

## ORIGINAL ARTICLE

# Polydrug use among 15- to 16-year olds: Similarities and differences in Europe

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### Abstract

**Aims:** We describe types of polydrug use among school students across Europe and explore differences between high, medium and low drug prevalence countries.

**Method:** Analysis is based on survey data from over 70,000 15- to 16-year-old school students in 22 European countries. Polydrug use (defined as the use of two or more listed substances during the last 30 days) is compared across three country clusters based on drug prevalences by hierarchical cluster analysis. Affinity between substances is measured by pairwise associations and regression analysis was used to assess the differences in rate ratio across the country clusters.

**Results:** A third of all school students had consumed two or more substances. The most common combinations were: alcohol and cigarettes, followed by alcohol or cigarettes combined with cannabis, followed by alcohol or cigarettes, cannabis and at least one other illegal drug. Pairwise associations show that cannabis and cocaine users are more likely to use illegal drugs than the general student populations but least likely to do so in countries with high prevalence levels ( $p < 0.0005$ ).

**Conclusion:** Consideration of country differences and objective measures for the concept of normalization could help to inform more holistic prevention initiatives that respond to country-specific contexts.

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## Introduction

The 1990s saw the emergence of widespread drug and alcohol use among young people in many parts of Europe. Increased access to a range of psychoactive substances has led to concerns about health risks associated with polydrug use. Increases in substance use have been, at least in part, due to alcohol promotions and advertising, availability of illegal<sup>1</sup> drugs and the relative increase in disposable incomes of young people (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2008; Rand Health, 2007; Rehn, Room, & Edwards, 2001; ter Bogt, Schmid, Gabhainn, Fotiou, & Vollenbergh, 2006; Lintonen, 2007). The use of any psychoactive substance during the period of adolescent growth and development causes concern, as each substance carries its own particular health risks, depending on the quantity and frequency in which it is consumed. Risks are heightened when two or more psychoactive substances are used within a short period of time because of added acute and long-term health risks associated with drug combinations (Bennett & Higgins, 1999; Office for National Statistics (ONS), 2000a, 2000b; Strang et al., 1999; Taylor, Frischer, & Goldberg, 1996). Whilst some drug combinations carry acute risks for overdose or death, binge alcohol drinking together with the use of illegal drugs is associated with increased acute harm, co-morbidity of mental health problems and other long-term health risks (Maguire & Nettleton, 2003; McCabe, Cranford, Morales, & Young, 2006; McLeod et al., 2004; Stefanis & Kokkevi, 1986). For example, stimulant drugs may contribute to alcohol problems by helping users stay awake appearing relatively sober whilst consuming large quantities of alcohol over longer periods than would otherwise be possible, particular health risks have been reported for consumption of cocaine and alcohol together. (Leccese, Pennings, & De Wolff, 2000).

Most of the information available on the prevalence of drug use in Europe is aggregated national data provided by repeated cross-sectional surveys of adult and school student populations. School surveys such as European school survey project on alcohol and other drugs (ESPAD) show that since the 1990s, the substances recorded to have the greatest increases in use among school students are alcohol and cannabis. Newly available access to a central ESPAD database, containing anonymous, individual drug use data from school surveys conducted in most EU member states, has made it possible to combine individual data from a range of European countries that share some common drug use patterns in order to provide a more robust and detailed picture of polydrug use than has been possible in the past.

Alcohol, cigarettes, cannabis and other psychoactive substances are used by many young people in a variety of drug-using repertoires, often perceived by the users as enhancing their social lives. Surveys invariably show that the use of alcohol and cigarettes is far more prevalent than the use of illegal drugs. Because of this, a comprehensive picture of polydrug use must incorporate the use of these legal substances in combination with illegal ones. Cannabis is the most commonly used illegal drug in most countries, with prevalence estimates reaching far higher

levels than those for other illegal drugs. Use of other illegal substances including ecstasy, cocaine, amphetamine, LSD and hallucinogenic mushrooms is very low in general populations and heroin is usually the lowest in both adult and school-student populations. This article presents data derived from ESPAD school surveys conducted in Europe in 2003 and follows earlier work on polydrug use among school students by Kokkevi in Greece and Smit and colleagues in the Netherlands (Smit, Monshouwer, & Verdurmen, 2002; Stefanis & Kokkevi, 1986). In the Netherlands, Smit described a typology of polydrug users that incorporated the majority of school students who had used more than one drug. This is made up of three types of polydrug user: Type A consists of those who only combined alcohol and cigarettes and did not use cannabis or other illegal drugs; Type B consists of those who used cannabis in addition to alcohol or cigarettes but did not use ecstasy, amphetamines, heroin or cocaine; and Type C consists of those who used ecstasy, cocaine, amphetamines, LSD or heroin in addition to cannabis and alcohol or cigarettes. Our initial aim was to explore data from 22 countries across Europe to answer the research question posed by Smit and colleagues in 2002: Can the typology described in the Netherlands be replicated in other European countries? We explore how patterns of polydrug use differ across Europe, in terms of the proportion of school students represented in each type and how they are associated with selected social factors which have been commonly associated with drug taking: lack of parental control, perceived family affluence and playing truant from school (Lloyd, 1998; Miller & Plant, 1999).

In the course of this work we explored affinities between the use of one substance and the use of another in different groups of countries. Affinity is measured by the extent to which individuals who use cannabis, for example, have an increased likelihood (odds ratio) of using other illegal drugs. The article will illustrate how patterns of polydrug use and the relationship between the use of different substances appear to be associated with the concept of 'normalization',<sup>2</sup> throwing light on this ill-defined concept. Furthermore, consideration is given to the possible consequences of normalization of substance use for devising effective prevention strategies and brief interventions for young people. Whilst there is no single, widely accepted measure of normalization, ever since Parker and his colleagues in the UK first used the term in the context of adolescent recreational drug use, it has often been used to describe situations where prevalence of a specific form of substance use is relatively high (Berridge, Thom, & Herring, 2007; Bjarnason, Steriu, & Kokkevi, 2008; Ives & Ghelani, 2006; Parker, Aldridge, & Measham, 1998). Normalization is associated with social factors such as the availability and acceptability of different types of drug use and is likely to be both a cause and a consequence of reduced social stigma attached to a particular drug-taking behaviour, regardless of its legal status. This analysis of polydrug use provides a deeper understanding of the drug situation in Europe and highlights the need for drug prevention efforts to be adapted to accord with specific country contexts.

## Method

### *Polydrug use*

This analysis is based on a sample of over 70,000 15- to 16-year-old school students in 22 countries that participated in ESPAD school surveys in 2003 and represents a total population of about 9.5 million school students. The methodology of the survey, including the questionnaire, is described in detail by Hibell et al. (2004).

'Polydrug use' is defined as the use of two or more of the following substances (alcohol, cigarettes, cannabis, ecstasy, amphetamines, cocaine, LSD, hallucinogenic mushrooms and heroin) by a single individual during the 30 days prior to the survey. Individuals who have never used or have used a single, legal or illegal substance were excluded, resulting in a total sample of 21,776 individual polydrug users. The narrowest time window commonly used for monitoring drug use in ESPAD school surveys is 30 days. However, research studies indicate that a substantial proportion of young people who report using more than one substance, use these substances during short periods, such as an evening out or over a weekend (Collins, Ellickson, & Bell, 1998; Parker et al., 1998).

A second line of enquiry was the use of pairwise associations among all of the 15- to 16-year olds who had used cannabis during the past 30 days in order to explore how the use of cannabis by an individual student increases the likelihood (rate ratio) of the student using another substance. Pairwise associations for all of the cocaine users were also explored.

### *Analysis*

The very low reported levels of use among school students of illegal drugs other than cannabis results in sample sizes that are often not large enough for statistical efficiency. Access to a central ESPAD database, containing anonymous, individual, school student drug use data from surveys conducted in 22 European countries, made it possible to combine individual data into three separate clusters on the basis of estimates of prevalence of use for a range of substances within each country. This enabled the aggregation of polydrug users into samples with sufficient numbers for statistical analysis. At the same time, the division of the countries into three distinct groups allowed comparison between groups, so that key differences between low-, medium- and high-prevalence countries are not denied. Hierarchical cluster analysis was performed using Ward's method. Drug use prevalence in each country for each of the drugs was scaled to lie between 0 and 1 by using the minimum and maximum for all participating countries. Drugs included in the cluster analysis were binge alcohol (defined as drinking five or more drinks in a row), cigarettes, cannabis, cocaine, ecstasy and amphetamine. The conditions required for gaining access to these data and full methodological details about ESPAD surveys may be found at [www.espad.org](http://www.espad.org).

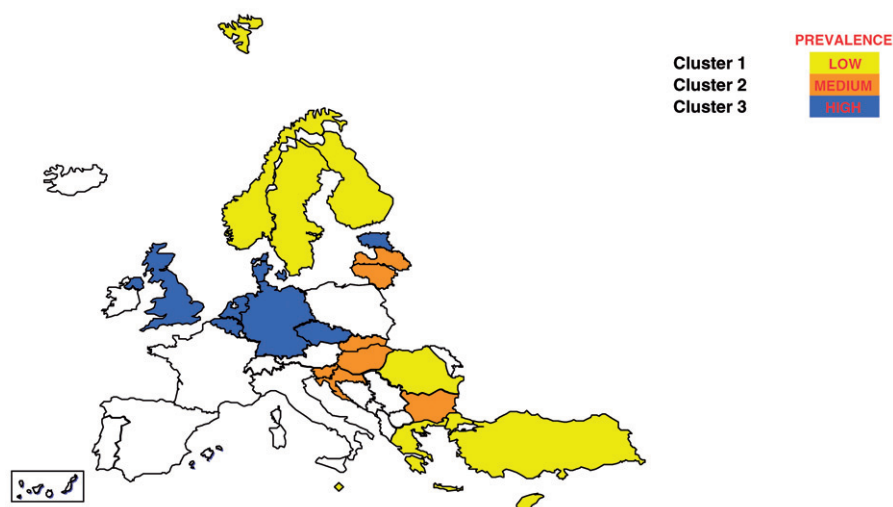


Figure 1. Map of Europe showing 22 countries grouped in three clusters based on estimates of prevalence of use for a range of substances among 15- to 16-year-old school students within each country.

Source: ESPAD 2003 15- to 16-year-old school students in 22 countries made up of largely of EU Member States together with Norway, Croatia and Turkey.

Notes: Hierarchical cluster analysis was performed using Ward's method. Drug use prevalence in each country for each of the drugs was scaled to lie between 0 and 1 by using the minimum and maximum for all participating countries. Drugs included in the cluster analysis were binge alcohol (defined as drinking five or more drinks in a row), cigarettes, cannabis, cocaine, ecstasy and amphetamine.

The three groups of countries obtained from cluster analysis are illustrated in Figure 1. This map presents a simplified backdrop of cultural norms against which to view the complex patterns of polydrug use. The three clusters range broadly from low through to high levels of consumption of legal drugs (alcohol, and to a lesser extent cigarettes) in conjunction with ascending levels of cannabis prevalence. Regression analysis was used to assess the differences in rate ratio across the three country clusters.

## Results

### *Country clusters*

Cluster 1 countries (Cyprus, Finland, Greece, Malta, Norway, Romania, Sweden, Turkey<sup>3</sup>) are characterized by generally low levels of both legal and illegal drug use. The second cluster is made up of countries that recently joined, or wish to join, the EU (Bulgaria, Croatia,<sup>4</sup> Hungary, Latvia, Lithuania, Slovakia, Slovenia) where prevalence of drug use, cannabis in particular, increased substantially between 1995 and 2003. The third cluster (Belgium, Czech

Republic, Denmark, Estonia, Germany,<sup>5</sup> Netherlands, United Kingdom) is characterized by longer histories of illegal drug use dating back to the 1970s and 1980s – except in the Czech Republic and Estonia – and the prevalence of drug use is comparatively high in these countries.

Despite being based only on prevalence data, the cluster analysis reveals a geographical pattern that, with a few exceptions, differentiates countries in the northwest of Europe from those in central and eastern Europe and those in the northern and southern extremities.

### *Prevalence of substance use*

Alcohol, cigarettes and cannabis use are the most common forms of substance use reported in the last 30 days by school students in the 22 European countries analyzed (Table I), though substantial differences exist between countries (illustrated by the ranges of prevalence indicated beside each substance). Levels of reported use of illegal drugs other than cannabis are far lower across all countries.

### *Polydrug use: Prevalence*

Almost a third of the 15- to 16-year-old school students in the 22 countries included in this analysis reported having consumed two or more substances in the 30 days before taking part in the ESPAD survey.

Of the school students reporting the use of two or more substances in the last 30 days, 96.5% can be classified according to the typology of polydrug users described by Smit and his colleagues in the Netherlands. A small proportion of cases do not fit into the typology, for example those who had used only alcohol and ecstasy or only cigarettes and amphetamines.

Figure 2 shows across the country clusters, an increasing proportion of polydrug users who use, in conjunction with alcohol or cigarettes, cannabis alone and a corresponding decrease in those who use no illegal drugs. Whilst the polydrug typology described by Smit et al. represents the three most common combinations of substance in all of the 22 countries, a comparison of country clusters shows that in the countries with the lowest levels of prevalence the proportion of undefined polydrug users that do not fall into the typology is larger than those belonging to the Type C category of users (using illegal drugs in addition to cannabis). This undefined proportion is made up of a variety of different combinations that exclude cannabis.

Figure 2 suggests a closer affinity between cannabis and other illegal drug use at lower prevalence levels and less affinity of cannabis with other illegal drugs at higher prevalence levels. As might be expected, the total number of different drug combinations in use increases across country clusters with 73 different drug combinations among Cluster 1 countries, 84 among Cluster 2 countries and 91 among Cluster 3 countries. These differences may reflect country differences in the drugs market and drug using repertoires. Gender differences at this age are

Table I. Range of prevalence in 22 European Countries and average prevalence by cluster (%) for substance use during the last 30 days by 15- to 16-year olds.

Substance	Prevalence full range	Cluster 1	Cluster 2	Cluster 3
Alcohol	20–81	50.8	65.3	73.1
Binge alcohol	15–60	34.6	38.4	51.8
Cigarettes	18–46	26.7	40.5	36.3
Cannabis	0–20	2.2	7.6	15.0
Ecstasy	0–3	0.5	0.8	1.3
Hallucinogenic mushrooms	0–2	0.3	0.3	0.8
LSD or other hallucinogens	0–1	0.3	0.3	0.6
Amphetamine	0–1	0.4	0.8	0.9
Cocaine	0–1	0.4	0.3	0.6
Heroin	0–1	0.3	0.2	0.3

Source: ESPAD 2003 Database 15- to 16-year old school students in 22 countries made up of largely of EU Member States together with Norway, Croatia and Turkey.

Notes: Binge alcohol = five or more drinks in a row in the last 30 days. In Turkey figures are based on one major city in each of six different regions (Adana, Ankara, Diyarbakir, Istanbul, Izmir and Samsun). In Germany figures are based in six regions only (Bavaria, Brandenburg, Berlin, Hesse, Mecklenburg-Western Pomerania and Thuringia).

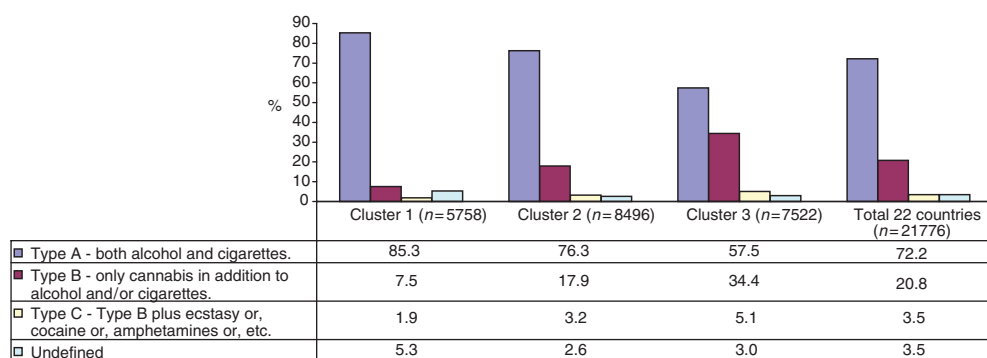


Figure 2. Comparison of polydrug use types during the previous 30 days by the three different country clusters.

Source: ESPAD 2003 15- to 16-year-old school students in 22 countries made up of largely of EU Member States together with Norway, Croatia and Turkey.

minimal with slightly more girls belonging to Type A compared with boys who are overrepresented in Type C.

#### Pairwise associations between substances

In recent years drug prevention practices in Europe have started to pay more attention to complementary prevention interventions that focus on specially selected groups of people or settings. Adolescent cannabis users, for example, may be identified and targeted as one such risk group for selective

Table II. Comparison of odds ratios (RR<sub>S</sub>) based on pairwise associations between substance use during the last 30 days compared to the general school population of 15- to 16-year olds by country clusters.

Cannabis users	Prevalence range (%)	Cluster 1 (n = 562)	Cluster 2 (n = 1795)	Cluster 3 (n = 2982)
Ecstasy	8–13	25.6*	9.5*	6.0*
Cocaine	3–11	28.0*	8.3*	5.3*
Magic mushrooms	3–10	33.6	9.3	6.9
Amphetamines	4–9	22.8*	8.3*	4.7*
Heroin	2–9	29.0**	11.0**	5.0**
LSD	3–7	23.3	9.3	6.3
Cocaine users	Prevalence range (%)	Cluster 1 (n = 103)	Cluster 2 (n = 66)	Cluster 3 (n = 109)
Cannabis	57–71	25.6*	8.8*	5.1*
Ecstasy	45–68	136.6*	51.9*	39.2*
Magic mushrooms	21–59	195.7*	70.7*	37.0*
Amphetamines	21–56	139.8*	37.9*	20.7*
Heroin	19–66	220.0*	177.0*	69.0*
LSD	21–57	190.0*	92.3*	34.0*

\* $p < 0.0005$ ; \*\* $p < 0.001$ .

Source: ESPAD 2003 Database 15- to 16-year old school students in 22 countries made up of largely of EU Member States together with Norway, Croatia and Turkey.

prevention, usually in the form of brief interventions (EMCDDA, 2008). Pairwise associations (rate ratio) show how the use of one substance by an individual increases the likelihood of them using another substance. The following table (Table II) supports and reinforces the country cluster differences observed above. It shows pairwise associations among cannabis users and cocaine users and compares their use of other illegal drugs during the preceding 30 days with the general population of school students in each of the country clusters.

### *Cannabis users*

Table II shows that cannabis users in all three country groups are more likely to have used other illegal drugs during the preceding 30 days than the general student populations but it is worth noting from the range in prevalence that among cannabis users prevalence of other illegal drugs seldom rises to more than 10%. When cannabis users within each country cluster are compared, differences in their prevalence levels of other illegal drug use are revealed. In Cluster 1 (low-prevalence countries), those who used cannabis during the past 30 days had prevalence estimates for other illegal drug use that were over 20 times those in the general school population of 15- to 16-year olds. The ratios decrease in higher prevalence countries to between 8 and 11 times the general school population in Cluster 2 countries down to around 5 times those in Cluster 3 countries. There is



a statistically significant trend of drug use among cannabis users, with the exception of LSD and hallucinogenic mushrooms, which decreases across the clusters (logistic regression, trend  $p < 0.0005$ ).

In addition it is worth noting that, in each of the country clusters, although the school students who used cannabis had prevalence estimates for cigarette smoking that were between two and three times higher than in the total general school student population the pattern hardly varied with similar ratios across all three country clusters. School students in all of the country clusters who binge drink or smoke cigarettes are around twice more likely to smoke cannabis than those in the general school population.

### *Cocaine users*

Table II shows that cocaine users are very much more likely than cannabis users to have used other illegal drugs during the preceding 30 days. Prevalence estimates of other illegal drug use among cocaine users rise to over 50% in Cluster 1 countries and well over 20% in Cluster 2 and 3 countries. In Cluster 1 the school students who had used cocaine were over a 100 times more likely to use other drugs than those in the general school population that age, with the exception of cannabis. The rate ratio, in Cluster 1, for cocaine users to take heroin are 220. In Cluster 2 the ratio decreases to 177 down to 69 in Cluster 3. Again, there is a statistically significant trend of drug use among cocaine users, which decreases across the clusters (logistic regression, trend  $p < 0.0005$ ).

Among both cannabis and cocaine users the higher drug prevalences among those in Cluster 1 suggests that cannabis and cocaine users in those countries display more deviant behaviour than those in Cluster 3.

Prevalence of binge drinking among cocaine users rises to 94% in the high-prevalence countries, which gives rise to concerns about health risks for the small but significant number of individuals who combine cocaine use with binge drinking (Leccese et al., 2000).

### *Social factors associated with polydrug use*

Three different social factors commonly associated with polydrug use were explored: parental control, family affluence and truancy from school.

*Parental control.* Lack of parental control is widely documented in the research literature as being correlated with problematic drug use among adolescents. In this analysis parental control was operationalized by use of responses to a question about whether or not the parents of individual respondents knew where they were in the evenings.<sup>6</sup> An average of around 4% of all the 15- to 16-year olds responded saying that their parents usually did not know where they were and there was little difference between country clusters. However, there were significant differences according to the type of polydrug user. Between 22%

and 32% of Type C polydrug users (who used other illegal drugs in addition to cannabis and alcohol or cigarettes) reported that their parents usually did not know where they were in the evenings. The association was stronger in country Cluster 1 than in the other two clusters.

*Family affluence.* Because poverty, deprivation and educational disadvantage have been traditionally linked with problem drug use, we explored the responses of different types of polydrug user groups to a question about their perceived family affluence in relation to other people<sup>7</sup> and found that nearly 40% of school students on average, regardless of their drug use, perceive their families as being better off than others but there were country differences. Table III shows that a larger proportion of Type C polydrug drug users perceived themselves as better off than Type A and B polydrug users and those in the general population. The proportion perceiving themselves as better off than others was higher in low-prevalence countries than in high-prevalence countries where perceptions about the family affluence among Type C polydrug users are closer to the general school student population.

*School truancy.* School truancy is a behaviour commonly associated with drug taking; therefore we explored responses to ESPAD survey questions about missing school.<sup>8</sup> On average, 7% of school students surveyed reported deliberately missing school three or more times in the last 30 days but, as might be expected; there were substantial differences depending on their drug use. An average of only 12% of those who are Type A polydrug users missed school compared with up to 30% in Type C. However, Table III illustrates differences depending on the type of country cluster. In the Cluster 1 (low prevalence) countries nearly half the Type C users had missed school, in Cluster 2, a third had missed school and in the high-prevalence Cluster 3 countries just over a fifth had missed school. In a similar way to the family affluence variable, school truancy illustrates how Type C polydrug users in high-prevalence countries are not as distant from the norm as their peers in other types of countries.

## Discussion

### *Main findings*

Almost a third of the 15- to 16-year olds in the 22 countries included in this analysis reported having consumed two or more substances in the 30 days before taking part in the ESPAD survey. Alcohol and cigarettes users are by far the most common type of polydrug user in all the country clusters (average 73%), these were followed at some distance by those who used alcohol or cigarettes combined with cannabis (average 20%). The third type of polydrug use that includes alcohol or cigarettes, cannabis and at least one other illegal drug was considerably lower at an average of 3%. Despite the common typology that represents the three most

Table III. Social factors associated with different types of polydrug use among 15- to 16-year olds in different country clusters.

	Cluster 1 (n = 594)	Cluster 2 (n = 879)	Cluster 3 (n = 710)
Parents usually do not know where school students are in the evening			
Type A	9.3	8.8	6.6
Type B	15.2	15.0	12.0
Type C	32.1	22.2	22.5
General population (n = 71,362)	3.5	5.1	4.3
	Cluster 1 (n = 1807)	Cluster 2 (n = 3104)	Cluster 3 (n = 2307)
Affluence of family perceived as better off compared to other families in same country			
Type A	37.6	36.5	33.3
Type B	35.7	37.8	35.7
Type C	51.9	46.2	40.4
General population (n = 76,541)	41.5	36.5	34.3
	Cluster 1 (n = 562)	Cluster 2 (n = 1420)	Cluster 3 (n = 856)
Truant from school 3 or more times in the last 30 days			
Type A	14.0	15.7	5.6
Type B	27.2	24.3	10.5
Type C	45.9	33.3	21.6
General population (n = 66,735)	7.1	10.1	4.3

Source: ESPAD 2003 Database 15- to 16-year old school students in 22 countries made up of largely of EU Member States together with Norway, Croatia and Turkey.

Notes: Numbers in each cluster include small proportion of students who are not covered by the three typologies. Assessed by responses to the following ESPAD questions: How often does the statement 'My parents know where I am in the evenings' apply to you? Always, Often, Sometimes, Usually not. How well off is your family compared to other families in your country? Very much better off, Much better off, Better off, About the same, Less well off, Much less well off, Very much less well off. During the last 30 days how many whole days of school have you missed because you skipped or 'cut'? None, 1 day, 2 days, 3-4 days, 5-6 days, 7 or more days.

common combinations, important differences were observed between the three countries clusters.

The proportions of school students that are represented in each type of polydrug group differ according to the type of country cluster and, as expected, reflect the country differences in drug prevalence. Cluster 3 countries have the lowest proportion of Type A (legal) polydrug users and the largest proportion of Type C (illegal) polydrug users. In the countries with the lowest levels of drug prevalence the proportion of undefined polydrug users that do not fall into the typology is larger than those belonging to the Type C category of users (using illegal drugs in addition to cannabis). This proportion is made up of a variety of different drug combinations that exclude cannabis but no other single combination is found more frequently than Type C.

With regard to social factors, the data analysis indicates that the likelihood of belonging to the Type C polydrug users is elevated for individuals in all of the

country clusters whose parents do not know where they are in the evenings, for individuals who perceive their family as better off than other families in their country and for those who truant from school three or more times in the last 30 days. However, Type C polydrug users in high drug use prevalence countries are closer to the general student population than their peers in other countries. The 15- to 16-year olds are at an age that is typical for drug experimentation and therefore, a large proportion of them may be considered experimenters rather than the 'problem' users particularly in countries where drugs are most easily available. The particularly strong association between lack of parental control, family affluence and truancy among Type C polydrug users in Cluster 1 countries appears to indicate a less normalized and more deviant recreational drugs culture.

Pairwise associations between different substances shows that both cannabis and cocaine users are more likely to use both legal and illegal drugs than the general student populations, but prevalence of other illegal drug use seldom rises to more than 10% among cannabis users.

There is a significant trend of drug use among cannabis and cocaine users which decreases across the clusters ( $p < 0.0005$ ) showing that in countries with low prevalence levels, cannabis and cocaine users are more likely to use other illegal drugs than they are in countries where prevalence is generally high. Prevalence estimates for cigarette smoking and binge alcohol drinking among both cannabis and cocaine users are between two and three times higher than among the general school population in all of the country clusters.

### *Limitations*

This analysis is based on cross-sectional surveys conducted in 2003; we cannot therefore make causal inferences or explore changes in the situation. The analysis was based on self-reported school surveys in 22 different countries and carries the usual methodological caveats, particularly about comparability and data from some major European countries was missing from the centralized database. The low number of school students who had used two or more illegal drugs during the 30 days prior to the survey limits possibilities for detailed statistical analysis of these particular polydrug users. Targeted research is required to reach this population.

The analysis was conducted on drug behaviour within a given time window of the last 30 days, therefore the extent to which drug use during this period concerned experimental use, frequent use or combined use is unknown, although we know from other research that among young people substance use tends to concentrate during single evenings or weekends. The analysis excluded school students who used a single substance and also excluded volatile substances<sup>9</sup> and benzodiazepine drugs.<sup>10</sup> Although these substances feature in polydrug taking repertoires, prevalence estimates for their use tend to be less reliable than for other substances due to the fact that there is a very wide range of these products

available in different countries. Knowledge among school students about what might constitute an 'inhalant' or a 'tranquilliser' or a 'sedative' is likely to be limited and the contexts in which these various substances are used (for legitimate medical or practical purposes) or misused (for recreational purposes) are too diverse to be easily understood.

### *Implications*

Measures of polydrug use types may serve as useful indicators of prevailing drug cultures, which could be taken into account when planning intervention strategies targeted, for example, specifically at cannabis or cocaine users. The analysis suggests that an understanding of patterns of polydrug use and associated factors might contribute to the development of an operational definition of normalization that would help to inform policy makers across Europe.

Different rationales for polydrug use are documented in the literature and one is that the use of one substance may serve as a substitute for another, usually because of factors associated with availability, effects and prices (Boys et al., 1999; Gossop et al., 1998). However, the association of cigarette smoking and binge drinking with increasing prevalence for cannabis and other drug use suggests a consumption pattern, in this case, that accumulates new substances rather than substitutes the substances already in use. However, it is worth noting that whilst binge drinking and cannabis use increased among school students up to 2003, there have been recent signs of stabilization and the use of other illegal substances has generally remained at very much lower levels (EMCDDA, 2008).

This exploration of polydrug use highlights the following two priorities. The typology described shows that the great majority of school students who use alcohol and cigarettes use no other illegal drugs; when they do it is cannabis that dominates the overall picture. Therefore, among school students, substance use is associated with a youth culture and lifestyle that has, to date, largely excluded the use of ecstasy, cocaine and other illegal drugs. The extent to which young people in the future will be able to obtain an increasingly wide selection of psychoactive products; legal ones as a consequence of advertising and cheap promotions and illegal ones through social networks and Internet sales remains unclear but an expanding market in psychoactive products is likely to have an impact on future developments in polydrug use and the normalization of specific polydrug combinations (Schepis, Marlow, & Forman, 2008). Parker and colleagues make the point that today's youth 'through experience and maturity, assess and reassess their attitudes to leisure and pleasure and the psychoactive options available' (Parker et al., 1998, p. 3). However, a priority for policy makers is to provide young people with the sort of objective and scientific information they need to make their assessments and resist the influence of vested interest groups.

A second priority is to identify and target the minority of young potential 'problem' users who make ill considered, often alcohol affected, decisions about drug taking. Policies that aim to protect and prevent problems among these minorities might benefit from being placed in the context of a wider framework of

substance use that takes the level of normalization in different countries into account. Further work to develop objective measures for the concept of normalization could help to inform more holistic prevention initiatives that would respond more appropriately to country-specific contexts.

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## Notes

- [1] Illegal drugs refer to psychoactive substances, which are subject to special drug legislation to control their use, possession or trade.
- [2] Parker et al. (1998, p. 151) describe normalization of drug use as a situation in which 'mainstream youth culture assimilated and legitimated recreational drug use'.
- [3] Turkey is a candidate for EU membership. In Turkey, figures are based on one major city in each of six different regions (Adana, Ankara, Diyarbakir, Istanbul, Izmir and Samsun).
- [4] Croatia is a candidate for EU membership.
- [5] ESPAD 2003 figures for Germany are based in six regions only (Bavaria, Brandenburg, Berlin, Hesse, Mecklenburg-Western Pomerania and Thuringia).
- [6] The ESPAD question is: How often does the statement 'My parents know where I am in the evenings' apply to you? Always, Often, Sometimes, Usually not.
- [7] The ESPAD question is: How well off is your family compared to other families in your country? Very much better off, Much better off, Better off, About the same, Less well off, Much less well off, Very much less well off.
- [8] The ESPAD question is: During the LAST 30 DAYS how many whole days of school have you missed because you skipped or 'cut'? None, 1 day, 2 days, 3-4 days, 5-6 days 7 or more days.

- [9] Referred to in the ESPAD questionnaire as 'inhalants', which includes products such as butane gas lighter refills and contact adhesives.
- [10] Referred to in the ESPAD questionnaire as 'tranquillisers or sedatives' with or without a doctor's prescription.

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