The Classification of Spanish Adolescents Based on Substance Consumption Patterns and the Analysis of the Relationships within their Social Developmental Contexts

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This research is part of the 2006 edition of the *Health Behavior in School-aged Children* (HBSC) study. The data presented were composed of a sample of 15942 Spanish adolescents ranging from 13 to 18 years of age. The instruments used included a variety of questions related to substance consumption among adolescents, their bio-psycho-social adjustment and developmental contexts, all of which are part of the HBSC study instrument bank. Through classification analysis, as well as significance and effect size tests, we obtained relevant information about the current epidemiology of substance consumption among Spanish adolescents. These results are representative of the Spanish adolescent population which allows the typical risk profile attributed to young people to be clarified. A gradual adjustment can be seen in terms of substance consumption levels in youth and that same level in their friends. Likewise, the analysis of the developmental context (family, friends and school) provides important information when it comes to preventing substance consumption, thus showing the advantages that coherence and connection have between the different environments where youth live, grow up and develop.
Keywords: substance consumption, adolescence, health, developmental contexts, Spain.

Esta investigación forma parte de la edición 2006 del estudio *Health Behavior in School-aged Children* (HBSC). Los datos que se presentan constituyen una muestra de 15942 adolescentes españoles de 13 a 18 años. Los instrumentos utilizados han sido diversas preguntas relacionadas con el consumo de sustancias, el ajuste biopsicosocial de los adolescentes y sus contextos de desarrollo, que forman parte del banco de instrumentos del estudio HBSC. Realizando análisis de clasificación, pruebas de significación y tamaños de efecto, se obtiene información relevante acerca de la epidemiología actual del consumo de sustancias en los adolescentes españoles. Se trata de resultados representativos de la población española que permiten matizar con detalle el perfil de riesgo típicamente atribuido a los jóvenes. Se demuestra una graduación en la relación entre el nivel de consumo de sustancias de los jóvenes y el nivel de consumo de sus amistades. Así mismo, el análisis de los contextos de desarrollo (familia, amistades y escuela) aporta información relevante a la hora de prevenir el consumo de sustancias, demostrando las ventajas que supone la coherencia y conexión entre los diferentes ámbitos donde los jóvenes viven, crecen y se desarrollan.
Palabras clave: consumo de sustancias, adolescencia, salud, contextos de desarrollo, España.

Currently, substance consumption among young people is a major concern for parents, educators and professionals. Young people in developed countries are exposed to drugs which are easily available at a very early age, with Spain standing out as one of the countries with the highest adolescent consumption rate. After alcohol and tobacco, the substance most consumed by Spanish adolescents is cannabis. In fact, Spain, along with Wales, places third among countries with the highest rate of cannabis consumption by young people, behind Canada and Switzerland (Currie et al., 2008).

Nowadays, we know the risk behaviors of adolescents in a society are the outcome of the process of socialization (along with his o her genetic traits). The success of this outcome in terms of society's expectations will depend on a series of interactions with significant socializing agents –such as parents, teachers, peers, and media- that constitute the community in which this individual lives (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000).

In the early years, the family assumes the primary role of nurturing the child. As the child gets older, the peer group becomes a primary source of support. In primitive societies, training for competency occurs in the family in the form of learning to hunt or build a shelter, whereas in industrial societies it occurs in the school in the form of learning to read, write, compute, and master a wide range of subject matter. Each agent has its own functions in socialization. Sometimes the agents complement each other, sometimes the contradict each other. In this sense, the value of drug-free living is usually taught in the family, the school, the friends, and perhaps in the media, with the agents complementing each other (Berns, 2009).

There is extensive research that demonstrates the relationship between substance consumption and poorer scores for well-being or quality of life in young people. However, the same does not hold true when researching the relationship between substance consumption and the satisfaction that young people have with their surrounding social contexts: family (Brook, Cohen, Whitemean, & Gordon, 1992; Guo, Hill, Hawkins, Catalano, & Abbott, 2002), friends (e.g., Guo et al., 2002) and school (Chassin et al., 2004; Paulson, Combs, & Richardson, 1990). Despite the fact that some work has demonstrated lower quality of life indicators in relation to the family, friends and school contexts of young people who consume drugs, there are limited data showing the satisfaction that these young people have in regard to developmental contexts, depending on substance consumption pattern. Most authors are ever more convinced that it is a person's satisfaction towards their surrounding circumstances that most determines their quality of life, rather than the external indicators. Thus, in some studies, the correlation between various aspects of subjective well-being and objective life circumstances is surprisingly low (Diener & Diener, 1996; Huebner, 2004; Schkad & Kahnema, 1998).

Faced with this need for research, the objective of this paper is to show the satisfaction or assessment of Spanish adolescents with regards to their family, friends and school depending on their pattern of substance consumption. To this end, the adolescents are first classified depending on their substance consumption profile. This classification is then compared with their health scores, after which, the level of satisfaction that Spanish youths feel towards their family, friends and school is evaluated. Subsequently, a more in-depth study is carried out in the context of development, which shows more inconsistencies and a lack of continuity when compared with all other contexts.

Methods

Participants

This paper is classified within the 2006 edition of the international study, *Health Behaviour in School-aged Children* (HBSC). The participants in this study are a representative sample of the adolescent population in Spain. The same was selected with a random multi-stage sampling, stratified by conglomerates, bearing in mind—in addition to the age of the adolescents—the geographical area (region of the country), habitat (rural and urban) and type of education centre (public or private). The resulting sample from this selection process was made up of a total of 15942 Spanish adolescents, 46.7% boys, between 13 and 18 years of age (34.5% of 13-14 year-olds, 36% of 15-16 year-olds and 29.5% of 17-18 year-olds).

Measures

The HBSC questionnaire collects information about the adolescents based upon various topics related to their lifestyles, their positive health and the contexts in which they grow up (family, peers and school). This study has demonstrated along its almost 30 years of history to have a large bank of instruments that meet the criteria of reliability and validity. Given the detailed information provided, the following paragraphs only cite references to papers that validate the instruments used in this work.

The indicative variables of the adolescents' substance use were obtained from two sources. Firstly, the questions related to tobacco and alcohol consumption were selected from the item bank of the study HBSC (Currie et al., 2008):

- Current frequency using tobacco (*every day / at least once a week, but not every day / less than once a week / I don't smoke*).
- Current drinking frequency of different types of alcohol such as beer, wine, liquors, alcopops and others (*every day / every week / every month / rarely / never*).
- Frequency of episodes of drunkenness (*never / once / 2-3 times / 4-10 times / more than 10 times*).

Secondly, the questions related to use of illegal drugs were obtained from the *European School Survey Project on Alcohol and Other Drugs* -ESPAD- (Hibell et al., 2009):

- Frequency of cannabis consumption in the last 30 days (*never / once or twice / from 3 to 5 times / from 6 to 9 times / from 10 to 19 times / from 20 to 39 times / 40 times or more*).
- Frequency of use of other illegal drugs: designer drugs (ecstasy, pills, LSD, acid, trip), amphetamines or speed, opiates (heroine, methadone), drugs to get high, cocaine, glue or solvents and others (*with the same answer values as for cannabis*).

With regard to substance consumption of friends, the adolescents' perception of their friends smoking cigarettes, drinking alcohol, getting drunk, smoking marijuana and using drugs to get stoned were evaluated. These questions are part of the bank of the HBSC study instruments (Currie et al., 2008) and they present the following answer values: *never or rarely / sometimes / often / I do not know*.

The indicative variable of the state of health of adolescents is a measure created from 20 items related to life satisfaction, related-health quality of life, self-reported health and psychosomatic complaints. It is a global and integrated score with a mean value of 5 and a typical deviation of 10 that has good criteria of reliability and validity (Ramos, Moreno, Rivera, & Pérez, 2010). This measure assesses the state of physical, mental and social well-being of adolescents, according to the more broadly accepted definition of health that was proposed by the World Health Organization (WHO, 1948).

The "Cantril ladder" was used to evaluate young people's satisfaction with the three more important contexts of development in their lives (Cantril, 1965), but it was adapted to the fields of family and friends. It consists in asking adolescents to indicate, on a scale from 0 to 10, the value that best represents the global perception they have of their family and their friends, being 0 the lowest satisfaction with these contexts and 10 the highest. In the case of satisfaction with the school context, HBSC uses the item created in the first edition -1985/86- of this study (Currie et al., 2008). The adolescents had to answer how they felt about school, with the following answer values*: I like it a lot / I like it a bit / I don't like it very much / I don't like it at all*.

To evaluate how adults accept adolescents' friends, questions about both parents and teachers' acceptance of friends were included (these items are in the HBSC study bank of instruments, Currie et al., 2008). These questions have the following answer values: *always or almost always / sometimes / never or almost never / they have not met your group of friends*.

Procedure

The international coordination of the HBSC study indicates that there are three basic conditions that must be complied with during the data collection procedure. Firstly, it must be the students themselves who respond to the questionnaire; secondly, the anonymity of the answers must be strictly guaranteed and, lastly, the administration of the questionnaires must be carried out within the school context.

In those geographical areas where there was more than one official language, a bilingual questionnaire was used. The questions in one of the two official languages was on one side of the questionnaire and translated into the other language on the other side, so that each student could freely choose the language they felt more comfortable with to complete the questionnaire.

A cluster analysis was made to classify young people according to substance use. Specifically, two-step cluster procedure was selected for three main reasons. First, the number of clusters was not clear. In addition, this procedure is a suitable test when analyzing large samples (such as the HBSC study's sample). Besides, it allows the use of categorical and quantitative variables. Later, this cluster analysis was validated examining concordance between the two-step cluster and the k-means cluster. To carry out the k-means cluster, the ordinal values of categorical variables were transformed into quantitative values, observing the distance between the different values. The kappa index was sorted by the following criteria: from 0 to .19, insignificant agreement degree; from .20 to .39, low agreement degree; from .40 to .59 average agreement degree; from .60 to .79 high agreement degree; and, from .80 to 1, very high agreement degree (Landis & Koch, 1977).

Tests of significance (chi-square, Student's *t*-distribution and analysis of variance) were calculated to examine the relation between the clusters of adolescents obtained before as well as other variables of this study (sex, age, global health score, satisfaction with family, friends and school, substance consumption of friends and acceptation of friends by parents and teachers) (Tabachnick & Fidell, 2007).

Also, effect size tests were used, depending on the characteristics of the variables: V de Crammer, for contrast between a nominal variable and a nominal or ordinal variable (or coefficient *phi*, when the two variables had the same number of answer values), and Kendal Tau, for the contrast between two ordinal variables (using the coefficient Tau-b if the two variables had the same number of answer values and the coefficient Tau-c if they had a different number of answer values). In all cases, the following intervals were applied: from 0 to 0.09, negligible effect; from 0.10 to 0.29, small effect; from 0.30 to 0.49, medium effect; and from 0.50, large effect (Abdi, 2007; Agresti, 1996). The eta-square effect size was made for the contrast between categorical and quantitative variables, with the following intervals: from 0 to 0.009, negligible effect; from 0.010 to 0.089, small effect; from 0.090 to 0.249, medium effect; and from 0.250, large effect (Tabachnick & Fidell, 2007).

Results

Classification of adolescents based on their substance consumption pattern

First of all, a two-step cluster analysis was carried out with five variables: current frequency of tobacco consumption, current frequency of alcohol consumption, frequency of episodes of drunkenness, frequency of cannabis consumption in the last 30 days and frequency of the consumption of other illegal substances. As can be seen in Table 1, this analysis resulted in four groups of adolescents. Of those adolescents between 13 and 18 years of age, 1,262 young people were not included in the analysis as they failed to respond to one of the previous questions.

A cluster analysis was also carried out using the k-means cluster procedure and the correspondence of both results (two-step cluster and k-means cluster) was verified to obtain a kappa index of 1. Demographic characteristics for these four groups of adolescents are explained below.

The *first group* was made up of 8,641 adolescents, that is to say, 58.9% of the participating adolescents. These were those adolescents with the lowest consumption pattern of legal and illegal drugs. As shown on Table 2, 95.4% of these adolescents did not smoke, 91% never or rarely consumed alcohol, 91.6% had never been drunk, 98.8% had not consumed cannabis in the last month and 99.2% had never experimented with other illegal drugs. Therefore, we are talking about young people with zero substance consumption or their alcohol consumption was very moderate.

The *second group* was made up of 4,629 adolescents or, in other words, 31.5% of the adolescents. The adolescents in this group stood out for their high alcohol consumption, accompanied by episodes of drunkenness. Their consumption of tobacco, cannabis and other illegal drugs was almost equal to the average. In fact, 83.6% and 94%, respectively, had never consumed cannabis or any other illegal drug. With regards to tobacco, as can be seen in Table 2, 63.2% did not smoke, as opposed to 16.6% that smoked daily.

However, it is in the alcohol consumption and frequency of drunkenness that places these adolescents at greater risk; 56.8% consumed alcohol at least weekly and 27.4% had been drunk four times or more in their life. Therefore, these young people are characterized by their high consumption of alcohol, but not of illegal drugs.

The *third group* of young people was made up of 1,153 adolescents, which corresponds to 7.9% of the adolescents. The consumption of alcohol, tobacco, cannabis and the prevalence of drunkenness in these young people were significantly high and the only positive or protective indicator was their low consumption of other illegal drugs (designer drugs, amphetamines or speed, opiates, drugs to get stoned, cocaine, glues or solvents…). Table 2 shows that 70.1% of these adolescents smoked daily, 77.8% drank alcohol at least weekly, 37.3% had been drunk 10 times or more in their lives and 88.8% said they had consumed cannabis at least three times in the last 30 days (within this last group, 13.1% had consumed it 40 times or more). However, 71.2% had never consumed other illegal drugs and 22.5% had done so only once or twice. Therefore, these adolescents are characterized by their frequent consumption of legal drugs and cannabis, but not by consumption of other illegal drugs.

The *fourth group* was made up of 256 adolescents (1.7% of the adolescents). The consumption of both legal and illegal drugs was very high in this fourth group of adolescents. The consumption of alcohol, tobacco, cannabis and the prevalence of drunkenness in these adolescents was practically the same as that recorded for the adolescents in group 3; however, what made these different to the others is their very high consumption of other illegal drugs (98.7% had consumed these at least six times in their life and 32.4% had done so 40 times or more). That is to say, this is a group of young people characterized by a high consumption of legal and illegal substances.

After establishing the basic characteristics of the four groups of adolescents, the relationship between these four groups and the sex and age of these participants was analyzed. These results are provided below in Table 3.

Table 1

The classification of adolescents based on their substance consumption pattern

	Frequency	Percent	Valid percent
Group 1	8,641	54.2	58.9
Group 2	4,629	29.1	31.5
Group 3	1,153	7.2	7.9
Group 4	256	1.6	1.7
Valid Total	14,680	92.1	100.0
Missing	1,262	7.9	
Total	15,942	100.0	

Table 2

Distribution of the four adolescent groups obtained in the cluster analysis related to substance consumption in the different variables included in the analysis

	Total		Zero substance consumption or alcohol consumption very moderate (group 1)		High alcohol consumption (group 2)		High consumption of legal drugs and cannabis (group 3)		High consumption of legal drugs, cannabis and other illegal drugs (group 4)	
	N	%	N	%	N	%	N	%	N	%
Tobacco consumption										
Do not smoke	17,853	83.3	8,244	95.4	2,926	63.2	131	11.3	28	11.0
Less than once a week	860	4.0	274	3.2	455	9.8	64	5.5	4	1.7
At least once a week, but not every day	792	3.7	58	.7	478	10.3	150	13.0	15	5.9
Every day	1,936	9.0	65	.7	770	16.6	809	70.1	208	81.4
Alcohol consumption										
Never	9,509	45.0	4,328	50.1	25	.5	8	.7	3	1.2
Rarely	5,054	23.9	3,533	40.9	535	11.5	64	5.6	14	5.4
Every month	2,602	12.3	781	9.0	1,440	31.1	184	16.0	21	8.3
Every week	3,683	17.4	0	.0	2,519	54.4	826	71.6	158	61.7
Every day	285	1.3	0	.0	111	2.4	72	6.2	60	23.5
Drunkenness										
Never	14,915	69.5	7,917	91.6	582	12.6	55	4.8	7	2.8
Once	2,179	10.2	712	8.2	1,153	24.9	106	9.2	10	4.1
2-3 times	2,040	9.5	13	.1	1,631	35.2	253	21.9	36	14.1
4-10 times	1,123	5.2	0	.0	720	15.5	309	26.8	42	16.4
More than 10 times	1,204	5.6	0	.0	543	11.7	430	37.3	160	62.7
Cannabis consumption										
Never	13,216	85.2	8,533	98.8	3,869	83.6	0	.0	24	9.2
Once or twice	916	5.9	85	1.0	655	14.2	129	11.2	19	7.5
From 3 to 5 times	354	2.3	13	.1	101	2.2	225	19.5	9	3.7
From 6 to 9 times	282	1.8	6	.1	5	.1	234	20.3	31	12.2
From 10 to 19 times	297	1.9	4	.0	0	.0	242	21.0	49	19.1
From 20 to 39 times	217	1.4	0	.0	0	.0	172	14.9	43	16.7
40 times or more	235	1.5	0	.0	0	.0	151	13.1	81	31.6
Other illegal drugs consumption										
Never	14,883	93.8	8,570	99.2	4,349	94.0	822	71.2	0	.0
Once or twice	548	3.5	49	.6	219	4.7	259	22.5	0	.0
From 3 to 5 times	121	.8	8	.1	28	.6	73	6.3	4	1.7
From 6 to 9 times	97	.6	2	.0	29	.6	0	.0	61	24.0
From 10 to 19 times	67	.4	6	.1	2	.0	0	.0	57	22.3
From 20 to 39 times	55	.3	0	.0	2	.0	0	.0	50	19.5
40 times or more	102	.6	6	.1	0	.0	0	.0	83	32.4

Table 3
Distribution by sex and age of the four groups of adolescents classified according to their substance consumption pattern

	Total		Zero substance consumption or alcohol consumption very moderate (group 1)		High alcohol consumption (group 2)		High consumption of legal drugs and cannabis (group 3)		High consumption of legal drugs, cannabis and other illegal drugs (group 4)	
	N	%	N	%	N	%	N	%	N	%
Total	15,942	100	8,849	100	4,551	100	1,146	100	266	100
Sex										
Boys	7,614	46.7	4,243	48.6	2,056	43.2	612	47.1	129	41.9
Girls	8,328	53.3	4,606	51.4	2,495	56.8	534	52.9	137	58.1
Age										
13 - 14 year-olds	5,499	34.5	4,384	49.7	500	11.1	96	8.9	17	6.2
15 - 16 year-olds	5,733	36.0	2,991	33.4	1,768	39.7	496	43.6	103	41.2
17 - 18 year-olds	4,710	29.5	1,474	16.9	2,283	49.2	554	47.4	146	52.7

The data in Table 3 show that as the age of the adolescents increases, so does the intensity of substance consumption. Likewise, in the group of younger adolescents (13-14 years), the proportion of boys and girls with a low pattern of consumption was much greater (49.7%) than in the groups with a high (8.9%) and very high (6.2%) pattern of consumption: $\chi^2(6, N = 14,679) = 2,909.87, p < .001$, Crammer $V = .14$. There was no appreciable relationship between the sex of the adolescents and their classification based on substance consumption patterns: $\chi^2(3, N = 14,679) = 37.14, p < .001, \Phi = .05$.

Relationship between the classification of adolescents depending on the substance consumption pattern and their health score in the three age groups

Table 4 shows the descriptive statistics of the global health score in the four groups of adolescents, classified according to their substance consumption pattern, differentiated depending on the age group. Variance analysis and size of effect tests were carried out in each one of the age groups to evaluate the relationship between the global health score and pattern of consumption. The results demonstrated that the global health score decreased in those adolescents who had a higher pattern of consumption, although this only occurred in young people aged 13 to 16. In short, at 13-14 years of age, the global health score was 50.98 points for young people with a negligible consumption of drugs (group 1), while this score fell to 39.18 for those that consumed alcohol and cannabis (group 3) and, even further to 33.03 for those that also consumed other illegal drugs (group 4): $F(3, 4, 257) = 75.06, p < .001, \eta^2 = 0.051$. In the 15-16 years age group, the variation in the global health score was also significant ($F(3, 4, 924) = 50.17, p < .001, \eta^2 = 0.03$), decreasing from 49.12 for young people with an almost nonexistent consumption of drugs (group 1) to 42.17 for those with a higher consumption (group 4), as can be

seen in Table 4. With regards to the 17-18 year-olds, the relationship between substance consumption patterns and global health score was significant, but with an unappreciable effect size: $F(3, 4, 237) = 13.31, p < .001, \eta^2 = 0.009$.

As for 13 to 16 year olds, whether or not drugs were consumed very clearly affected health, and the relationship between substance consumption and young peoples' satisfaction with their developmental contexts is shown below, selecting those age groups.

The influence of substance consumption on satisfaction with developmental contexts

To begin with, the level of satisfaction shown by young people from 13 to 16 years with their family relationships (measured from 0 to 10) decreased from the group that did not consume drugs or did so very moderately, with a average of 8.40, to the group who consumed both legal and illegal drugs, with an average of 6.73 (see Table 5). Bearing in mind that the global average of family satisfaction is 8.23, those young people who either consumed alcohol in large quantities (group 2) or consumed some form of illegal drug (groups 3 and 4) were more dissatisfied with their family relationships: $F(3, 9, 933) = 116.52, p < .001, \eta^2 = 0.034$. However, the satisfaction of young people with their relationships with friends was not affected by their substance consumption pattern, since in the four groups their level of satisfaction oscillated between 8.58 and 8.69: $F(3, 9, 899) = 1.05, p = .368$.

Table 6 shows satisfaction with school context among the young people in this study, depending on substance consumption pattern. Thus, 66.9% of young people who consumed cannabis and 73.1% who consumed other illegal drugs in addition to alcohol reported being unsatisfied with school. Young people who reported having liked school a great deal, either did not consume any drug, or consumed very low levels: $\chi^2(9, N = 10,174) = 634.35, p < .001, Tau-b = .205$.

Table 4

Descriptive values of the global health score in the four groups of adolescents based on their substance consumption, differing in the three age groups

	Mean	SD	N	Minimum	Maximum
13-14 year-olds					
Zero substance consumption or alcohol consumption very moderate (group 1)	50.98	9.76	3,631	2.68	93.34
High alcohol consumption (group 2)	46.02	12.29	440	8.20	93.34
High consumption of legal drugs and cannabis (group 3)	39.18	10.83	80	14.19	68.79
High consumption of legal drugs, cannabis and other illegal drugs (group 4)	33.03	17.85	11	6.53	85.27
Total	50.18	10.37	4,162	2.68	93.34
15-16 year-olds					
Zero substance consumption or alcohol consumption very moderate (group 1)	49.12	8.42	2,640	13.05	80.08
High alcohol consumption (group 2)	46.96	9.38	1,719	5.65	77.75
High consumption of legal drugs and cannabis (group 3)	45.23	9.23	474	11.27	81.78
High consumption of legal drugs, cannabis and other illegal drugs (group 4)	42.17	11.87	96	9.57	69.40
Total	47.86	9.05	4,929	5.65	81.78
17-18 year-olds					
Zero substance consumption or alcohol consumption very moderate (group 1)	47.06	9.51	1,398	8.36	86.75
High alcohol consumption (group 2)	46.43	8.50	2,193	6.01	68.79
High consumption of legal drugs and cannabis (group 3)	44.37	8.98	518	10.50	67.91
High consumption of legal drugs, cannabis and other illegal drugs (group 4)	44.23	10.86	123	12.21	67.47
Total	46.32	9.017	4,233	6.01	86.75

Table 5

Descriptive values of adolescent satisfaction with their family context depending on substance consumption

	Mean	SD	N	Minimum	Maximum
Satisfaction with family relations					
Zero substance consumption or alcohol consumption very moderate (group 1)	8.40	1.59	6,960	0	10
High alcohol consumption (group 2)	7.98	1.67	2,283	0	10
High consumption of legal drugs and cannabis (group 3)	7.44	1.98	579	0	10
High consumption of legal drugs, cannabis and other illegal drugs (group 4)	6.73	2.74	115	0	10
Total	8.23	1.68	9,938	0	10

Table 6

Distribution of adolescents according to substance consumption and their satisfaction with the school context

	I like it a lot		I like it a bit		I don't like it very much		I don't like it at all	
	N	%	N	%	N	%	N	%
Satisfaction with school context								
Zero substance consumption or alcohol consumption very moderate (group 1)	1,322	18.5	3,108	43.6	1,842	25.8	859	12.0
High alcohol consumption (group 2)	210	9.0	831	35.7	746	32.0	541	23.2
High consumption of legal drugs and cannabis (group 3)	34	5.8	163	27.3	161	26.9	239	40.0
High consumption of legal drugs, cannabis and other illegal drugs (group 4)	11	9.6	21	17.3	37	31.5	49	41.6
Total	1,778	16.0	4,488	40.3	3,037	27.3	1,829	16.4

Therefore, those young people with a higher intensity of substance consumption reported lower satisfaction with family and school, but satisfaction with friends was not affected. The characteristics of the group of friends will be explored more fully below.

Analysis of the group of friends of the adolescents studied

Consumption patterns in the group of friends

The results of this study showed that substance consumption in adolescents between 13 and 16 years of age was closely related to their friends' substance consumption, as indicated by the data shown in Table 7.

In regard to legal drugs (tobacco and alcohol), 73.1% of the friends of those young people who reported that they did not consume drugs, or who reported having consumed alcohol only moderately (group 1), never or hardly ever smoked cigarettes, $\chi^2(6, N = 8,808) = 2,673.1$, $p < .001$, $Tau-c = .380$; 56.4% did not consume alcohol at all, $\chi^2(6,$ $N = 8,985) = 3,051.15$, $p < .001$, $Tau-c = .440$; and 79.7% had never or hardly ever been drunk, $\chi^2(6, N = 8,836) = 2,899.04$, $p < .001$, $Tau-c = .391$. Concerning the consumption of marijuana cigarettes, 73% of adolescents who reportedly consumed both legal drugs and cannabis (group 3) had friends who also smoked marijuana frequently. The same held true with 75.9% of adolescents who consumed other illegal drugs, in addition to marijuana (group 4): $\chi^2(6, N = 8,578) = 3,607.57$, $p < .001$, $Tau-c = .363$. Furthermore, there is a clear difference with regards to friends' use of drugs to get stoned: $\chi^2(6, N = 8,544) = 2,636.29$, $p < .001$, $Tau-c = .241$. While only 1.5% of adolescents' friends belonging to the group with either no substance consumption or very moderate alcohol consumption often consumed drugs to get stoned (group 1), this happened in 8.3% of the friends of young people who were characterized by a high alcohol consumption (group 2). Additionally, 36.4% of adolescents also consumed cannabis (group 3), while for the young peoples who consumed legal drugs, cannabis and other illegal drugs (group 4), the percentage rose to 62.8%.

Table 7

Distribution of adolescents based on their friends' substance consumption and classified according to their own substance consumption

Most of their friends…	Zero substance consumption or alcohol consumption very moderate (group 1)		High alcohol consumption (group 2)		High consumption of legal drugs and cannabis (group 3)		High consumption of legal drugs, cannabis and other illegal drugs (group 4)	
	N	%	N	%	N	%	N	%
Smoke cigarettes								
Never or rarely	4,344	73.1	681	31.3	30	5.2	2	2.1
Sometimes	1,039	17.5	710	32.7	113	19.6	13	10.6
Often	557	9.4	783	36.0	433	75.2	103	87.3
Drink alcohol								
Never or rarely	3,409	56.4	159	7.1	14	2.4	7	6.2
Sometimes	2,101	34.8	1,053	47.0	168	28.8	24	20.1
Often	536	8.9	1,026	45.9	401	68.8	87	73.7
Get drunk								
Never or rarely	4,742	79.7	654	30.0	82	13.9	9	8.0
Sometimes	979	16.5	1,095	50.2	273	46.2	31	26.7
Often	227	3.8	432	19.8	235	39.9	77	65.3
Smoke marijuana								
Never or rarely	4,936	85.2	1,026	49.2	25	4.4	13	10.8
Sometimes	637	11.0	693	33.2	132	22.6	15	13.3
Often	220	3.8	366	17.5	427	73.0	88	75.9
Use drugs to get stoned								
Never or rarely	5,450	93.4	1,492	73.5	158	28.0	18	15.2
Sometimes	295	5.1	368	18.1	201	35.6	26	22.0
Often	88	1.5	169	8.3	206	36.4	73	62.8

*Acceptance by parents and teachers of adolescents'
friends*

Among young people who reportedly did not consume
drugs or who drank alcohol only moderately (group 1),
76.9% reported that their parents always or almost always
accepted their friends. However, this percentage diminished
progressively as the intensity of involvement in substance
consumption increased: $\chi^2(9, N = 10,035) = 259.52, p <
.001$, *Tau-b* = .128. As can be seen in Table 8, the percentage
of friends that were reportedly accepted by parents
diminished to 68.5%, in the case of young people who
frequently consumed alcohol (group 2), to 55% for those
who also consumed cannabis in addition to legal drugs
(group 3), and dropped to 44.7% among those who
reportedly consumed legal drugs, cannabis and other illegal
drugs (group 4).

Similar to parents, teachers reportedly had a higher
probability of accepting the friends of those young people
who did not consume drugs or who drank limited amounts
of alcohol (group 1) when compared with the other groups
of young people: $\chi^2(9, N = 9,978) = 367.58, p < .001$, *Tau-b* = .151. In this case, acceptance of friends by teachers
also decreased as the young people studied were more
involved with substance consumption.

To conclude, despite the fact that teachers were found
to lack knowledge about friends to a higher degree than
parents, in both cases, an increase was observed in this lack

of knowing among teachers and parents of those groups of
adolescents who also showed greater substance consumption.
In other words, substance consumption is seen to influence
the relationship between the context of the friends, on one
hand, and the family and school contexts, on the other.

Discussion

One of the most interesting aspects of this study is the
classification of young people by consumption pattern. One
of the most common prejudices in regard to adolescence
is based on the negative image generated through their social
representation in society in general, as well as on many of
the policies and interventions aimed at adolescents during
this period of development. This image of young people is
closely related to the classic conceptualization of adolescence
as a stormy and stressful period, as originally suggested
by Hall (1904). Despite the increased risk of excessive and
uncontrolled consumption of drugs during adolescence,
the results of this work show that the profile of most Spanish
young people is not one of risk due to substance
consumption. Thus, this paper shows that almost 60% of
Spanish adolescents between 13 and 18 years of age do
not consume drugs and only rarely drink alcohol (group
1). On the contrary, less than 10% reported consuming any
illegal drug (groups 3 and 4). Although it is important that
society, the media, experts in intervention and the young

Table 8

*Distribution of adolescents according to acceptance of their friends by parents and teachers, as well as the classification
depending on their own substance consumption*

Acceptance of their friends by…	Total		Zero substance consumption or alcohol consumption very moderate (group 1)		High alcohol consumption (group 2)		High consumption of legal drugs and cannabis (group 3)		High consumption of legal drugs, cannabis and other illegal drugs (group 4)	
	N	%	N	%	N	%	N	%	N	%
Total	15,942	100	8,849	100	4,551	100	1,146	100	266	100
Parents										
Always or almost always	8,024	73.2	5,397	76.9	1,582	68.5	325	55.0	53	44.7
Sometimes	2,007	18.3	1,108	15.8	503	21.8	173	29.3	38	32.5
Never or almost never	581	5.3	334	4.8	131	5.7	65	11.1	10	8.3
They have not met their group of friends	348	3.2	178	2.5	93	4.0	28	4.7	17	14.5
Teachers										
Always or almost always	5,286	48.5	3,667	52.6	962	41.9	149	25.0	16	13.8
Sometimes	2,354	21.6	1,450	20.8	527	23.0	139	23.4	15	12.9
Never or almost never	789	7.2	475	6.8	177	7.7	63	10.6	19	15.9
They have not met their group of friends	2,468	22.6	1,379	19.8	629	27.4	244	41.0	67	57.4

people themselves reassess the at-risk stereotype, these data should not serve as an excuse to not prevent substance consumption. In short, this intervention with regards to the prevention of drug addiction in youth people, and above all in the youngest adolescents, is supported by two important facts.

First of all, the results obtained in this work show that there is a higher percentage of older adolescents in the clusters of higher consumption. That is to say that the percentage of adolescents in groups 2, 3 and 4 is greater in the group of 17-18 year-olds, followed by 15-16 year-olds and, lastly, 13-14 year-olds. To a certain extent, these data could support the gateway model (Kandel, 1975), as the consumption of harder drugs is preceded by the consumption of legal or less deleterious drugs. In spite of the fact that results from this study are limited as they were extracted from a cross-sectional (rather than longitudinal) design which does not allow the evaluation of the causal chain between the various drugs suggested by this model, the experts suggest an important continuity in the risk of substance consumption between adolescence and adulthood (e.g. Guo, Collins, Hill, & Hawkins, 2000).

Secondly, the results of this study show that adolescent health is affected by the pattern of consumption, especially in the case of the youngest adolescents (13 to 16 years old). In addition, the youngest adolescents either consume larger amounts of alcohol accompanied by episodes of drunkenness (group 2) or consume some illegal drug (groups 3 and 4), and it is these groups that present the worst health scores, as opposed to those that report low levels of consumption across substances (group 1), who have the best health scores.

Bearing in mind the implications of the results derived from this work for intervention efforts, it is of interest to note the low global health scores obtained for the second cluster of adolescents; that is to say, those who frequently consume alcohol, accompanied by episodes of drunkenness. This group constituted almost a third (31.5%) of adolescents in this study. These results reinforce the need to continue efforts to analyze factors associated with the consumption of alcohol and its consequences, as well as the need to establish good policies and programs aimed at reducing alcohol abuse among adolescents (Simons-Morton et al., 2009).

The lessons taught from the intervention policies of countries with a lower incidence of juvenile alcohol consumption leads us to believe that it would be a sound practice to implement more and better measures to regulate and control the access of the juvenile population to alcohol in the Spanish context. In addition, there needs to be more widespread implementation of programs focusing on prevention and the promotion of responsible consumption. This necessity becomes evident following a study carried out by the Organización de Consumidores y Usuarios (2009), which determined that, despite the prohibition established by the Laws of Spain, specifically Law 5/1990, adolescents

can obtain alcoholic beverages without any major difficulties. These data could explain why more than 90% of Spanish adolescents consider it easy or very easy to acquire alcohol (Plan Nacional sobre Drogas, 2009).

The low satisfaction reported by the study participants for their developmental contexts only affects family and school. Greater dissatisfaction was observed as the young people became more involved with harder substances. Young people who report both consuming substances and lower satisfaction with family relationships could be conditioned by characteristics of this context that have proven to have an influence on the adolescents' substance consumption, such as ambiguity in family rules, excessive protection or permissiveness or the existence of a rigid family organization (Brook et al., 1992; Guo et al., 2002). Research has demonstrated that satisfactory family communication avoids isolation, educates for relationships outside of the family, promotes the expression of feelings and facilitates personal development; therefore, family cohesion is a protective factor in the consumption of substances during adolescence (Duncan, Tildesley, Duncan, & Hops, 1995; Gosebruch, Sánchez, Delva, Wagner, & Anthony, 2003). Good paternal supervision, based on communication between parents and children, also works to protect youth (Kerr & Stattin, 2000; Stattin & Kerr, 2000).

As for the school context, it is known that those adolescents with poor academic performance and who lack academic aspirations are at greater risk of consuming drugs (e.g., Paulson et al., 1990). Chassin et al. (2004) summarize several hypotheses that are closely related to school satisfaction that clarify the relationship between the consumption of drugs, poor academic performance and the lack of academic aspirations. Variables associated with both academic performance and substance consumption include the stress and negative feelings caused by failure at school, which produces an increase in substance use as an escape mechanism to regulate these feelings. The weakening of the adolescent's feeling of belonging to the academic institution due to poor performance (which has proven to be a protective factor for many health behaviors and a source of positive development) and the greater risk of adolescent consumers being rejected by their peers with better results at school have also been associated with an increase of substance consumption.

Results from this study also demonstrate the important role that friends play in substance consumption during adolescence, since this is the only developmental context for which many of the participants reported satisfaction. To understand the influence of peers on the inception of substance use, the role these socializing agents play as a framework of reference to support adolescent identity when faced with the adult world and to satisfy the feeling of affiliation or belonging to a group must be remembered (e.g., Guo et al., 2002). Due to the importance of friends, the probability of consuming drugs increases if the adolescent

belongs to a group that consumes them (by means of role models, peer pressure, etc). Not only there is support for this hypothesis about socialization, which attributes a relatively passive role to the adolescent, but rather it has also been demonstrated that following a psychological homophile model, adolescents also play an active role when seeking out and selecting these colleagues who fulfill their own profile or the profile they want to have (Curran, Stice, & Chassin, 1997).

This study supports a relationship between the pattern of substance consumption in young people and the pattern of their friends' consumption. In fact, as can be seen in the data described in the results section, this relationship is tiered. In other words, non-consuming adolescents tend to have non-consuming friends, while those young people that are characterized by an excessive consumption of alcohol (without consuming illegal drugs) have friends with a similar consumption pattern. Finally, young people who are characterized by the consumption of harder substances have friends who primarily smoke marijuana and use drugs to get stoned.

Lastly, a key finding is the acceptance of the group of friends on behalf of the adults that surround the young people (parents and teachers). Although extensive research demonstrates the importance of the family, peers or school on the positive development of adolescents, most of this research approaches these contexts independently, without interrelating them. Nevertheless, some studies demonstrate the importance of coherence and continuity between the various environments in which adolescents mature and develop (e.g. Berns, 2009; Dedobbeleer & Desjardins, 2001; Moreno et al., 2009; Rubin, Dwyer, Kim, & Burgess, 2004). In fact, this study demonstrates that a negative evaluation of friends by parents and teachers or their ignorance about the group of friends is related to a greater probability of substance consumption amongst the adolescents studied. After all, these data have the wealth of empirical corroboration from the most outstanding theoretical contributions in the study of human development, such as Bronfenbrenner's ecological systems theory (1987), which demonstrates the importance of a strong connection between the various contexts in which young people develop (mesosystem) to have optimal development which, in this case, is free of substance consumption. To test for this relationship, more comprehensive research is recommended.

The practical implications of these data suggest that the prevention of drug addiction in young people must not only have an impact at the level of the individual, as has been the case historically, with school prevention programs that insistently try to convince young people not to consume drugs. To compliment these strategies, other more global approaches are necessary that seek to include all the environments in which adolescents live. Thus, it is important to convince parents to be knowledgeable regarding their youngsters' relationships with friends, ensuring that they feel comfortable bringing their friends home. It would also be interesting for adults in the school environment (especially teachers and the educational center's executive member) to participate in the social environment of students. An example could be the promotion of free-time activities within a protected school environment, which would distance adolescents from contexts that involve a greater risk of substance consumption.

To conclude, it is important to point out that this work stems from a traverse research design, of a more limited weight than a longitudinal study when establishing causal relationships. In addition, the fact that the HBSC study focuses on school populations adds another limitation to this work, since, in the case of the 17-18 year-old adolescent population, we only had access to those who had continued within the educational system (remember that in Spain, secondary education is mandatory to the age of 16). Despite these limitations, we consider that this study presents results that help to better understand the reality that surrounds the consumption or non-consumption of substances during adolescence and provides some keys for preventive intervention.

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