15 (n=6,558)	5.4	N/A	20.7	74.0
	16 (n=1,764)	4.9	N/A	19.0	76.1
	Total (n=18,400)	7.0	N/A	24.8	68.2

Note. N/A – data not applicable

In Table 6 gender differences regarding age and social context of drinking are also presented. It can be seen that the proportion of drinking alone in younger age is more prevalent in boys. The proportion of drinking with parents decreases by age for both boys and girls. The proportion of drinking with adults, interestingly, remains constant over the years for light alcohol; for strong alcohol it is also decreasing by age. Finally, the proportion of drinking with peers increases by the age.

**Table 6. Gender and age differences in social context of drinking for light and strong alcohol in percentages**

	Age	Alone Girls / Boys	With Parents Girls / Boys	With Adults Girls / Boys	With Peers Girls / Boys
Light Alcohol	12	7.6 / 12.1	47.4 / 44.7	12.5 / 14.6	32.5 / 28.6
	13	6.8 / 10.3	33.7 / 32.7	11 / 12.2	48.5 / 44.7
	14	4.8 / 8.1	24.4 / 21.7	12 / 12.3	58.9 / 57.9
	15	3.5 / 6.5	17.8 / 14.8	12.5 / 12.8	66.2 / 65.9
	16	3.6 / 5.7	12.7 / 9.8	12.8 / 14.5	70.8 / 70
	total	4.9 / 8.1	24.8 / 22.3	12 / 12.7	58.3 / 56.8
Strong Alcohol	12	11.2 / 16.9	N/A	40.8 / 42.5	48.1 / 40.5
	13	6.5 / 11.7	N/A	31.1 / 34.5	62.4 / 53.8
	14	5.6 / 9.5	N/A	24.2 / 26.5	70.2 / 64.1
	15	2.6 / 7	N/A	20.2 / 21.1	76.2 / 71.9
	16	4.3 / 5.2	N/A	18.8 / 19.3	76.9 / 75.5
	total	5.1 / 8.8	N/A	24 / 25.6	70.9 / 65.6

Note. N/A – data not applicable

### 3.2 Incidence of Drinking

First the results of drinking light alcohol are analysed (see Table 7). The overall model was significant,  $F(35,32281) = 60.78$ ,  $P < .001$ ,  $\eta^2 = .062$ . There was significant effect of social drinking context,  $F(3,32281) = 93.31$ ,  $P < .001$ ,  $\eta^2 = .009$ . Post-hoc analyses (LSD) indicated that more units of alcohol were drunk: (i) with peers compared to alone, adults and parents; (ii) with adults than alone or with parents; and (iii) more alone than with parents ( $P = .001$ ). There was significant effect present also for country cluster,  $F(3, 32281) = 44.52$ ,  $p = .001$ ,  $\eta^2 = .004$ . Post-hoc analyses revealed that in Western Europe more units were drunk than in Northern, Southern and Eastern Europe ( $P = .001$ ). Significant effect emerged also for gender,  $F(1, 32281) = 36.02$ ,  $p = .001$ ,  $\eta^2 = .001$ , namely boys drank more units than girls. Finally, age effects were also present  $F(4, 32281) = 66.58$ ,  $P < .001$ ,  $\eta^2 = .008$ . Post-hoc analyses indicated that (i) 12-year-olds drank less than 13 to 16-year-olds ( $P = .03$ ); (ii) 13-year-olds less than 14 to 16-year-olds ( $P = .001$ ); (iii) 14-year-olds less than 15 to 16-year-olds ( $P = .001$ ) and (iv) 15-year-olds less than 16-year-olds ( $P = .001$ ).



**Table 7. The amount of light and strong alcohol consumed regarding social context of drinking alcohol, age, gender and country clusters**

		Units of Light Alcohol	Shots of Spirit
		M (SE)	M (SE)
<b>Social Context</b>	alone	1.16 (.09)	2.24 (.18)
	with parents	.66 (.09)	N/A
	with adults	1.19 (.07)	2.42 (.09)
	with peers	1.63 (.05)	3.75 (.11)
<b>Gender</b>	girls	1.06 (.06)	2.50 (.11)
	boys	1.27 (.05)	3.14 (.11)
<b>Age</b>	12	.80 (.12)	2.61 (.29)
	13	.78 (.05)	2.20 (.11)
	14	1.01 (.04)	2.53 (.09)
	15	1.33 (.05)	3.14 (.14)
	16	1.85 (.13)	3.58 (.20)
<b>Country cluster</b>	NE	.99 (.09)	2.70 (.21)
	WE	1.45 (.05)	2.84 (.11)
	SE	1.20 (.11)	2.76 (.18)
	EE	1.01 (.04)	2.96 (.10)

Note. NE – Northern Europe; WE – Western Europe; SE – Southern Europe; EE – Eastern Europe; N/A – data not applicable.

Next, the interaction effects are examined (see Table 8). Gender and social context of drinking interaction was significant,  $F(3,32281) = 3.97$ ,  $P = .008$ ,  $\eta^2 = .001$ . Post-hoc analyses indicated that (i) both girls and boys drank more units of alcohol with peers than with adults, parents or alone; and (ii) more with adults and alone than with parents ( $P = .001$ ). In addition, boys drank more with adults than alone ( $P = .01$ ). Country cluster and social context of drinking interaction was also significant,  $F(12,32281) = 4.62$ ,  $P = .001$ ,  $\eta^2 = .002$ . Post-hoc analyses indicated that (i) in all clusters more alcohol was drunk with peers than with parents ( $P = .001$ ); (ii) in Western, Southern and Eastern Europe more alcohol was used with adults ( $P = .001$ ) and alone ( $P = .02$ ) than with parents; (iii) in Northern, Western and Eastern Europe more alcohol was used with peers than with adults ( $P = .01$ ); and (iv) in Western and Eastern Europe more alcohol was used with adults than alone ( $P = .05$ ). Finally, significant social context of drinking and age interaction also emerged,  $F(9, 32281) = 6.86$ ,  $P < .001$ ,  $\eta^2 = .002$ . Post-hoc analyses indicated that (i) all age groups drank more alcohol with peers than with parents ( $P = .001$ ) or alone ( $P = .04$ ); (ii) 12 to 15-year-olds drank more alcohol with peers than with adults ( $P = .01$ ); (iii) 14 to 16-year-olds drank more with adults than with parents ( $P = .01$ ); (iv) 14 to 16-year-olds drank more alone than with parents ( $P = .02$ ); and (v) 16-year-olds drank more alone than with adults ( $P = .03$ ).

**Table 8. The interaction effect on the amount of light and strong alcohol consumed**

	Units of light Alcohol	Shots of Spirit
	M (SE)	M (SE)
<b>Social context * gender interaction</b>		
Girls drinking alone	1.22 (.14)	1.92 (.28)
Boys drinking alone	1.11 (.11)	2.58 (.22)
Girls drinking with parents	.53 (.15)	N/A
Boys drinking with parents	.79 (.12)	N/A
Girls drinking with adults	.93 (.10)	2.12 (.14)
Boys drinking with adults	1.45 (.09)	2.73 (.12)
Girls drinking with peers	1.54 (.06)	3.44 (.11)
Boys drinking with peers	1.72 (.08)	4.06 (.20)
<b>Social context * age interaction</b>		
12yo drinking alone	.70 (.24)	2.18 (.58)
13yo drinking alone	.72 (.13)	1.86 (.28)
14yo drinking alone	.95 (.12)	1.75 (.23)
15yo drinking alone	1.27 (.16)	2.55 (.37)
16yo drinking alone	2.07 (.30)	2.88 (.51)
12yo drinking with parents	.35 (.27)	N/A
13yo drinking with parents	.54 (.06)	N/A
14yo drinking with parents	.69 (.06)	N/A
15yo drinking with parents	.78 (.11)	N/A
16yo drinking with parents	.92 (.36)	N/A
12yo drinking with adults	.70 (.19)	1.74 (.28)
13yo drinking with adults	.73 (.11)	1.77 (.14)
14yo drinking with adults	.95 (.09)	2.28 (.11)
15yo drinking with adults	1.45 (.12)	2.90 (.15)
16yo drinking with adults	1.89 (.22)	3.26 (.30)
12yo drinking with peers	1.34 (.23)	3.65 (.52)
13yo drinking with peers	1.12 (.05)	2.98 (.10)
14yo drinking with peers	1.46 (.04)	3.55 (.07)
15yo drinking with peers	1.81 (.05)	3.97 (.08)
16yo drinking with peers	2.42 (.08)	4.59 (.13)
<b>Social context * cluster interaction</b>		
NE alone	1.10 (.20)	1.67 (.41)
WE alone	1.17 (.15)	2.05 (.28)
SE alone	1.51 (.23)	2.47 (.47)
EE alone	.86 (.05)	2.73 (.26)
NE with parents	.45 (.22)	N/A
WE with parents	.92 (.07)	N/A
SE with parents	.63 (.29)	N/A
EE with parents	.63 (.07)	N/A
NE with adults	.70 (.15)	2.08 (.19)
WE with adults	1.63 (.08)	2.55 (.14)
SE with adults	1.19 (.19)	2.44 (.25)
EE with adults	1.14 (.09)	2.55 (.12)
NE with peers	1.61 (.17)	4.12 (.39)
WE with peers	2.06 (.05)	3.92 (.09)
SE with peers	1.45 (.09)	3.37 (.16)
EE with peers	1.40 (.05)	3.58 (.10)

Note. NE – Northern Europe; WE – Western Europe; SE – Southern Europe; EE – Eastern Europe; N/A – data not applicable.

Now the differences in drinking strong alcohol are analysed (see Table 7). The overall model was significant,  $F(26,18290) = 17.03$ ,  $P < .001$ ,  $\eta^2 = .024$ . There were differences in social context of drinking,  $F(2,18290) = 32.64$ ,  $P < .001$ ,  $\eta^2 = .00$ . Post-hoc analyses (LSD) indicated that more alcohol was drunk with peers than alone or with adults ( $P = .001$ ). Country clusters had a significant effect,  $F(3, 18290) = 13.70$ ,  $p = .001$ ,  $\eta^2 = .002$ . Post-hoc analyses revealed that (i) in Western and Southern Europe more strong alcohol was used than in Northern Europe; and (ii) in Eastern Europe more than in Western and Southern Europe ( $P = .001$ ). Gender differences were also significant,  $F(1,18290) = 22.59$ ,  $P = .001$ ,  $\eta^2 = .001$ , namely boys drank more strong alcohol than girls. Finally, age differences were also present,  $F(4,18290) = 14.16$ ,  $P < .001$ ,  $\eta^2 = .003$ . Post-hoc analyses revealed that (i) 12-year-olds drank less than 14 to 16-year-olds ( $P = .01$ ); (ii) 13-year-olds less than 14 to 16-year-olds; (iii) 14-year-olds less than 15 to 16-year-olds; and (iv) 15-year-olds less than 16-year-olds (all  $P = .001$ ).

Last, the interaction effects are examined (see Table 8). For strong alcohol there was no gender and social context of drinking interaction or age and social context of drinking interaction present. Interaction effects emerged for country cluster and social context,  $F(6,18290) = 2.63$ ,  $P = .015$ ,  $\eta^2 = .001$ . Post-hoc analyses indicated that (i) more alcohol was used with peers than with adults in all country clusters ( $P = .001$ ); (ii) in Eastern Europe more alcohol was used with peers than alone ( $P = .01$ ); and (iii) in Northern Europe more alcohol was used alone than with other adults ( $P = .02$ ).

#### 4. DISCUSSION

In this paper we examined the adolescents' social context of drinking in different country clusters of Europe by age and gender. We were interested in two aspects, with whom the alcohol was drunk and the quantity of alcohol used last time.

First of all, our research has demonstrated that drinking is a social activity – most often adolescents drink together with their peers which confirms previous results [4]. Differences between country clusters were also present confirming that in Southern Europe adolescents drink light alcohol more often with parents than in other regions [4]. For the youngest age group alcohol is most often consumed with parents and other adults. While age increases the proportion of adolescent who drink with peers increases and becomes dominant social situation of alcohol use. Also a larger quantity of alcohol is drunk with peers.

A key issue to target is the finding that boys drank more alcohol alone (and in younger age) than girls. In further research this issue should be examined more closely to find out what is behind it – is it just experimenting? There were some differences present between country clusters. In Western-Europe the quantity of light alcohol consumed was higher than in other regions; however, for strong alcohol the quantity of strong alcohol used was higher in Eastern Europe. This finding indicates that in different regions of Europe the alcohol prevention programs should be targeting different key issues in reducing consumption.

As a limitation of the study it can be pointed out that we examined only last time alcohol use regarding social context of drinking. Further analyses concerning especially drinking alone in adolescent are needed as in adults it has been shown that this behaviour is strongly related to personal problems [31]. In our study the proportion of adolescents drinking alone started to decrease by age. It is not clear whether this is due to just experimenting in the taste of different alcoholic beverages at home or drinking it with a reason (getting drunk, trying to forget the problems). Also, as the self-report data was used, although the data was cleaned

for the extremes (for example, an adolescent stating that he/she drank twenty units of alcohol first time when he/she was six-years-old), the adolescents may have been differently motivated to fill in the questionnaire. Finally, it has to be noted that the effect sizes concerning the analyses are small.

An important issue to examine further is the adults with whom adolescents use alcohol with. If they are not parents, it would be interesting to study further who are they - random people who bought the adolescents alcohol or those who just reached the legal age of buying alcohol and now sharing it with their younger peers? As the quantities of alcohol consumed with adults other than parents is high then the results of McMorris et al. [13] are supported who found that adult-supervised settings for alcohol use resulted in higher levels of harmful alcohol consequences.

## **5. CONCLUSION**

The results indicate that alcohol is mostly drunk (in higher amounts) with peers. However, we found that in the youngest age groups the proportion of adolescents drinking alone is relatively high. First of all, the habit to deal with stress by consuming alcohol could lead to alcohol dependency in already young age. Second, this finding should be taken into account while developing special programs for alcohol prevention. At the moment many programs aim at family and/or school as important actors; however, for at least some group of adolescents an individual approach is needed.

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## **COMPETING INTERESTS**

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