

# Adolescent substance use in two European countries: Relationships with psychosocial adjustment, peers, and activities<sup>1</sup>

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**ABSTRACT.** Adolescents may use various substances to improve psychological wellbeing or to face personal discomfort. However, they may also use drugs because they fall in with a certain peer group, or have a boyfriend or girlfriend who draws them into risky or illegal activities. All of these motivations for substance use among adolescents may be well founded according to literature on adolescent development. The present cross-national study explores the relationships between adolescent psychological adjustment, peers, activities, and substance use. The Italian and Dutch versions of the Me and My Health questionnaire were administered to 970 Italian and Dutch adolescents (both genders, mean age 16 years old). In both countries, substance use was more strongly related to peer relationships and activities than to psychological adjustment. However, the country has a moderating role with respect to some of the aspects considered. The findings support that the most effective preventive interventions are those which involve the peer group and are adapted to the context.

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**KEYWORDS.** Adolescence. Peer relationship. Substance use. Descriptive *ex post facto* study.

**RESUMEN.** Los adolescentes pueden consumir diversas sustancias para aumentar su bienestar psicológico o afrontar su malestar. Sin embargo, también pueden usar drogas porque están de acuerdo con cierto grupo de la misma edad, o tienen un novio o una novia que los conduce a actividades de riesgo o ilegales. Todas estas motivaciones para el consumo de sustancias entre adolescentes pueden estar bien asentadas en la literatura sobre desarrollo adolescente. El presente estudio transcultural explora las relaciones entre el ajuste psicológico de los adolescentes, la relación con los iguales, las actividades, y el consumo de sustancias. Las versiones italiana y holandesa del cuestionario *Me and My Health* fueron administradas a 970 adolescentes italianos y holandeses (de ambos sexos, con una edad promedio de 16 años). En ambos países, el uso de sustancias estaba más vinculado a la relación con los iguales y a las actividades que al ajuste psicológico. Sin embargo, el país tiene un papel moderador con respecto a algunos de los aspectos considerados. Las conclusiones sostienen que las intervenciones preventivas de mayor efectividad son las que involucran al grupo de iguales y están adaptadas al contexto.

**PALABRAS CLAVE.** Adolescencia. Relación con los iguales. Uso de sustancias. Estudio descriptivo *ex post facto*.

Adolescents may use various substances to improve psychological wellbeing or to face personal discomfort. However, they may also use drugs because they fall in with a certain peer group, or have a boyfriend or girlfriend who draws them into risky or illegal activities. All of these motivations for substance use among adolescents may be well founded according to literature on adolescent development.

With respect to the use of substances as an emotional coping strategy to face psychological distress, some studies have already underlined that this applies only to few adolescents with poor psychological adjustment (Inglés *et al.*, 2007; Labouvie, 1986; White, Bates, and Labouvie, 1998). We also know that some experimentation with behaviors, such as risk-taking, contribute to positive adolescent psychological adjustment (Pape and Hammer, 1996), most likely because it allows them to test personal boundaries and to explore new roles serving important developmental ends. In fact, compared to those who experiment with alcohol, both alcohol abstainers and frequent users show greater signs of interpersonal alienation and psychological distress. (Shedler and Block, 1990).

Furthermore, joining peer groups with specific values and that take part in different kinds of activities may contribute to different levels of involvement in risk behaviors (Stattin and Kerr, 2001). Much of the research on adolescent peer relationships has focused on the similarity of friends' behavior, which can be explained through two tendencies: a) adolescents become similar to their friends because of their influence (Fisher and Bauman, 1988); b) adolescents select friends who behave and think similarly (Engels, 1998; Kandel 1994). These tendencies were considered as alternatives in the

past. We now recognise that both tendencies are at work in peer group processes (Hartup, 1996; Mahoney, Stattin and Lord, 2004).

Boyfriends/girlfriends also play an important role as an adolescent's efforts at being attractive to the other gender can prompt either health enhancing or health compromising behavior (Brown, Dolcini, and Leventhal, 1997). Some research has shown that a romantic partner may indirectly suppress high levels of risk-taking behavior, particularly alcohol abuse among boys, because the partner does not approve of it (Pape and Hammer, 1996). On the other hand, other research has shown that low levels of substance use provide the adolescent an opportunity to enter the "dating market" by going out with friends and making it easier to approach the opposite sex (Engels, 1998; Engels and ter Bogt, 2001).

Finally, adolescents are likely to use substances in public settings, especially those characterized by fun-oriented activities such as pubs and discos (Hussong, 2000). Conversely, the use of drugs is unlikely when adolescents participate in organized activities, such as those related to belonging to groups led by adults with a specific goal and clear organization, *i.e.*, sport teams (Mahoney, Larson and Eccles, 2005; Mahoney and Stattin, 2000). Of all the organized group activities, the role of the church group is of particular interest as it offers the chance to engage in meaningful activities, which are also addressed to moral and social values, such as respect for others and their rights (Wallace and Williams, 1997). Generally speaking, in choosing a friend, boyfriend/girlfriend and a peer group, adolescents are also choosing a setting in which they learn different skills, exchange opinions, share values and activities, influence others and are influenced by others (Urberg, Shyu, and Liang, 1990).

The scholars of health psychology are interested in getting a better understanding of the relationships among adolescent substance use, psychological adjustment, peers, and leisure in order to plan more efficient risk prevention and health promotion interventions (Oliveira, Soibelman, and Rigoni, 2007). Nevertheless, the interrelationships among substance use, psychological adjustment (in terms of wellbeing and discomfort), peer relationships (namely friends and the romantic partner) and activities (in terms of leisure and belonging to different types of organized groups) are still unclear. Jessor (1998) argued that this was because many of the studies focus on just one of these aspects, namely psychological adjustment or peers or leisure, without evaluating a more complete model of adolescent psychosocial functioning. Furthermore, to our knowledge, numerous studies have investigated only one type of substance without considering that different types of substances, though highly correlated with one another (Ciairano, van Schuur, Molinengo, Bonino, and Miceli, 2006), are more or less socially accepted and have different relationships to psychological adjustment (Bonino, Cattelino, and Ciairano, 2005).

Some authors (Lindman and Lang, 1994; Moore and Parsons, 2000) have pointed out that the majority of research conducted involved just one cultural and social context, namely North America, which does not allow us to distinguish the universal from the contextually specific. Comparative studies are needed to explore the similarities and differences in substance use in countries with different laws, social norms and values regarding substances and attitudes towards health and health promotion. These features

may prove to influence both the prevalence of substances and the underlying processes of protection and risk, as they contribute to deciding which tasks are most urgent during youth and how to respond to them.

The present descriptive *ex post facto* study (Montero and León, 2007; Ramos-Álvarez, Valdés-Conroy, and Catena, 2006) seeks to overcome these limitations in literature by examining the relationships among substances and psychological adjustment, peers and activities in Italy and the Netherlands. We selected Italy and the Netherlands because they are both European countries but they differ with respect to laws and social norms regarding substances and attitudes towards health and health promotion. First of all, they differ with respect to the social norms and cultural scripts of alcohol use; Italy is the world's largest producer of wine and moderate daily alcohol consumption is the norm in this country (Gual and Colon, 1997; Lintonen and Konu, 2003).

The latest statistics from ESPAD (The European School Survey Project on Alcohol and Other Drugs; Hibell *et al.*, 2004) showed that, over the same time period, the percentage of Italian students who had been drunk was lower (37%) than the Dutch (46%) and lower than the average of all ESPAD countries (53%). In terms of tobacco use, differences may rise from the fact that publicity campaigns against tobacco smoking in public places were introduced more recently in Italy than in Northern European countries. Epidemiological data showed that fewer Dutch adolescents had ever smoked (57%) compared to Italians (64%) and to the European average (66%). Third, with regard to marijuana use, while in Italy it is illegal though easily available, in the Netherlands marijuana use is permitted only in specific settings and after having reached the legal age. Dutch social policy on substances has long been aimed at clearly separating the so-called soft and hard drug markets (Brouwer, 2000). Epidemiological data showed that the percentage of adolescents who have used marijuana or hashish is higher than average in both Italy and the Netherlands (around 28% among Dutch and Italians *vs.* 21% among adolescents in the other countries). The use of other illicit drugs is also similar in the two countries, but it does not differ from the average (around 7%). Finally, Italy and the Netherlands traditionally differ because the former has a more conservative attitude towards health matters and prevention (Bonino, Cattelino, and Ciairano, 2006; Buzzi, Cavalli, and de Lillo, 2002) while the latter has a more progressive view, based mainly on pragmatism (Sandfort, 1998). The following research questions will be dealt with:

- What are the relationships between psychological adjustment (in terms of psychological wellbeing and discomfort), peer relationships (namely friends and romantic partner), activities (namely leisure and belonging to an organized group), and alcohol drinking, tobacco smoking and marijuana use, when all predictors are considered simultaneously?
- Does the country moderate these relationships? That is to say, are these relationships more universal or context specific?

We expect to find that adolescent substance use is more related to peer relationships and activities than to psychological wellbeing and discomfort. Our expectations are due to evidence from the literature that adolescent substance use is mainly temporary and

experimental. Thus, for the majority of adolescents substance use is unlikely to be related to personal conditions of psychological distress. Further, we also expect to find a positive relationship between alcohol use and peer relationships as the social function of alcohol has been shown by previous studies.

With respect to the universality or the contextual specificity of the phenomenon, we expect to find positive relationships in both countries between greater substance use and stronger peer relationships and time spent in leisure activities. However, we also expect to find that the country moderates the form or strength of some of these relationships in relation to the country's specific social and cultural characteristics. We could expect, for instance, being that moderate alcohol use is more traditionally accepted in Italy, that the relationship between alcohol drinking and adolescent adjustment is weaker in Italians than Dutch. Conversely, as marijuana is regulated in the Netherlands and illegal in Italy, we might expect that the relationships between marijuana and adjustment are weaker among Dutch than Italians. Finally, as Italy is a more traditional Catholic country, we could expect that church groups play a more important role for Italian adolescents.

The study contributes to previous research in a number of ways. First, we consider three substances (alcohol, tobacco, and marijuana) that may have different associations with psychological adjustment. Moreover, we investigate the association between these substances and psychological adjustment, peer relationships, leisure activities and involvement in organized groups in two European countries characterized by different social norms and cultural scripts about substances and attitudes towards health.

## Method

### *Participants*

The sample consisted of 970 Italian and Dutch adolescents, living in the northwest of Italy and the northeast of The Netherlands, and is reasonably balanced for country (52% Italian, 48% Dutch), gender (52% boys, 48% girls), age (15-17 years: 56%; 18-19 years: 44%; mean age = 17.4), type of school (31% lyceum or VWO, 69% technical and vocational school or HAVO<sup>3</sup>) and place of residence (39% large or medium-sized city, 61% small town). There are no differences between this sample and national samples in terms of socio-demographic characteristics ([www.istat.it](http://www.istat.it) in Italy; [www.cbs.nl](http://www.cbs.nl) in the Netherlands). This sample is representative of the population of adolescents attending high school in these parts of Italy and the Netherlands. Furthermore, there are no differences between the epidemiological data about adolescent substance use drawn from some recent European studies and the correspondent cohort drawn from this sample (Ciairano, 2004; Currie *et al.*, 2004; Hibell *et al.*, 2004).

<sup>3</sup> The Dutch VWO (preparatory to a university education) is comparable to the Italian lyceum. However, entrance to University in Italy is open to graduates of all the different types of high schools. The Dutch HAVO (higher general advanced education) is a lower level than VWO.

### Measures

The Italian (Bonino *et al.*, 2005) and Dutch versions (Ciairano, 2004) of the Me and My Health questionnaire were used to collect the data. These questionnaires are adaptations of the Health Behavior Questionnaire (Jessor, Donovan, and Costa, 1992) to the Italian and Dutch contexts. They contain around 600 questions and investigate the three main systems of the adolescents' lives: personality, behavior (normal daily activities, leisure activities, belonging to different groups, and risk behavior), and the relationships with family, school, and peers (in the present study we considered only peers).

The study analyzes the relationships among involvement in three psychoactive substances (alcohol, tobacco, and marijuana), psychological adjustment (wellbeing and discomfort), peer relationships (both friends and romantic partner), leisure activities (going to pubs or video arcades and going to discos) and belonging to two different types of organized groups (religious and volunteer organizations and sport groups). All the items and the scales used in the present study were drawn from the well-validated measures used within the theoretical framework of the Problem Behavior Theory (Jessor, Donovan, and Costa, 1991; Jessor *et al.*, 2003). As it was already underlined, they have been adapted to both the Italian (Bonino *et al.*, 2005; Ciairano, Kliever, Bonino, Miceli, and Jackson, 2006) and Dutch contexts (Ciairano, 2004) and the psychometric characteristics of each scale were checked by way of Cronbach's alpha and principal component analysis.

- Substance use. In the present study we used three items to investigate substance use. (a) First item investigates problem alcohol drinking, defined as the frequency with which students drink more than 5 glasses of beer, wine or liquor: 0 (*never in their life*), 1 (*never in the last 6 months*), 2 (*once in the last 6 months*), 3 (*2-3 times in the last 6 months*), 4 (*4-5 times in the last 6 months*), 5 (*once a month*), 6 (*2-3 times a month*), 7 (*once a week*), 8 (*twice a week*), 9 (*more than twice a week*). (b) Second item investigates tobacco smoking, defined as the number of cigarettes smoked per day: 0 (*none in the whole life*), 1 (*none in the last month*), 2 (*from 1 to 5*), 3 (*half a packet/10 cigarettes*), 4 (*one packet/20 cigarettes*), 5 (*more than one packet/20 cigarettes*). (c) Third item investigates marijuana use, defined as the frequency with which students smoke marijuana: 0 (*never in the whole life*), 1 (*never in the last 6 months*), 2 (*once in the last 6 months*), 3 (*2-3 times in the last 6 months*), 4 (*4-5 times in the last 6 months*), 5 (*once a month*), 6 (*2-3 times a month*), 7 (*once a week*), 8 (*2-3 times a week*), 9 (*4-5 times a week*), 10 (*every day*).
- Psychological wellbeing, which includes positive self-perception and expectations for future success (Bonino *et al.*, 2005), consists of 16 items. Seven of these items concern positive self-perception (*What do you think about your ability to do well in school? How well do you think you deal with everyday problems? Do you feel able to make important decisions about your life? Are you confident that you can learn new skills when you need them? Do you think you are attractive to the opposite sex? On the whole, how satisfied are you with yourself? Can you resist peer pressure from the rest of the group?*). The possible responses

- range from 1 (*not at all*), 2 (*a little*), 3 (*a fair amount*), 4 (*very much*). Nine of the items concern expectations for future success (*What are the chances that you will: graduate from high school, go to university, be able to own your own home, have a job that you enjoy, have a happy family life, stay in good health, be able to live wherever you want to, be respected in your community, have good friends you can count on?*). The possible responses range from 1 (*very low*), 2 (*low*), 3 (*about 50%*), 4 (*high*), 5 (*very high*). The Cronbach's alpha was .78, the eigenvalue was 3.7 (26% expl. variance).
- Psychological discomfort, defined as a sense of alienation and depressive feelings (Bonino *et al.*, 2005), consists of 9 items. Four items concern sense of alienation (To what extent do you agree with each of the statements below: *I often feel left out of things that other kids are doing, I sometimes feel unsure about who I really am, it's hard for me to know how to act if it is not clear what other people expect from me, hardly anything I'm doing in my life means very much to me*). Possible answers range from: 1 (*disagree*), 2 (*a little*), 3 (*a fair amount*), 4 (*very much*). Five items concern depressive feelings (*In the past six months, have you: just felt really down about things, felt pretty hopeless about the future, spent a lot of time worrying about little things, just felt depressed about life in general, felt alone?*) The possible responses range from 1 (*no*), 2 (*a little*), 3 (*fairly often*), 4 (*a lot*). The Cronbach's alpha was .85, the eigenvalue was 4.1 (46% expl.variance).
  - Peer relationships, which considers both friends and the romantic partner, consists of 5 items that investigate: number of close friends 1 (*none*), 2 (*1*), 3 (*2-3*), 4 (*4 or more*); friends' support *when you have personal problems, do you feel that you can rely on your friends to help you?* 1 (*never*), 2 (*sometimes*), 3 (*often*), 4 (*always*); time spent weekly with friends and alone with the romantic partner 1 (*none*), 2 (*1 hour*), 3 (*2-3 hours*), 4 (*4-5 hours*), 5 (*6-7 hours*), 6 (*8 hours or more*); number of dates with someone of the opposite sex in the past six months 1 (*never*), 2 (*once or twice*), 3 (*3-4 times*), 4 (*about once a month*), 5 (*2-3 times a month*), 6 (*once a week*), 7 (*several times a week*). The Cronbach's alpha was .60, the eigenvalue was 1.9 (39% expl.variance).
  - Leisure activities. Two different types of leisure activities were considered: time spent weekly in a pub or video arcade and time spent weekly going to discos 1 (*none*), 2 (*1 hour*), 3 (*2-3 hours*), 4 (*4-5 hours*), 5 (*6-7 hours*), 6 (*8 hours or more*).
  - Organized groups. As for belonging to different organized groups, we limited the analyses to two groups which are similarly structured in Italy and the Netherlands: religious and volunteer groups and sport groups -possible answers: 0 (*No*), 1 (*Yes*)-.

### Procedure

Public schools representing the different types of high schools attended by Dutch and Italian adolescents were invited to participate. All schools that were contacted agreed to be involved in the study. Consent from the parents of students who were

minors and from students over the age of 18 was obtained in accordance with Dutch and Italian law and the ethical codes of the Professional Psychology Associations. No students refused to participate. The questionnaire was completed individually, anonymously, and in its entirety during school hours under the supervision of specially trained researchers and in the absence of the classroom teachers; it turned in immediately upon completion by 100% of the students sampled. Questionnaire administration was preceded by a presentation of the study to the schools and students and was followed by a presentation of some of the general results. The care dedicated to the presentation of the study and the conditions under which the questionnaire was completed, along with the assurance of anonymity, motivated the adolescents, who regarded the study with great interest, willingness, and seriousness.

### *Analyses*

To investigate the relationships among substances, psychological adjustment, peer relationships and activities and the moderator role of the country, we used the regression approach suggested by Holmbeck (1997). Additionally, we controlled for co-linearity among predictors by centering the variables as suggested by Aiken and West (1991).

In the regression models (one for each substance), we first entered the country (Italy was coded with 1), then the seven predictors and finally the seven interaction terms between each predictor and the country. All the significant interactions were plotted to facilitate accurate interpretation (Holmbeck, 1997).

## **Results**

### *Information about the study variables*

We investigated the differences between countries for psychological wellbeing and discomfort, peer relationships, leisure activities and substance use through *t*-test and for belonging to organized groups through cross-tabulation and chi-squared test. Italian adolescents perceived lower wellbeing and higher discomfort than the Dutch, and they were more involved in peer relationships (Table 1). Dutch adolescents spent more time weekly going to discos. We did not find any differences in time spent in pubs or video arcades. Italian adolescents were more involved in tobacco smoking and marijuana use while the Dutch were more involved in problem alcohol drinking. Dutch adolescents were more involved than Italians in both types of organized groups (Table 2).



**TABLE 1.** Comparison between Italian and Dutch adolescents: Psychosocial adjustment, activities and substance use.

	<i>Dutch</i>		<i>Italian</i>		<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Wellbeing	.44	5.42	-.41	6.95	2.05	914	.040
Discomfort	-2.28	4.78	2.20	5.61	-13.13	934	.000
Peer relationships	-.67	4.94	.64	4.81	-4.03	903	.000
Time spent weekly in pub or arcade	.07	1.58	-.06	1.40	1.40	960	.161
Time spent weekly going to discos	.54	1.36	-.54	1.36	12.35	963	.000
Problem alcohol drinking	.78	2.63	-.77	2.35	9.70	968	.000
Tobacco smoking	-.44	1.13	.43	1.46	-10.40	968	.000
Marijuana use	-.39	2.13	.38	2.89	-4.74	968	.000

**TABLE 2.** Comparison between Italian and Dutch adolescents: Percentages of belonging to different groups.

<i>Type of group</i>	<i>NO</i>			<i>YES</i>			$\chi^2$	<i>df</i>	<i>p</i>
	<i>Dutch</i>	<i>Italian</i>	<i>Total</i>	<i>Dutch</i>	<i>Italian</i>	<i>Total</i>			
	<i>n</i> (%)	<i>n</i> (%)	<i>N</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>N</i> (%)			
Church and volunteer work	338 (70)	398 (81)	736 (76)	143 (30)	91 (19)	234 (24)	16.38	1	< .001
Sport	176 (38)	313 (65)	489 (52)	292 (62)	168 (35)	468 (48)	71.64	1	< .001

Generally speaking, the predictors are not co-linear (Table 3). In both countries the strongest correlation is between wellbeing and discomfort ( $r = -.40$ ). The majority of the correlations are much lower (around .10) and do not reach significance.

**TABLE 3.** Correlations among outcomes (substance use) and predictor variables.

<i>Variables</i>	2	3	4	5	6	7	8	9	10
1. Frequency of drinking 5 or more glasses of beer, wine, liquor (6 months)	.22**	.31**	.07*	-.15**	.27	.36**	.44**	.01	.13**
2. Daily frequency of tobacco smoking (1 month)		.54**	-.09**	.20**	.30**	.26**	.12**	-.04	-.16**
3. Frequency of marijuana smoking (6 months)			-.04	.08*	.25**	.25**	.16**	-.07*	-.11**
4. Wellbeing				-.40**	.23**	.01	.05	-.04	.20**
5. Discomfort					-.06	.02	-.18**	.01	-.24**
6. Peer relationships						.35**	.25**	.04	.01
7. Time spent weekly in pubs or video arcades							.31**	-.03	-.01
8. Time spent weekly in discos								.00	.14**
9. Church and volunteer work group									.05
10. Sport group									

*Note.* Minimum pairwise *N* of cases = 869.

\**p* < .05, \*\**p* < .01.

### *Relationships among psychoactive substances, psychosocial adjustment, leisure activities and organized groups*

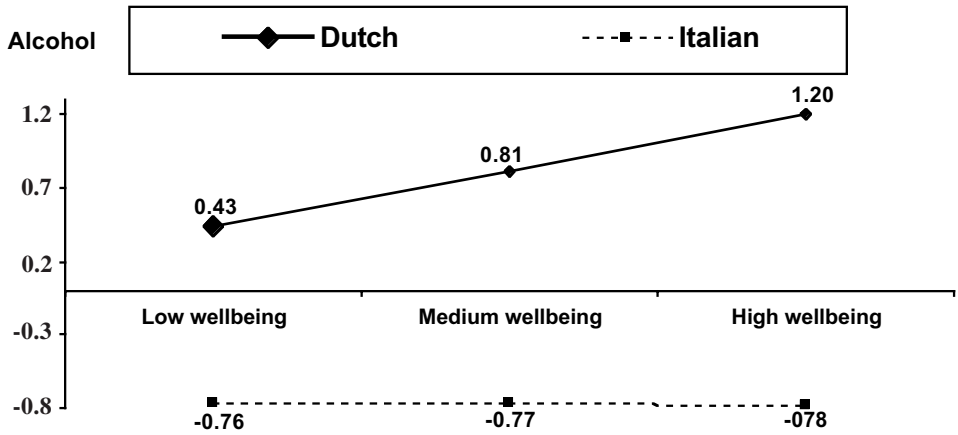
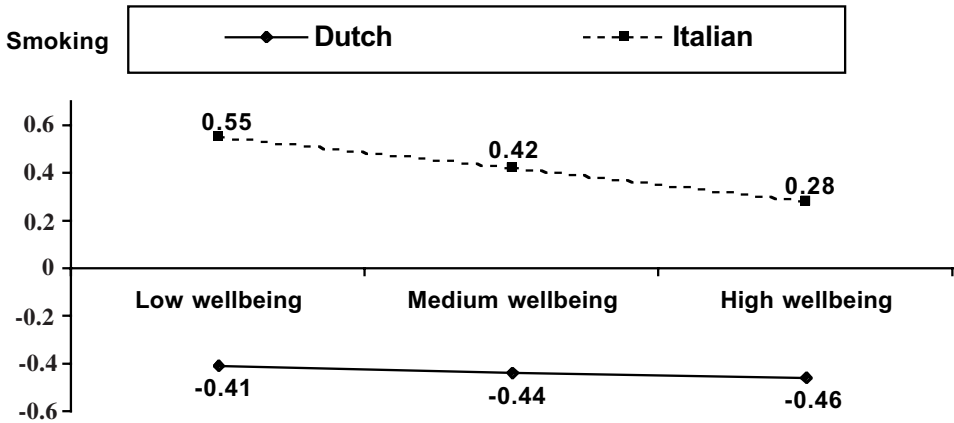
Adolescent substance use seems more related to peers and the way they spend their spare time than to other aspects of psychological functioning (Table 4). As we expected, stronger peer relationships and more time spent in leisure activities were related to greater involvement in substance use. The higher the adolescents ranked peer relationships the more likely they were to report being involved in alcohol. Further, the more time adolescents reported to spend in pubs or video arcades or going to discos, the greater their involvement in alcohol, tobacco and marijuana use. We also found a positive relationship between alcohol use and psychological wellbeing. On the contrary, we found no positive relationship between substances and discomfort.

**TABLE 4.** Summary of regression analyses for variables predicting the use of different substances.

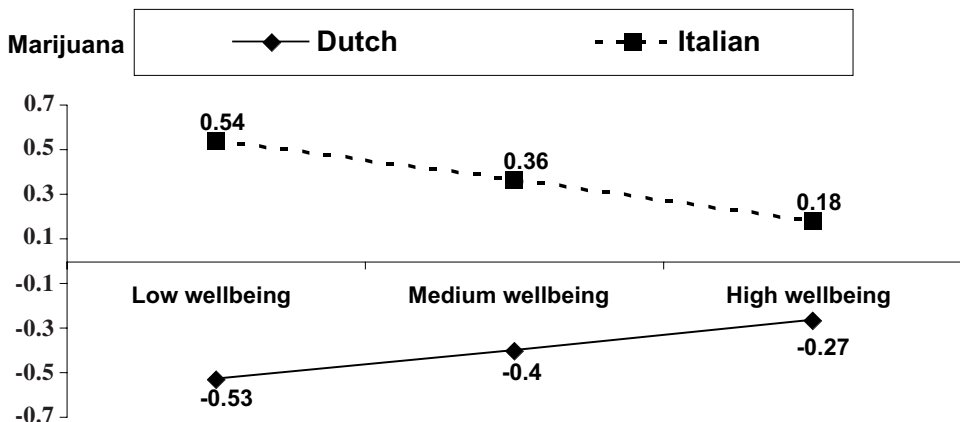
Variable	Frequency of drinking five or more glasses of beer, wine and liquor (6 months)			Daily frequency of tobacco smoking (1 month)			Frequency of marijuana smoking (6 months)		
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$
Country	-1.168	.254	-.225***	1.032	.139	.371***	.826	.273	.161**
Wellbeing	.043	.022	.104*	-.003	.012	-.012	.026	.024	.064
Discomfort	-.023	.024	-.051	.019	.013	.077	.043	.026	.095
Peer relationships	.103	.026	.194***	.016	.014	.057	.030	.028	.058
Time spent weekly in pubs or video arcades	.488	.078	.277***	.191	.043	.203***	.455	.084	.262***
Time spent weekly in discos	.478	.091	.266***	.128	.050	.134*	.073	.098	.041
Church and volunteer work group	-.188	.238	-.031	.185	.130	.058	-.219	.256	-.037
Sport group	.184	.227	.036	-.077	.124	-.028	-.274	.244	-.053
Country X Wellbeing	-.056	.028	-.109*	-.036	.015	-.131*	-.077	.030	-.153*
Country X Discomfort	.037	.032	.060	-.005	.018	-.014	-.048	.034	-.078
Country X Peer relationships	-.035	.036	-.046	.074	.019	.186***	.094	.038	.127*
Country X Time spent weekly in pubs or video arcades	-.239	.113	-.091*	-.041	.062	-.029	-.262	.121	-.101*
Country X Time spent weekly in discos	-.169	.122	-.067	.080	.067	.059	.402	.131	.160**
Country X Church and volunteer work group	-.051	.361	-.006	-.480	.197	-.103*	-.549	.388	-.064
Country X Sport group	-.028	.321	-.004	-.126	.176	-.035	.142	.346	.022
Model	$R^2 = .306$ $F_{(15, 821)} = 24.093$ $p < .001$			$R^2 = .276$ $F_{(15, 821)} = 20.866$ $p < .001$			$R^2 = .178$ $F_{(15, 821)} = 11.826$ $p < .001$		

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Besides, the significant interactions showed that the country has a moderator effect on some of the relationship among substances and adolescent psychological adjustment, peers and activities. A positive relationship between alcohol and wellbeing was found only for the Dutch adolescents (Figure 1). As for the other two substances examined, the higher Italian adolescents ranked wellbeing the less they were involved in tobacco (Figure 2) and marijuana (Figure 3).

**FIGURE 1.** Interaction of wellbeing and country on alcohol.**FIGURE 2.** Interaction of wellbeing and country on tobacco.

**FIGURE 3.** Interaction of wellbeing and country on marijuana.



Though there is a general trend towards a positive relationship between stronger peer relationships and more time spent in leisure activities and greater substance use, the country moderates the strength of this relationship. Particularly among the Italians, the higher adolescents ranked peer relationships (Figures 4 and 5) and going to the disco (Figure 8) the greater their involvement in tobacco and marijuana use. Conversely, among Dutch adolescents, the higher they ranked time spent in pubs or video arcades the greater their involvement in alcohol (Figure 6) and marijuana use (Figure 7). Finally, only Italian adolescents who belong to a church group were less involved in tobacco (Figure 9).

**FIGURE 4.** Interaction of peers and country on tobacco.

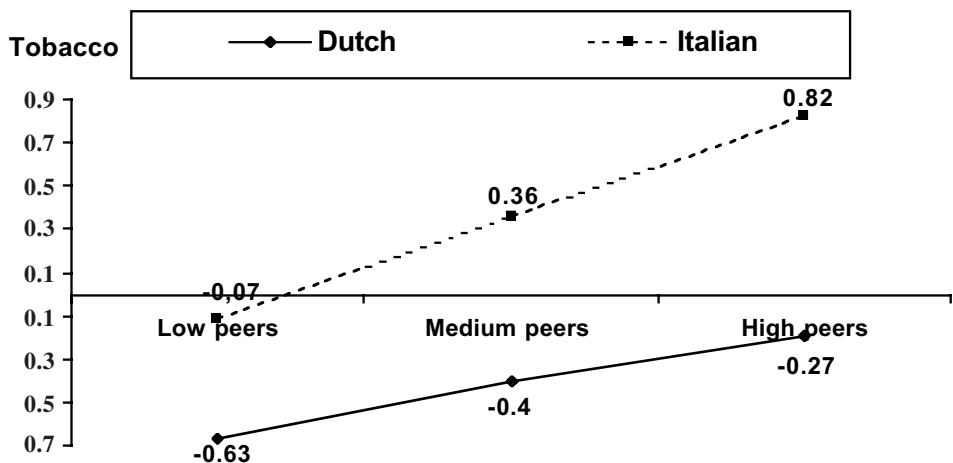


FIGURE 5. Interaction of peers and country on marijuana.

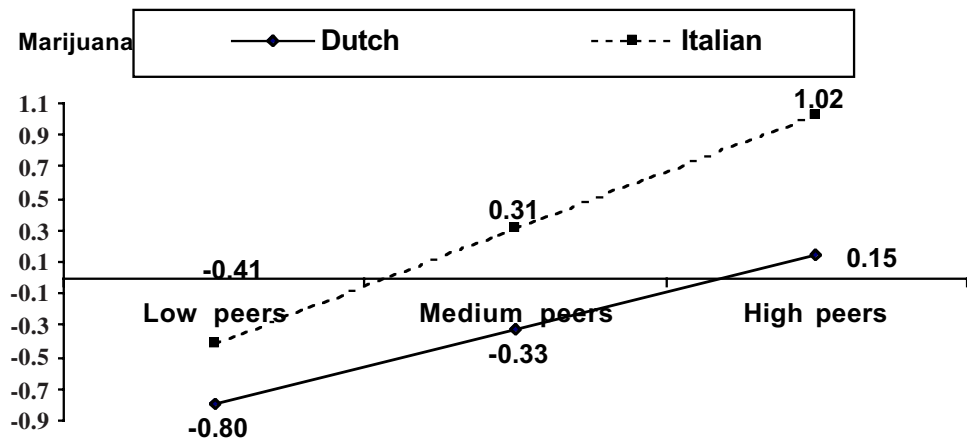
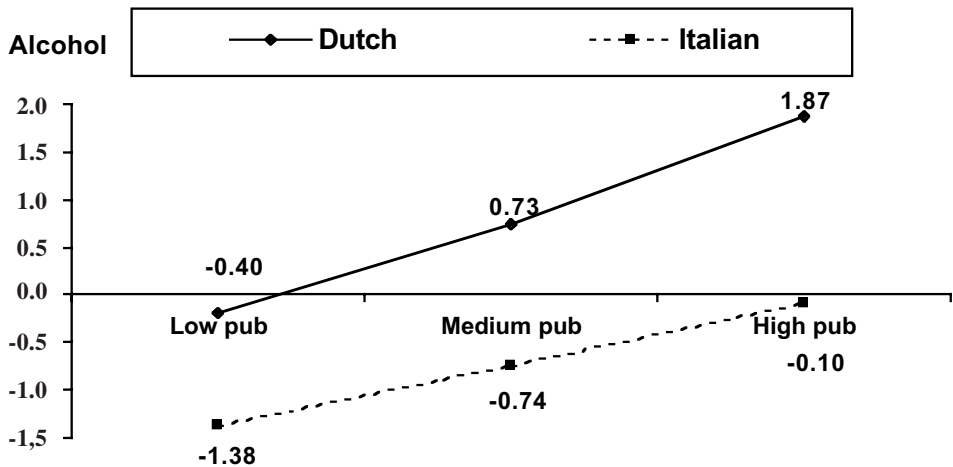
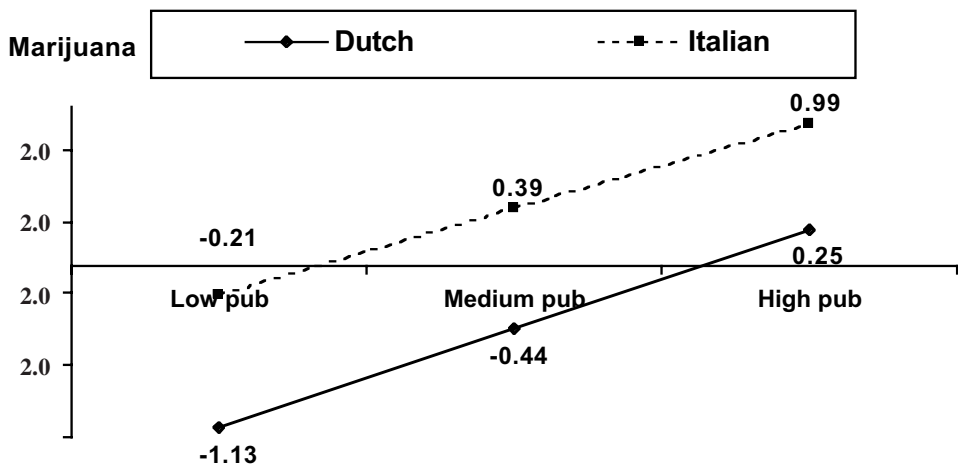


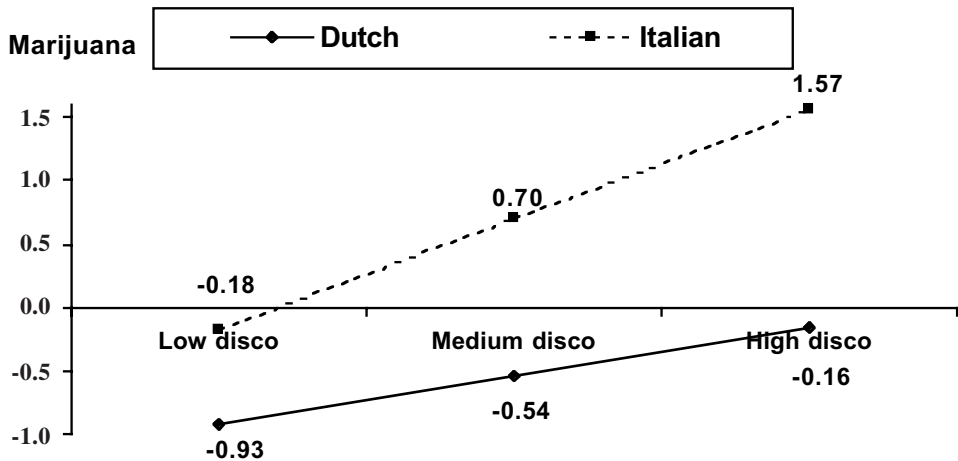
FIGURE 6. Interaction of pub and country on alcohol.

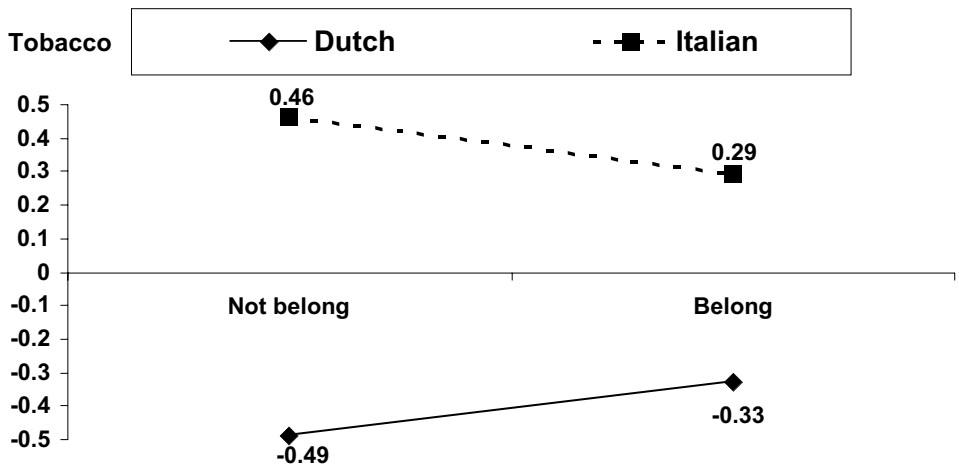


**FIGURE 7.** Interaction of pub and country on marijuana.



**FIGURE 8.** Interaction of disco and country on marijuana.



**FIGURE 9.** Interaction of church group and country on tobacco.

The percentages of explained variability were 31% for problem drinking, 28% for tobacco smoking, and 18% for marijuana smoking.

### Discussion

Generally speaking, our expectations were confirmed. In this study we argued that adolescent substance use is more strongly related to peer relationships and activities than to psychological wellbeing and discomfort because adolescents are more likely to use substances experimentally within social relationships with peers and in particular leisure contexts. We also argued that alcohol drinking is more strongly related to peer relationships than the other substances examined because of its clearer social function.

We found that peer relationships and leisure activities are important correlates of substance use and of alcohol drinking in particular. Adolescents are more likely to use substances in relation to the time they spend with peers and in specific leisure contexts, such as pubs, video arcades and discos, than for other reasons, such as improving their psychological wellbeing or escaping from personal discomfort.

These findings give further support to the interpretation of adolescent substance use as mainly temporary, linked to the context and to experimentation (Pape and Hammer, 1996). Our findings also support the stronger social function of alcohol compared to other substances, most likely because alcohol promotes a feeling of heightened confidence in approaching peers (Engels and ter Bogt, 2001). From a preventive point of view these findings show the importance of intervening in the adolescent peer group instead of concentrating on the individual as well as the importance of further investigating the positive functions of risk behaviors. Moreover, as expected, there are both similarities and differences in the relationships among substances, psychological adjustment, peers



and activities in the two samples of Dutch and Italian adolescents. In some cases, country was found to play a moderating role.

Dutch adolescents who drank more alcohol also had higher wellbeing. Spending time with peers and going to discos correlated with tobacco and marijuana use among the Italians and going to pubs correlated with alcohol and marijuana use among the Dutch. On the contrary, greater wellbeing and belonging to a church group were related to lower tobacco and marijuana use among Italian adolescents. Some of these moderating effects could be expected based on the social and cultural characteristics of Italy and the Netherlands. A weaker relationship between alcohol drinking and adolescent adjustment is to be expected among Italian adolescents because the moderate use of alcohol is traditionally more accepted in Italy. A weaker relationship between marijuana use and adolescent adjustment is to be expected among the Dutch because the use of marijuana is regulated in the Netherlands. Furthermore, church groups is to be expected to play a more important role among the Italians because Italy is a more traditional Catholic country. However, these findings must be replicated and certainly require further reflection about the possible underlying processes. However, our study supports the hypothesis that both universal and context specific processes can co-occur. Further, it suggests that the peculiarities of the country must be carefully considered and that any intervention, while it may be valid in one context, must be adapted before it can be applied in different contexts.

Our findings also suggest that proposing organized activities as alternatives to substance use may not always be sufficient. Various interpretations are possible. For instance, we know that adolescents are likely to leave organized groups as they get older. This may be because they feel the need to take on personal responsibilities while organized groups are led by adults (Kloep and Hendry, 2002). Moreover, it is unclear to what extent adults who lead organized groups are prepared to work with adolescents to promote the progressive assumption of responsibility and to what degree these adults are capable of organizing activities that really interest adolescents. Though adolescents continue to attend these groups, they may not transfer the conventional and healthy values they learn there to other contexts. It seems reasonable to assume that they view more or less organized activities as completely separate settings. These reflections suggest the relevance of reconsidering the types of leisure activities society offers to adolescents, considering in particular the current lengthy period of emerging adulthood and its characteristics (Crockett and Silbereisen, 2000; Csikszentmihalyi and Schneider, 2000).

This study has several limitations. First, the cross-sectional design does not allow us to explore the long-term relationships among substances, psychosocial adjustment, leisure activities and belonging to organized group. Secondly, the lack of a longitudinal control does not permit us to evaluate whether the most likely direction is that from general adjustment to substance use, or conversely from substance use to general adjustment. Thirdly, some aspects of adolescent adjustment must be investigated more deeply, such the quality of peer relationships, friendships and romantic relationships, instead of confining our investigation to the amount of time spent together, the support that peers provide and the number of dates with a romantic partner.

Overall, this study suggests that in different social and cultural contexts adolescent substance use is more likely to be related to some relational aspects, such as the peer group and leisure activities, than to other aspects of personal functioning. Thus, in order to increase their efficacy, preventive strategies should be addressed to the adolescent peer group rather than to the individual. Furthermore, this study highlights the importance of further investigating the positive social functions of substances during adolescence, such as their role in the facilitation of peer relationships.

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