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ORIGINAL ARTICLE

Socioeconomic position and occupational social class and their association with risky alcohol consumption among adolescents

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Abstract

Objectives To compare different measures of socioeconomic position (SEP) and occupational social class (OSC) and to evaluate their association with risky alcohol consumption among adolescents attending the last mandatory secondary school (ages 15–17 years).

Methods This was a cross-sectional study. 1268 adolescents in Catalonia (Spain) participated in the study. Family affluence scale (FAS), parents' OSC, parents' level of education and monthly familiar income were used to compare socioeconomic indicators. Logistic regression analyses were conducted to evaluate socioeconomic variables and missing associated factors, and to observe the relation between each SEP variable and OSC adjusting by sociodemographic variables.

Results Familiar income had more than 30% of missing values. OSC had the fewest missing values associated factors. Being immigrant was associated with all SEP missing values. All SEP measures were positively associated with risky alcohol consumption, yet the strength of these associations diminished after adjustment for sociodemographic variables. Weekly available money was the variable with the strongest association with risky alcohol consumption.

Conclusions OSC seems to be as good as the other indicators to assess adolescents' SEP. Adolescents with high SEP and those belonging to upper social classes reported higher levels of risky alcohol consumption.

Keywords Socioeconomic status · Social class · Adolescent · Alcohol drinking

Introduction

It is widely known that social determinants affect individuals' health, as many studies have shown (Braveman and Gottlieb 2014). The evidence among adults is plentiful, but there has been a lack of research about what effects the social determinants have on adolescents' health (Viner et al. 2012). On the one hand, the few studies that have analyzed this effect show a relationship between socioeconomic deprivation and health problems in adolescents (Holstein et al. 2009; Reiss 2013), but the evidence of the effect of social determinants on adolescents' behaviors is still scarce and uncertain.

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One of the possible reasons why social determinants have not been taken into account in many studies about adolescents is probably the difficulty measuring them during this period of life. Also, studies have measured socioeconomic position (SEP) with many different indicators making comparisons difficult (Juneau et al. 2015). For this reason, different measures have been created specifically in the attempt to measure SEP among adolescents as, for example, the Family Affluence Scale (Currie et al. 2008). In Spain, an indicator commonly used to assess in adult population is the classification proposed by the Spanish Epidemiology Society (SEE), which is based on neo-Weberian occupational social class (Domingo-Salvany et al. 2013). Nevertheless, as Font-Ribera et al. (2015) have noticed, a measure to help determine adolescents health inequalities as the proposed by the Spanish Epidemiology Society for adults is still needed (Font-Ribera et al. 2015).

Drunkenness' and binge drinking are risky alcohol consumption patterns (Guardia et al. 2008), which can carry important health and social consequences. In most European countries, binge drinking has become a public health problem, mainly in young people. According to the WHO's Global status report on alcohol and health 2014, the prevalence of heavy episodic drinking of WHO European region was 31.2% among adolescents (15–19 years) in 2010 (World Health Organization 2014). The evidence existing in the literature of the effect that social determinants have on adolescents alcohol consumption is scarce and uncertain (Poonawalla et al. 2014; Richter et al. 2009).

To our knowledge, no Spanish studies have to date compared multiple socioeconomic indicators, in particular neo-Weberian occupational social class indicators, and their relation with adolescent risky alcohol consumption. Therefore, this study aimed at (1) comparing indicators of socioeconomic position used in school surveys and an indicator of adolescents' social class; and (2) to evaluate the association of risky alcohol consumption with each measure among 4th year high school students (ages 15–17 years) among Catalan adolescents.

Methods

Design and study population

This was a cross-sectional study. The study population comprised 15- to 17-year-old students in 4th year of ESO, which corresponds to the last year of mandatory education in Spain, thus being representative of the population of this age (and equivalent to 10th grade in the USA). They were surveyed during the 2011–2012 academic year in the Central Region of Catalonia (Northeastern Spain), representing 1.1% of adolescents in Spain.

Cluster sampling with the class as the sampling unit was used. A random sampling was performed to select the classrooms using stratification by type of school (private/subsidized or public), township size (fewer than 2000 inhabitants classified as rural, 2001–10,000 inhabitants classified as intermediate, and more than 10,000 inhabitants classified as urban) (Instituto Nacional de Estadística 2001), and socioeconomic position of the school township (average income tax for the town). High schools refusing to participate were replaced by another high school with the same characteristics based on the strata, until we obtained the sample size needed to be representative of the Catalan region according to the variables used for the stratification. A sample of 1268 students was finally obtained.

Data collection instruments

A questionnaire was created using items from existing validated questionnaires (Comín et al. 1997; Moncada and Pérez 2001). The questionnaires were computerized and self-administrated in 60 min during school hours. Each student had a computer and answered the questionnaire individually, with the presence of the teacher and a member of the research team, who gave the instructions and clarified doubts. A pilot study was carried out previously in a high school from the geographic area of the study.

All the questionnaires were collected during the 2011–2012 academic year, concretely between February and March 2012.

Study variables

The sociodemographic variables used were: gender, age, family structure ("two-parent family", or "other family structure" such as single-parent households tutors, other relatives, or children's shelters), country of origin ("natives" if the parents and the adolescent were born in Spain, and "immigrants" if the parents or both generations were born outside Spain), and the students self perceived academic achievement compared with their classmates. They were asked to answer whether they had been working in a paid work during the last month and also how much money they had weekly for their own expenses. The type of high school was registered depending on whether it was public or subsidized and private. Students living in towns with 10,000 inhabitants or fewer were classified as rural, and those living in towns with more than 10,000 inhabitants were classified as urban.

To compare the different SEP variables of adolescents, different indicators were registered. The Family Affluence Scale (FAS) (Currie et al. 2008) categorized the students' SEP as low, medium, or high depending on their answers about how many computers and vehicles they had at their

houses, whether they had their own bedroom, and how many travels they made with their family during the last year. The maximum level of education also was answered separately for their father and their mother, and the parental education was created by taking into account the education level of the parent with the highest level. To obtain the adolescent social class, the mother and the father's social class was created following the classification proposed by the Spanish Epidemiology Society (SEE) which is based on the occupational social class (Domingo-Salvany et al. 2013). Students were asked to answer these questions: "Which is the main activity of the company where your father works (or has worked)?" and "which is the specific job your father carries out (or has carried out) in the company?" The same questions were asked for the students' mother. Once the answers were obtained, a code of three digits was given depending on the 2011 Spanish National Occupation Classification, and then the neo-Weberian occupational social class was obtained (CSO-SEE12) (Domingo-Salvany et al. 2013). Social class I comprised directors and managers of establishments with 10 or more salaried employees and professionals traditionally associated with bachelor's degrees. Social class II comprised directors and managers of establishments with fewer than 10 employees, professionals traditionally associated with associate's degrees, other technical support professionals, athletes, and artists. Social class III consisted of workers in intermediate occupations and self-employed workers. Social class IV consisted of supervisors and workers in qualified technical occupations and semi-qualified workers. Social class V comprised unqualified workers. The parent with the highest social class was used to create the parents' social class indicator. Finally, the students were asked about the monthly incomes of their family, considering how much money their father and mother together earned each month.

Drunkenness and heavy episodic drinking (at least 5 drinks in a row) are risky alcohol patterns for adolescents (Guardia et al. 2008). Therefore, risky alcohol consumption was determined to be the dependent variable from students who declared they had been drunk and/or had engaged in heavy episodic drinking at least once during the last year.

Statistical analysis

The means and standard deviations for the quantitative variable and the frequencies and proportions for the qualitative variables with their 95% confidence intervals (95% CI) were calculated. Different logistic regression analysis were performed, on one hand, to determine the missing related factors of the SEP variables and social class and, on the other hand, to determine the relation between risky alcohol consumption and each SEP variable and social class adjusting by sociodemographic variables, with calculation of the crude odds ratio (cOR) and the adjusted OR (aOR) with the 95% CI for each independent variable. The analyses were performed using SPSS 20.0 software.

Results

The response rate was 88.4%. As Table 1 shows, a total of 1268 students participated in the study, 51.5% of whom were boys. More than half of the respondents were classified as having medium academic achievement. Almost three-fourths reported no work with pay, whereas 6 of 10 declared that they had less than 10 euros a week for their own expenses. More than 70% of the adolescents lived with both parents, and almost 80% of them were natives. As reported, 7 of 10 of the students attended public school, and the half of them lived in rural areas.

The socioeconomic characteristics can be seen in Table 2. The family affluence scale was the only SEP variable without missing values and the one reporting the highest levels of family affluence (more than the 60% of the students were classified as high family affluence). Most of the students knew their mother's level of education than knew their father's education level (17.4% vs. 20.1% of missing values, respectively). In general, the mother's level of education was higher than the father's level (almost 40% of the mothers had higher secondary or university studies vs. 28.5% of the fathers). Almost 1 in 4 of the students reported university studies as the highest level of education for one of their parents. The father's occupational social class could not be classified by 13.3% of the students, whereas the mother's occupational social class could not be classified by almost 25% of the students. Nevertheless, almost 6 in 10 of the fathers were classified into occupational social class IV or V, whereas not 4 in 10 mothers' were categorized in the same social class. In terms of parents' occupational social class, almost 42% of the families were classified into social classes IV and V, and the missing values for this variable were $< 8\%$. More than 30% of the respondents did not know their monthly family incomes.

In the analysis to identify which factors could be determining the missing or undefined answers for all SEP variables and social class, different factors were found (Table 3). After adjustment of the OR by all the independent variables, the associated factors that maintained significant statistical association with the missing values for parental level of education were a medium or low academic achievement (aOR 1.87; 95% CI 1.28–2.75 and aOR 2.13; 95% CI 1.30–3.51, respectively), immigrant status (aOR 1.53; 95% CI 1.06–2.20) and residence in a rural area (aOR 1.58; 95% CI 1.14–2.20). The factors associated with

Table 1 Sample characteristics of students from Central Catalonia (Spain) in their last year of mandatory education[a], 2011–2012

	n (%)
Gender	
Boys	653 (51.5)
Girls	615 (48.5)
Age (years)	
Mean	15.35 ± (1.16)
Self-declared academic achievement	
High	415 (32.7)
Medium	670 (52.8)
Low	183 (14.4)
Students with paid work	
Yes	337 (26.6)
No	931 (73.4)
Weekly available money	
0 euros	175 (13.8)
< 10 euros	578 (45.6)
10–30 euros	388 (30.6)
> 30 euros	127 (10.0)
Family structure	
Both parents	910 (71.8)
One parent	290 (22.9)
Other family structure[b]	68 (5.4)
Country of origin[c]	
Native	988 (77.9)
1st generation immigrant	184 (14.5)
2nd generation immigrant	87 (6.9)
Type of high school	
Public	857 (67.6)
Subsidized/private	411 (32.4)
Type of township of residence[d]	
Rural	636 (50.2)
Urban	632 (49.8)
Total	1268 (100)

Missing values are < 1%

[a]Mandatory education in Spain is from 6 to 16 years, and the last year is called the 4th year of Educación Secundaria Obligatoria (ESO)

[b]Tutor and/or sibling and/or other family member or kid's shelter

[c]Natives: parents and adolescents born in Spain; 1st generation immigrants: adolescents and parents born outside Spain; 2nd generation immigrants: parents immigrants and adolescents born in Spain

[d]Rural: ≤ 10,000 inhabitants. Urban: > 10,000 inhabitants

the missing values for the reported monthly family income were 10 euros or less for the students' own expenses (aOR 1.28; 95% CI 1.00–1.64), native status (aOR 1.26; 95% CI 0.93–1.72), residence in a rural area (aOR 1.41; 95% CI 1.10–1.81) and public school attendance (aOR 1.49; 95% CI 1.15–1.93). The associated factors that maintained

Table 2 Socioeconomic characteristics of students from Central Catalonia (Spain) in their last year of mandatory education[a], 2011–2012

	n (%)
FAS[b]	
Low	**86 (6.8)**
Medium	**410 (32.3)**
High	**772 (60.9)**
Father's level of education	
Without education or primary education unfinished	105 (8.3)
Primary education	273 (21.5)
Secondary education	273 (21.5)
Higher secondary education	194 (15.3)
University studies	168 (13.2)
Do not know	255 (20.1)
Mother's level of education	
Without education or primary education unfinished	83 (6.5)
Primary education	251 (19.8)
Secondary education	243 (19.2)
Higher secondary education	251 (19.8)
University studies	220 (17.4)
Do not know	220 (17.4)
Parents' highest level of education	
Without education or primary education unfinished	**52 (4.1)**
Primary education	**219 (17.3)**
Secondary education	**238 (18.8)**
Higher secondary educations	**267 (21.1)**
University studies	**296 (23.3)**
Do not know	**196 (15.5)**
Father's occupational social class[c]	
SC I	140 (11.0)
SC II	88 (6.9)
SC III	142 (11.2)
SC IV	613 (48.3)
SC V	116 (9.1)
Do not know/missing/undefined	169 (13.3)
Mother's occupational social class[c]	
SC I	114 (9.0)
SC II	153 (12.1)
SC III	243 (19.2)
SC IV	299 (23.6)
SC V	151 (11.9)
Do not know/missing/undefined	308 (24.3)
Parent's occupational social class[c]	
SC I	**211 (16.6)**
SC II	**167 (13.2)**
SC III	**272 (21.5)**
SC IV	**455 (35.9)**
SC V	**72 (5.7)**

Table 2 (continued)

	n (%)
Do not know/missing/undefined	**91 (7.2)**
Reported monthly family incomes (euros)	
> 6000	**38 (3.0)**
3001–6000	**155 (12.2)**
1501–3000	**332 (26.2)**
901–1500	**223 (17.6)**
Without incomes or < 900	**112 (8.8)**
Missing	**408 (32.2)**
Total	1268 (100)

[a]Mandatory education in Spain runs from 6 to 16 years, and the last year is called the 4th year of Educación Secundaria Obligatoria (ESO)

[b]*FAS* Family Affluence Scale (see "Methods")

[c]*SC* Social class (neo-Weberian classification proposed by the Spanish Epidemiology Society, see "Methods")

Bold values are represent statistically significant difference

significant statistical association with the missing social class values were status as an immigrant (aOR 4.18; 95% CI 2.63–6.66) and public school attendance (aOR 1.86; 95% CI 1.07–3.23).

In Table 4, the two SEP measures and the social class and their association with risky alcohol consumption adjusted by the sociodemographic variables among 4th year of ESO students are shown. The covariates that maintained significance after adjustment were the same ones for the three different models.

The associated factors that maintained significant statistical associations between parents' occupational social class and risky alcohol consumption after adjustment for the sociodemographic variables were: belonging to the highest social class (SC I–II) (aOR 1.34; 95% CI 1.00–1.79), reporting lower academic achievement (aOR 1.65; 95% CI 1.12–2.42), having paid work (aOR 1.47; 95% CI 1.12–1.93), having more than 10 euros a week (aOR 2.52; 95% CI 1.98–3.21), not living in a biparental family (aOR 1.44; 95% CI 1.11–1.88), being native (aOR 2.00; 95% CI 1.47–2.70) and living in a rural environment (aOR 1.32; 95% CI 1.04–1.69). The same factors were associated between the family affluence scale and risky alcohol consumption. Belonging to the highest socioeconomic position (aOR 2.04; 95% CI 1.21–3.46), reporting lower academic achievement (aOR 1.64; 95% CI 1.12–2.41), having paid work (aOR 1.47; 95% CI 1.12–1.92), having more than 10 euros a week (aOR 2.38; 95% CI 1.86–3.05), not living in a biparental family (aOR 1.48; 95% CI 1.13–1.93), being native (aOR 1.90; 95% CI 1.40–2.58) and living in a rural environment (aOR 1.30; 95% CI 1.02–1.66) . And the factors associated between the parental level of education and risky alcohol consumption were: having parents with university degrees and secondary education (aOR 1.89; 95% CI 1.37–2.60 and aOR 1.48; 95% CI 1.02–2.15, respectively), reporting lower academic achievement (aOR 1.82; 95% CI 1.23–2.70), having paid work (aOR 1.45; 95% CI 1.10–1.90), having more than 10 euros a week (aOR 2.50; 95% CI 1.96–3.20), not living in a biparental family (aOR 1.48; 95% CI 1.13–1.93), being native (aOR 2.00; 95% CI 1.48–2.70) and living in a rural environment (aOR 1.32; 95% CI 1.03–1.69). Having more than 10 euros a week for the adolescents own expenses was the variable with the highest OR in the three different models.

Discussion

The first aim of the study was to compare different SEP indicators and social class measured by parents' occupational social class used among adolescents. Monthly family income had more than 30% of missing values, the family affluence scale had no missing responses, while the parental level of education and also the social class had acceptable missing values (7–16%). Immigrant status and public school attendance were the social factors associated with missing values for parents' occupational social class; lower self-declared academic achievement, immigrant status; residence in a rural area for parental education; and having < 10 euros for student expenses, native status, residence in a rural environment, and public school attendance for reported monthly family incomes.

The second aim of the study was to evaluate risky alcohol consumption according to SEP variables and parental occupational social class. Students with higher SEP reported higher levels of risky alcohol consumption than students with lower SEP and also social class had similar results. These associations maintained their significance ($p < 0.001$) even after adjusting by the sociodemographic variables, and the three different models had the same factors associated. So risky alcohol consumption was associated with the highest SEP level and social class, and also to lower self-declared academic achievement, having paid work, having more than 10 euros a week for own expenses, not living with a biparental family, being native and living in a rural environment.

Differences in the distribution of SEP and social class indicators observed in our study may, in part, reflect the different constructs these indicators attempt to capture. Nevertheless, and in spite of the difficulties to establish comparisons, it is preferable to collect information on the whole range of distribution instead of, for example, comparing only the lower part of the scales. The difficulty measuring social class during adolescence has been noted by other authors (Currie et al. 2008; Cheng and Goodman

Table 3 Missing data for each socioeconomic variable by selected independent variables

	Parents' occupational social class[a]			Parental level of education			Reported monthly family incomes		
	n (%)	cOR (IC95%)	aOR (IC 95%)	*n* (%)	cOR (IC95%)	aOR (IC 95%)	*n* (%)	cOR (IC95%)	aOR (IC 95%)
Gender									
Girls	35 (5.70)	1	1	83 (13.5)	1	1	204 (33.2)	1.09 (0.86–1.38)	1.11 (0.87–1.41)
Boys	55 (8.40)	1.52 (0.98–2.36)	1.43 (0.91–2.26)	113 (17.3)	1.34 (0.99–1.82)	1.36 (0.99–1.86)	204 (31.2)	1	1
Self-declared academic achievement									
High	29 (7.0)	1	1	41 (9.9)	**1**	**1**	55 (30.1)	1.06 (0.73–1.55)	1.06 (0.72–1.56)
Medium	47 (7.0)	1.00 (0.62–1.62)	0.83 (0.50–1.38)	119 (17.8)	**1.97 (1.35–2.88)**	**1.87 (1.28–2.75)**	223 (33.3)	1.16 (0.81–1.66)	1.20 (0.83–1.73)
Low	14 (7.7)	1.10 (0.57–2.14)	1.02 (0.51–2.06)	36 (19.7)	**2.23 (1.37–3.63)**	**2.13 (1.30–3.51)**	130 (31.3)	1	1
Students with paid work									
Yes	18 (5.3)	1	1	44 (13.1)	1	1	116 (34.4)	1.15 (0.88–1.50)	1.18 (0.90–1.54)
No	72 (7.7)	1.49 (0.87–2.53)	1.56 (0.89–2.74)	152 (16.3)	1.30 (0.91–1.87)	1.32 (0.91–1.91)	292 (31.4)	1	1
Weekly available money									
More than 10 euros	31 (6.0)	1	1	75 (14.6)	1	1	151 (29.3)	1	**1**
10 euros or less	59 (7.8)	1.33 (0.85–2.08)	1.19 (0.75–1.90)	121 (16.1)	1.12 (0.82–1.54)	1.09 (0.80–1.51)	257 (34.1)	1.25 (0.98–1.59)	**1.28 (1.00–1.64)**
Family structure									
Biparental	61 (6.7)	1	1	140 (15.4)	1	1	303 (33.3)	1.20 (0.92–1.57)	1.14 (0.87–1.50)
Other family structure[b]	29 (8.1)	1.23 (0.77–1.94)	1.03 (0.63–1.67)	56 (15.6)	1.02 (0.73–1.43)	0.98 (0.70–1.39)	105 (29.3)	1	1
Country of origin[c]									
Natives	42 (4.3)	**1**	**1**	141 (14.3)	**1**	**1**	331 (33.5)	**1.39 (1.03–1.88)**	**1.26 (0.93–1.72)**
Immigrants	46 (17.0)	**4.61 (2.96–7.17)**	**4.18 (2.63–6.66)**	54 (19.9)	**1.50 (1.06–2.12)**	**1.53 (1.06–2.20)**	72 (26.6)	**1**	**1**
Type of township of residence[d]			55 (19.9)						
Rural	34 (5.3)	**1**	1	113 (17.8)	**1.43 (1.05–1.94)**	**1.58 (1.14–2.20)**	225 (35.4)	**1.34 (1.06–1.70)**	**1.41 (1.10–1.81)**
Urban	56 (8.9)	**1.72 (1.11–2.68)**	1.45 (0.90–2.33)	83 (13.1)	**1**	**1**	183 (29.0)	**1**	**1**
Type of school									
Public	72 (8.4)	**2.00 (1.18–3.40)**	**1.86 (1.07–3.23)**	137 (16.0)	**1.14 (0.82–1.58)**	1.03 (0.73–1.45)	256 (29.9)	**1**	**1**
Subsidized/private	18 (4.4)	**1**	**1**	59 (14.4)	**1**	1	152 (37.0)	**1.38 (1.08–1.77)**	**1.49 (1.15–1.93)**

Students in the last year of mandatory education [Mandatory education in Spain is from 6 to 16 years, and the last year is called the 4th year of Educación Secundaria Obligatoria (ESO)]. Central Catalonia (Spain), 2011–2012

cOR Crude odds ratio, *aOR* adjusted odds ratio

[a]Parents' occupational social class (see "Methods")

[b]One parent or tutor and/or sibling and/or other family member or kid's shelter

[c]Natives: parents and adolescents born in Spain; immigrants: adolescent and/or parents born outside Spain

[d]Rural: $\leq$ 10.000 inhabitants; urban: $>$ 10.000 inhabitants

Bold values are represent statistically significant difference

2014). The family affluence scale was created to have a better SEP indicator because parental occupation had many measurement difficulties in adolescent population (Currie et al. 1997). In our study, the family affluence scale had no missing responses, but it tended to classify adolescents to the highest SEP positions compared with the other SEP and social class variables studied. In the analysis of the different associations between the different SEP and social class variables and FAS (previous analysis not shown in this paper), the students with lower SEP from FAS had the most missing values for parents' occupational social class and parent's level of education, as other authors have shown previously (Pförtner et al. 2014). Although the indicator has been revised (Batista-Foguet et al. 2004) and adapted over time (Currie et al. 2008), probably the scale needed to be updated. In fact, in another study, Elgar et al. (2015) pointed out that the item asking how many computers adolescents have might have lost sensitivity over the time (Elgar et al. 2015).

Comparison of the other two SEP indicators analyzed in this paper shows the proof that the monthly family income reported by adolescents is not a good indicator for SEP assessment during this period because the missing values are more than 30%, and too many associated factors make difficult to control the bias. Also, previous research has arrived to similar conclusions (Potter et al. 2005). Parental education showed more problems (missing associated factors) than the parents' occupational social class, consisting with the conclusions of other authors (Pueyo et al. 2007; Looker 1989; Engzell and Jonsson 2015), some of whom affirm it might be easier for adolescents to answer questions referring to a more recent period than the parents' level of education.

Our findings clearly show that the results of all the different variables must be taken carefully when used in the immigrant population because the variables analyzed were biased by country of origin. In our study, immigrants responded less to SEP measures and the social class than natives, as other authors have shown previously (Feskens 2006). Their difficulty answering these questions can have different explanations. First, the students' parents might have precarious occupations with a lot of instability. They may even work at more than one place at a time. Also, most of the immigration in Spain comes from Muslim countries, in which it is more common for the mother to stay at home, a factor not considered in the national occupation classification. Also, it might be difficult for them to describe their parents' level of education because the educational system might be different from that in our country. This reflects the need to adapt the questions depending on student's origin in an attempt to avoid this bias.

Studies that have analyzed different behaviors and their relation to adolescents' socioeconomic status have found an association between lower social classes and higher cigarette smoking, poorer diet, and less physical activity (Hanson and Chen 2007; Peltzer and Pengpid 2014). Nevertheless, studies investigating the association between family affluence or parental occupation and adolescents' alcohol use have found weak or no associations (Kwok and Yuan 2016). Some other authors found different results depending on the socioeconomic measure used and the pattern of consumption, with opposite associations (Kendler et al. 2014). Others reported positive associations, where higher alcohol use was more frequent in the higher social classes (Hanson and Chen 2007; Richter et al. 2009). These last set of results regarding alcohol consumption are in concordance with ours. We found the same association as the previous research (Richter et al. 2009), in which higher classes reported higher risky alcohol consumption in all SEP measures; nevertheless, our associations were strong when SEP was measured by FAS and parental education, and weaker when measured with parents' occupational social class. Again, these results might reflect that the indicators measure different constructs. If we assume that FAS and parental education may be related to income, the results are in concordance with other authors, showing that availability of financial resources is positively associated with binge drinking during adolescence (Kuntsche et al. 2004). In the same direction, our results show that having more than 10 euros a week seemed to be the most important individual factor for risky alcohol consumption in our study. Although in the adjusted analyses the associations of SEP and social class did not disappear, the associations were diminished, especially with FAS and social class, in comparison with the other variables analyzed. In the same direction, other authors have pointed out that peer and other family factors might have stronger influence on alcohol use than SEP during this period of life (Obradors-Rial et al. 2014; Richter et al. 2009; Currie et al. 2012). Our results also suggest that to fully grasp the impact of the social determinants of health on adolescents behaviors, we need to develop alternative indicators of social class.

Our study had some limitations. We could not establish causality with the findings due to the cross-sectional nature of the study design. Because information bias was possible with our use of a self-reported questionnaire, the instrument was created from other questionnaires previously validated to minimize such bias (Comín et al. 1997; Moncada and Pérez 2001). The different SEP measures and social class have been assessed with adolescents 15–16 years of age, which means that the results likely would have differed with younger students because the responses of younger adolescents to SEP questions are less

Table 4 Prevalence of reported risky alcohol consumption by socioeconomic measure and by sociodemographic variables

	n (%)	cOR (IC95%)	Parents' occupational social class[a] aOR (IC 95%)	Family affluence scale aOR (IC 95%)	Parental level of education aOR (IC 95%)
Gender					
Girls	335 (54.6)	1	1	1	1
Boys	359 (55.1)	1.02 (0.82–1.27)	1.05 (0.83–1.33)	1.05 (0.83–1.33)	1.03 (0.81–1.31)
Self-declared academic achievement					
High	221 (53.3)	**1**	**1**	**1**	**1**
Medium	356 (53.5)	1.01 (0.79–1.29)	1.12 (0.86–1.46)	1.12 (0.86–1.45)	1.18 (0.91–1.55)
Low	117 (63.9)	**1.56 (1.09–2.23)**	**1.65 (1.12–2.42)**	**1.64 (1.12–2.41)**	**1.82 (1.23–2.70)**
Students with paid work					
No	481 (51.8)	**1**	**1**	**1**	**1**
Yes	213 (63.4)	**1.61 (1.25–2.08)**	**1.47 (1.12–1.93)**	**1.47 (1.12–1.92)**	**1.45 (1.10–1.90)**
Weekly available money					
10 euros or less	344 (45.8)	**1**	**1**	**1**	**1**
More than 10 euros	350 (68.2)	**2.54 (2.01–3.21)**	**2.52 (1.98–3.21)**	**2.38 (1.86–3.05)**	**2.50 (1.96–3.20)**
Family structure					
Biparental	481 (53.0)	**1**	**1**	**1**	**1**
Other family structure[b]	213 (59.7)	**1.31 (1.02–1.68)**	**1.44 (1.11–1.88)**	**1.48 (1.13–1.93)**	**1.48 (1.13–1.93)**
Country of origin[c]					
Natives	575 (58.4)	**2.00 (1.52–2.62)**	**2.00 (1.47–2.70)**	**1.90 (1.40–2.58)**	**2.00 (1.48–2.70)**
Immigrants	112 (41.3)	**1**	**1**	**1**	**1**
Type of township of residence[d]					
Urban	315 (49.8)	**1**	**1**	**1**	**1**
Rural	379 (60.0)	**1.51 (1.21–1.88)**	**1.32 (1.04–1.69)**	**1.30 (1.02–1.66)**	**1.32 (1.03–1.69)**
Type of school					
Public	475 (55.6)	1.09 (0.86–1.39)	1.27 (0.98–1.66)	1.25 (0.96–1.62)	1.29 (0.99–1.67)
Subsidized/private	219 (53.4)	1	1	1	1
Parents' occupational social class[a]					
Do not know/missings/undefined	40 (44.4)	0,74 (0,47–1.16)	0.97 (0.60–1.57)	–	–
SC I–II	225 (60.0)	**1.39 (1.06 –1.81)**	**1.34 (1.00–1.79)**	–	–
SC III	155 (57.0)	1.22 (0.91–1.64)	1.16 (0.84–1.60)	–	–
SC IV–V	274 (52.0)	1	1	–	–
Family affluence scale					
Low	27 (31.8)	**1**	–	**1**	–
Medium	207 (50.5)	**2.19 (1.33–3.60)**	–	1.66 (0.98–2.82)	–
High	460 (59.8)	**3.20 (1.98–5.16)**	–	**2.04 (1.21–3.46)**	–
Parents highest level of education					

Table 4 (continued)

	n (%)	cOR (IC95%)	Parents' occupational social class[a] aOR (IC 95%)	Family affluence scale aOR (IC 95%)	Parental level of education aOR (IC 95%)
Primary education and without education	121 (44.6)	**1**	–	–	**1**
Secondary education	133 (55.9)	**1.57 (1.11–2.23)**	–	–	**1.48 (1.02–2.15)**
University studies and higher secondary education	336 (59.9)	**1.85 (1.38–2.48)**	–	–	**1.89 (1.37–2.60)**
Do not know	104 (53.6)	1.43 (0.99–2.07)	–	–	1.44 (0.97–2.13)

Students in the last year of mandatory education [Mandatory education in Spain runs from 6 to 16 years, and the last year is called the 4th year of Educación Secundaria Obligatoria (ESO)]. Central Catalonia (Spain), 2011–2012

cOR crude odds ratio, *aOR* adjusted odds ratio

[a]Parents' occupational social class. *SC* social class (neo-Weberian classification proposed by the Spanish Epidemiology Society, see "Methods")

[b]One parent or tutor and/or sibling and/or other family member or kid's shelter

[c]Natives: parents and adolescents born in Spain; immigrants: adolescent and/or parents born outside Spain

[d]Rural: ≤ 10.000 inhabitants; urban: > 10.000 inhabitants

Bold values are represent statistically significant difference

accurate (Ensminger et al. 2000). Other authors have suggested that when possible, information about SEP should be obtained from parents and students (Pueyo et al. 2007). Nevertheless, Engzell and Jonsson (2015) concluded that parental occupation answers from a sample of 14 year olds were reliable (Engzell and Jonsson 2015). The current paper only took into account the neo-Weberian approach to assess health inequalities because of the added difficulty assessing social class from a neo-Marxian approach (Domingo-Salvany et al. 2013). Further research on this field is needed for this period of life.

With the results of our study, it can be deduced that social class measured by parents' occupational social class is a measure that should be considered to obtain an approach of the adolescent social class. Other approaches are better to assess social class in adult populations (Muntaner et al. 2010, 2015); nevertheless, the difficulty for adolescents to answer questions related to their own social class makes them more difficult for use in this period of life when most are out of the labor market, so further research using social class based on the neo-Marxian approach (Wright 2000) in adolescents should be explored. Meanwhile, neo-Weberian parents' occupational social class has been proved to be an acceptable indicator, in comparison with the traditional SEP indicators in adolescence, which contributes to a better understanding of health inequalities during this period of life and, by extension, makes possible mobility comparisons during lifetime. Although our study offers a new measure that can be used, parents' occupational social class measured following SEE directions, it is necessary to continue investigating to achieve a better social class measure in adolescence, with the goal to monitor the impact that health inequalities have during this period of life and, therefore, to establish public health strategies to reduce them and to have more information about their impact in adult life.

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Compliance with ethical standards

Conflict of interest The authors declare that we have no conflicts of interests.

Human and animals rights The Helsinki Declaration of 1964 and its subsequent revisions, and the professional ethics codes were followed during the study. Also, the Spanish law on data confidentiality (Law 15/1999 of 13 December on Personal Data Protection) was observed. The school staff informed the parents of the teenagers about the aims of the study and obtained their collaboration.

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