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Perception of Risk and Drug Use: An Exploratory Analysis of Explanatory Factors in Six Latin American Countries

Julio Bejarano, Graciela Ahumada, Gerardo Sánchez, Nora Cadenas, Maria de Marco, Marya Hynes and Francisco Cumsille

This paper describes 2006 data on risk perception among high school adolescents in six South American countries. Multiple factors influence teens' risk perception on drug use. More non-users perceive risk from drug use, disapprove of such use, and have a lesser sense of drug availability than users. Fewer alcohol or tobacco users disapprove of use, but more perceive a higher risk on illicit drug use. Meanwhile, fewer illicit drugs users disapprove of smoking or drinking, but many of them still show a high risk perception of illicit drug use. A larger proportion disapproves of regular or continuous illicit drugs use. Further analyses are to be carried to better understand the relationship between risk perception and drug use in South America.

Keywords: drug use, risk perceptions, high school students

Introduction

The perception of risk is an essentially cognitive process through which individuals assign positive or negative properties to a determined object or event. This process may leave the individual more or less vulnerable to high risk behaviors according to the properties they assign to the object or event. The perception of risk could be associated with defined risk factors: low self-esteem, anxiety, depression, sexual abuse, and peer pressure are associated with the perception of risk to either to a greater or lesser extent. Perceptions of risk may influence or facilitate decision making through cognitive aspects and environmental factors that result in an assignment of value.

In the field of drug use research, the perception of risk associated with drug use has been established as a key factor in the decision of whether or not to use a drug. It is based on beliefs, expectations and affective value attributed to the substance as well as expectations of key persons in the subject's life (Rodriguez, 2002).

According to Lejckova and Csemy (2005), among the primary factors that influence the formation of attitudes and perceptions of risk associated with drug use are the family atmosphere and the school atmosphere. Nevertheless, the experience of the individual plays a major role as well. According to these authors, adolescents who do not use drugs tend to view drug use as carrying a high risk, tend to disapprove of its use, and tend to see the availability of drugs as restricted. Adolescents who use licit substances show a more positive attitude toward smoking and drinking alcohol but consider illicit drug use to be associated with high risk. However, adolescents who try illicit substances show higher approval of alcohol and tobacco use, show less concern about trying illicit drugs, but show greater disapproval of regular drug use. At the extreme end of this continuum are habitual drug users. This group shows attitudes that denote a low perception or risk associated with drug use and a perception of high availability of drugs, based on use among their friends and peers within their social group. These results, obtained among European students, are similar to perceptions of risk found among Latin American immigrants in Spain. Studies among Latin American populations in Spain found that both drug users and non-drug users perceived drug use as potentially dangerous; however, drug users tended not to see occasional drug use as harmful (Tortajada et al., 2005).

A study carried out among secondary school students in Argentina (Ahumada & Cadenas, 2008) revealed lower risk of drug use among individuals that attributed at least moderate risk to drug use as compared to those adolescents who responded that they did not know the risk or perceived drug use as low risk. Similarly, there was a lower probability of drug use if the adolescent was a student but did not work, and a lower probability of drug use if the adolescent had positive academic expectations, did not express interest in trying drugs, and/or did not show behavioral problems or frequent absenteeism from school.

Although the importance of perception of risk as a potential risk factor for drug use has been established in other countries (Brown, 2005; Mesters, van Breukelen, & de Vries, 2003), there are few published articles on the relationship between

Julio Bejarano, M.Sc., Instituto sobre Alcoholismo y Farmacodependencia, Costa Rica

Graciela Ahumada, M.S., Observatorio Argentino de Drogas, Secretaria de Programación para la Prevención de la Drogadicción y la Lucha contra el Narcotrafico, Argentina

Gerardo Sánchez, B.A., Instituto sobre Alcoholismo y Farmacodependencia, Costa Rica

Nora Cadenas, Lic., Observatorio Argentino de Drogas, Secretaria de Programación para la Prevención de la Drogadicción y la Lucha contra el Narcotrafico, Argentina

Maria de Marco, University of Maryland

Marya Hynes, MHS, Organization of American States (OAS), Inter-American Drug Abuse Control Comission (CICAD), Red Latinoamericana de Investigadores en Drogas (REDLA)

Francisco Cumsille, Dr. Ph., Organization of American States (OAS), Inter-American Drug Abuse Control Comission (CICAD), Red Latinoamericana de Investigadores en Drogas (REDLA)

perception of risk and drug use in Latin America. The objective of this paper is to demonstrate the importance of perception of risk and its relationship to drug use prevalence across a series of countries in South America (Argentina, Chile, Bolivia, Ecuador, Peru, and Uruguay), based on the assumption that the relationship between risk perception and drug use among students in South America is not heterogeneous enough to suggest the existence of population differences between the countries of the region.

Methods

Data for this study were taken from the first comparative study on drug use in South American youth, *Jóvenes y Drogas en Paises Sudamericanos. Un Desafío para las Políticas Públicas* (UNODC/CICAD, 2006). This comparative study of drug use in nine South American countries was conducted in 2005 and was a joint effort between the Inter-American Drug Abuse Control Commission (CICAD) of the Organization of American States (OAS) and the United Nations Drug Control Programme (UNODC) through its regional office in Peru. Among the participating countries were Argentina, Bolivia, Chile, Ecuador, Peru, and Uruguay. However, only five countries (Argentina, Bolivia, Chile, Ecuador, and Uruguay) included questions about the risk perception of damage from drug consumption. Furthermore, Chile only included questions about risk perception of harm associated with heavy drug consumption.

Research design

The study used a cross-sectional design of high school students and applied an anonymous survey on drug use modeled after the Monitoring the Future study in the United States. Nationally representative samples of high school students were obtained in each country through a multistage, probabilistic sampling procedure. Sampling involved three stages (Kish, 2009) and each country applied the same procedure in each of their geographic regions, states, or provinces in order to ensure nationally representative samples. In the first stage, schools were identified through the countries' national registries of secondary schools during the school year in which the study was performed. In the second stage, a random sample of schools was drawn for each region in each country. In the third stage, classrooms from each of the selected schools were randomly selected. Once a classroom was selected, all of the students in the class were administered the questionnaire. This method was applied in each country, though there was a slight variation in Chile, where instead of the entire class taking the questionnaire, 20 students were selected randomly within each class to take the questionnaire. This was done in order to remain consistent with previous studies carried out in Chile through its national drug use surveillance system. Sample weights were assigned to each student to take into account differences in population size and age-group structure across countries. Each individual country performed an Institutional Review Board ethics assessment prior to study administration. Informed parental consent was obtained via letters to the parents.

Each country had a lead researcher and research team. Data were collected during the second semester of the 2005 school year, with the exception of Bolivia, where data were collected in 2004.[1] Field work in each country was executed directly by personnel or external agencies contracted and supervised by the technical officers at the national drug commissions.[2] The school grades selected were 8th, 10th, and 12th. Students comprised three age groups: 14 years and younger, 15–16 years, and 17 years and older.

It should be noticed, therefore, that results shown in this article do not make any adjustments for the difference in timing of data collection in Bolivia. If there was a systematic different behavior in 2004 generations in Bolivia from the corresponding 2005 generations, the results of this paper do not adjust for it.

By consensus, the countries agreed on using the same format when administering the questionnaire. The format follows what is referred to as the 'common model' known as the *Modelo de Cuestionario Subregional* (MCS) or Subregional Questionnaire Model developed by the Organization of American States *Inter-American Uniform Drug Use Survey* (SIDUC). The common model consists of the administration of anonymous, self-applied questionnaires that gather information on the use of tobacco and alcohol; use of pharmaceuticals (tranquilizers and stimulants) without a prescription; use of illicit substances such as marijuana, cocaine, coca paste, and ecstasy; and inhalant use among secondary school students.

The questionnaire was standardized in Spanish with items adjusted for linguistic differences where necessary and depending on the local vernacular. The questionnaire consisted of three sections including questions about sociodemographic characteristics, prevalence and frequency of use of various substances (i.e., alcohol, cigarettes, marijuana, hashish, cocaine, coca base, tranquilizers, stimulants, ecstasy, methamphetamine, opium, morphine, crack, hallucinogens, and heroin), and perceptions of risk associated with the use of these substances.

The following question was used to assess lifetime substance misuse ''Have you ever used [psychoactive substance]?'' with the response option reading as ''yes/no.'' Subsequent questions asked ''Have you used [psychoactive substance] in the past 12 months?'' and ''Have you used [psychoactive substance] in the past 30 days?'' Questions regarding perception of risk associated with use were assessed with the question ''What do you think the level of risk is for a person who…'' followed by choice of selections: (a) has smoked cigarettes at some time, (b) smokes cigarettes frequently, (c) has had alcoholic drinks at some time, (d) drinks alcoholic beverages regularly, (e) drinks until drunk, (f) has taken tranquilizers at some time, (g) takes

[1] The survey in Bolivia was carried out at the end of 2004. Data were collected earlier because at the time of the study the government had sufficient support to move forward due to prior commitments made with CICAD and it was deemed best to continue rather than wait another year.

[2] National Drug Commissions are the governmental entities in charge of dealing with the policies associated with drug problems. In many cases, these would be similar in nature to the National Office on Drug Control Policy (ONDCP) in the United States.

Table 1
Sample Size and Population Represented by Country in School Survey Made in Argentina, Chile, Ecuador, Peru, Uruguay (each in 2005), and Bolivia (in 2004)

		Age Group (%)				
Country	Sample size	13–14 years	15–16 years	17–18 years	Male	Female
Argentina	38,716	36.7	35.7	27.6	44.4	55.6
Bolivia	18,717	32.9	38.8	28.3	49.0	51.0
Chile	33,885	41.5	33.7	24.8	48.9	51.1
Ecuador	12,500	35.1	37.2	27.7	49.3	50.7
Peru	57,923	34.5	49.9	15.6	48.9	51.1
Uruguay	7,599	39. 7	36.4	24.3	44.4	55.6
TOTAL	169,340	36.5	40.6	22.9	47.7	52.3

Table 2
Response and Non-response Rates of Risk Assessed Practices on High School Students in Five South American Countries, Argentina, Chile, Ecuador, Uruguay (each in 2005), and Bolivia (in 2004)

Assessed risk	Response %	Non-response %	Total
Frequent tobacco smoking	96.9	3.1	116,852
Alcoholic drunkenness	96.6	3.4	116,852
Frequent inhalant consumption	96,7	3.3	116,852
Frequent marijuana consumption	96.9	3.1	116,852
Frequent cocaine consumption	96.5	3.5	116,852
Frequent ecstasy consumption	96.4	3.6	116,852

tranquilizers regularly, (h) has used inhalants at some time, and (i) uses inhalants regularly. The questionnaire listed a choice of responses: ''no risk,'' ''slight risk,'' ''moderate risk,'' ''great risk,'' and ''don't know.''

For the purposes of the analysis, lifetime prevalence of drug use (any use during the lifetime) corresponds to experimental use, past-year prevalence of drug use (any use during the past year) corresponds to occasional use, and past-month prevalence (any use during the past 30 days) corresponds to frequent use of the substance.

It should be taken into account that risk perceptions refer to the subjective probability attributed to ''perceived damage or harm'' from drug consumption. The perceived damage from drug consumption was not gauged nor explained in the questionnaire for the different drugs. For simplicity, the expression ''risk perception from frequent drug use'' or others similar will be used.

The resulting integrated database of national samples comprised a total of 177,137 students (Table 1). No direct adjustment was carried out to account for differences in sample size across countries. As a result, the figures in this article may differ slightly from the figures published in national reports.

Statistical indicators such as prevalence rates of both licit and illicit substances were used to summarize data over the whole sample or its subsets. Similar indicators over risk perception categories were used for part or whole sample when referring to use/misuse of licit substances such as alcohol, tobacco, inhalants, and tranquilizers.[3] Pearson's *chi-square* was used to test for association between variables.

Risk perception is broadly understood as the subjective judgment made over the likelihood and severity of a risk and deals with reasons that may vary among individuals and for whom those judgments about risk may differ. Risk measurement depends on likelihood of threat and vulnerability and the magnitude of effects. It is quantified as the product of an incident's likelihood (simultaneous occurrence of threat and vulnerability) and the expected loss if the incident occurs. Differences with perception of risk of perilous practices may be attributed to a subject assigning low probability of threats and vulnerability and/or underestimation of expected losses or severity of harm of the incident occurs.

A high response rate—over 96%—was achieved for each risk assessment question on frequent consumption practices and drunkenness (Table 2).

South American surveys on (psychoactive) drug use in school teens tend to establish risk perception associated with drug use with a question of this sort: ''Which do you think is the risk a person runs when doing each of the following? …'' substituting expressions such as ''smoking frequently'' or

[3] Substances that are controlled in the United States, such as pharmaceutical substances, are not controlled or have fewer restrictions in the sample countries and are therefore qualified as misused, licit substances.

"drinking alcohol frequently" for the ellipsis. English translation was done as accurately and as meaningfully as possible from the Spanish version of the real questionnaire applied in each of the participating countries. The sense of "frequent" was left to individual interpretation of respondents, and it is difficult to establish if it differed by drug for a particular respondent or among respondents for each individual drug.

A response scale including options "no risk," "small risk," "moderate risk," "great risk," and "unknown risk" was given to the respondents. No information was previously given on injuries or (negative) consequences that might result from regular or "frequent" drug consumption either as a whole or for each drug. It can be argued whether such a question and associated response scale pretended to elicit perception on likelihood of injury, severity of injury, or both; that is, risk in technical sense described before (likelihood times severity).

If one identifies with the hypothesis that an increased perception of risk derived from drug consumption is associated with a decrease in drug consumption, or even in stopping or never beginning it, and results are generated that support such hypothesis, one may feel inclined to do more work on the components of risk assessment that contribute to a more "risky" perception of drug use. Work should be done on increasing awareness of "threat exposure probability" and awareness of "underrepresentation of vulnerability probability." Also awareness on "severity or expected loss of consumption" must be worked on.

However, if future studies show there is a reciprocal influence between risk perception and drug use, additional work must be done to prevent or reduce drug use per se to complement the work suggested in the previous paragraph.

Results

Perceptions of risk: licit substances

Licit substances considered in this analysis included tobacco, alcohol, pharmaceuticals (i.e., tranquilizers), and inhalants. For each of these, a risk perception measurement from frequent use/misuse was considered relevant given their legal status.

In Table 3, we observe that 14.5% reported low/no risk for smoking and frequent alcohol drinking, more than for the remaining substances. Smoking prevalence is grouped more heavily among those whose perception of risk associated with smoking is low or none. Regarding tranquilizers, 15% of students reported unknown risk associated with its frequent use, substances for which the largest proportion did not know the associated risk for its potential damage.

The perception of high risk associated with frequent alcohol use is significantly higher than for tobacco *($p<0.05$)* for both males and females. When we look at males and females separately, for either sex, there is a greater proportion that perceives that drinking until intoxicated constitutes a moderate or high risk than that which perceives in the same way smoking frequently.

With regards to perception of risk by sex, differences are significant at the $p=0.05$ level. Females showed a moderate or high perception of risk associated with each of the drugs in Table 3. More males than females were likely to report little/no risk associated with tobacco, alcohol, tranquilizers, and inhalants use.

Figure 1 displays perceptions of risk associated with cigarette smoking. Of the six countries considered, Chile shows

Table 3
Risk Perceptions Associated with Frequent Use of Licit Substances or Alcohol Intoxication by Sex in Argentina, Chile, Ecuador, Uruguay (each in 2005), and Bolivia (in 2004)

Drug and consumption pattern	Sex[a]	Low/no risk	Moderate/high risk	Unknown risk
Tobacco[a]	Total	14.5	79.4	6.1
(frequent use)	Male	15.6	77.3	7.1
	Female	13.5	81.3	5.2
Alcohol[b]	Total	14.0	81.3	4.8
(frequent use)	Male	16.3	78.8	4.9
	Female	11.9	83.4	4.6
Alcohol[a]	Total	10.9	80.7	8.4
(drink until drunk)	Male	12.5	78.2	9.3
	Female	9.4	83.0	7.6
Tranquilizers[c]	Total	9.4	75.5	15.0
(frequent use)	Male	11.6	72.6	15.8
	Female	7.5	78.1	14.4
Inhalants[a]	Total	5.8	81.2	13.1
(frequent use)	Male	7.2	78.9	13.9
	Female	4.5	83.2	12.3

Note. From *Jóvenes y drogas en países sudamericanos: Un desafío para las políticas públicas* by the United Nations Office on Drugs and Crime and the Inter-American Observatory on Drugs Inter-American Drug Abuse Control Commission (2006). Lima: Tetis Graf E.I.R.L.
[a]Statistically significant association *($p<0.05$)* between sex and risk perception for five countries data set.
[b]No risk perception assessment was available for alcohol frequent use in Chile.
[c]Data was available for risk perception on non-prescribed tranquilizer or stimulant medicines frequent use on all countries except Chile.

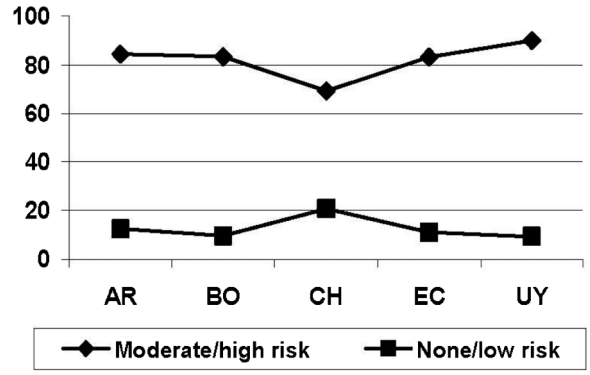

Figure 1. Percentage of students showing moderate/high or none/low level of perceived risk associated with smoking frequently, by country.

the lowest proportion (67.2%) of students who perceived "frequent" smoking as moderate or high risk ($p<0.05$) and has the highest proportion (19.8%) of students who perceive low or no risk associated with "frequent" smoking. By the same token, Chile shows the highest rate of current (last 30 days) smoking (38.1%) compared to the other five countries in the study (CICAD/UNODC, 2006).

About a quarter of current (any use in the past 30 days) smokers perceive smoking as low/no risk regardless of country. No difference between male and female current smokers is observed.

When we look only at those who consumed alcohol in the past 30 days, we see that about 17% perceive frequent alcohol use has little or no risk, and about 15% perceive getting drunk as having little/no risk. This means that 75% of current smokers and 85% of current drinkers think frequent smoking and drinking are moderately to highly risky.

A sizeable group of past-month tranquilizer users (16%) perceive little/no risk associated with its use. No statistically significant difference was found among males and females on tranquilizer use: 84% thought non-prescribed tranquilizer use was dangerous or they did not know the risk implied.

Perceptions of risk associated with illicit substances

The results from this section do not include Chilean students since they were not queried about harm risk associated with occasional drug use.

In Table 4, we observe that 22.7% perceive low risk associated with "some" marijuana use, more than for frequent use of any drug in Table 3 or getting drunk. The proportions of "unknown" risk associated with some use of crack/cocaine paste and MDMA are close to 20%, greater than the percentages that respond "unknown risk" ether for frequent use of licit drugs (or getting drunk) in five countries or for some use of the remaining illicit substances. The perceived risk associated with some use of cocaine was 16.7%, with the least difference in perception of males over females for some use of any illicit drug.

Prevalence of drug use licit drugs

Each of the countries had past-year tobacco use rates exceeding 30%; however, past-year tobacco use was higher in Chile, particularly among males. Past-year tobacco use was lowest among females in Bolivia (less than 20%). Tobacco use is significantly higher among males than females in Bolivia, Ecuador, and Peru and higher among females in Chile and Uruguay. In Argentina, past-year tobacco use is relatively similar among males and females. Past-month tobacco use is higher among females than among males in Chile (41.30%), Uruguay (27.49%), and Argentina (23.99%) (Table 5).

The highest rates of alcohol use are found in Uruguay, Argentina, and Chile, where more than half of the adolescents

Table 4
Risk Perceptions Associated with Some (at Least Once) Use of Illicit Drugs by Sex in Argentina, Ecuador, Uruguay (each in 2005), and Bolivia (in 2004)

Drug	Sex	Risk low/none	Risk moderate/high	Risk unknown
Marijuana (lifetime)	Total	22.7	69.2	8.1
	Male	24.3	67.5	8.2
	Female	21.2	70.8	8.0
Cocaine (lifetime)	Total	16.7	73.6	9.7
	Male	17.0	73.3	9.7
	Female	16.4	73.9	9.7
Crack/pasta (lifetime)	Total	12.4	67.9	19.7
	Male	13.3	69.1	17.5
	Female	11.5	66.9	21.6
Ecstasy (lifetime)	Total	14.3	64.9	20.9
	Male	16.0	64.6	19.5
	Female	12.9	65.1	22.0

Note. From *Jóvenes y drogas en países sudamericanos: Un desafío para las políticas públicas* by the United Nations Office on Drugs and Crime and the Inter-American Observatory on Drugs Inter-American Drug Abuse Control Commission (2006). Lima: Tetis Graf E.I.R.L.

Table 5
Past-year Prevalence of Licit Substance Consumption by Country and Sex in Argentina, Chile, Ecuador, Peru, Uruguay (in each 2005), and Bolivia (in 2004)

	Tobacco		Alcohol		Tranquilizers[a]		Stimulants[b]	
Country	Males	Females	Males	Females	Males	Females	Males	Females
Argentina	30.56	30.97	56.63	50.04	3.78	3.96	3.09	2.51
Bolivia	31.89	19.12	30.93	22.70	5.89	8.10	3.07	3.11
Chile	46.03	54.63	54.61	59.21	n/a	n/a	1.98	2.29
Ecuador	35.85	20.84	43.68	39.81	2.48	3.54	1.44	1.21
Peru	32.86	20.72	40.11	35.03	1.59	2.79	0.87	0.43
Uruguay	29.58	38.35	68.89	65.33	2.82	4.90	1.51	1.70

Note. From *Jóvenes y drogas en países sudamericanos: Un desafío para las políticas públicas* by the United Nations Office on Drugs and Crime and the Inter-American Observatory on Drugs Inter-American Drug Abuse Control Commission (2006). Lima: Tetis Graf E.I.R.L.
[a]Tranquilizers when taken without medical prescription
[b]Stimulants taken without medical prescription

report use of alcohol during the past year. Females in these same three countries show higher past-year prevalence of alcohol use than in the other three. Similarly, adolescents in Uruguay, Argentina, and Chile had higher rates of alcohol use during the past month (52.53%, 46.03%, and 40.23%, respectively). Past-month alcohol use among females in Argentina is 42% and 48% in Chile and Uruguay. Indeed, these three countries appear to have some of the highest rates of alcohol use in the hemisphere, exceeding rates found among similar grade students in the United States (Johnston, O'Malley, Bachman, & Schulenberg, 2006).

Regarding the use of tranquilizers without a medical prescription, Bolivia, Ecuador, Peru, and Uruguay show statistically significantly higher rates among females *($p<0.05$)* but the difference is less intense than observed in other populations (Yates & Catril, 2009; van der Waals, Mohrs, & Foets, 1993; Salmon, 2006: Nakao, Sato, Nomura, & Yano, 2009). The past-month prevalence of tranquilizers is 1.8 times higher than that for stimulants, when taking into account the total population of all six countries. In Argentina, alcohol use among males is higher than among females, while this pattern is reversed in Chile (Table 5).

Illicit drugs

Regarding illicit substances, past-year prevalence of any drug was 7.2% (males 8.6%, and females 5.9%) (Table 6).

The overall past-year prevalence for cocaine is 1.3%. Differences by sex are statistically significant ($p<0.05$), with the largest magnitude of difference between males and females in Bolivia and Ecuador. Among the people who used cocaine in the past 12 months, 75% of them also used marijuana during this period (Table 6).

The past-year prevalence of cocaine paste is lower overall compared to other illicit drugs (0.9%). Past-year prevalence is two times higher among males than females (1.2% vs. 0.6%). At least half of these subjects also used cocaine during the past 12 months, and at least two thirds of them used marijuana in that time period *($p<0.05$)*.

Past-year inhalant use is higher overall. Among females, the past-year prevalence was 1.6%, and among males 2.0%. Poly-drug use is also present in this group of users. More than half of these subjects had used marijuana in the past twelve months and about 20% had used cocaine paste. All of those who used inhalants had also used cocaine in the past 12 months.

Table 6
Illicit Drug Use during the Past 12 Months by Country and Sex in Argentina, Chile, Ecuador, Peru, Uruguay (each in 2005), and Bolivia (in 2004)

	Marijuana		Cocaine		Cocaine paste		Inhalants	
Country	Males	Females	Males	Females	Males	Females	Males	Females
Argentina	8.26	5.49	3.11	1.91	2.16	1.14	2.95	2.37
Bolivia	3.48	1.06	1.58	0.31	1.25	0.36	1.84	0.58
Chile	13.67	11.89	2.74	2.06	2.37	1.91	2.24	2.77
Ecuador	5.74	1.58	2.03	0.47	1.36	0.29	3.15	1.49
Peru	3.53	1.60	1.47	0.55	1.18	0.41	1.90	1.74
Uruguay	9.89	7.47	1.78	1.02	0.84	0.45	1.82	1.29

Note. From *Jóvenes y drogas en países sudamericanos: Un desafío para las políticas públicas* by the United Nations Office on Drugs and Crime and the Inter-American Observatory on Drugs Inter-American Drug Abuse Control Commission (2006). Lima: Tetis Graf E.I.R.L.

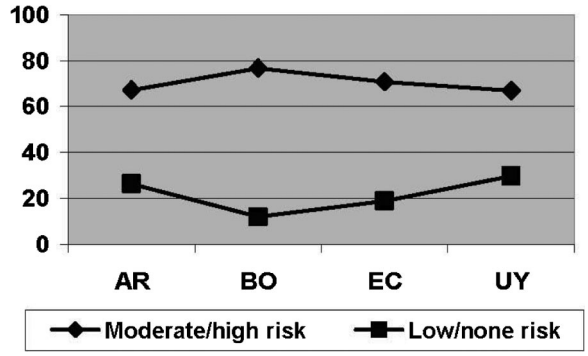

Figure 2. Percentages of students who assign low/no risk and moderate/high risk to smoking marijuana by country.

Relationship between risk perceptions and drug use

It was possible to detect that past-year tobacco consumption (Figure 3) was lower for students that perceived frequent tobacco use as highly risky. The same pattern was observed for past-year alcohol consumption: those who perceived getting drunk as highly risky showed a smaller past-year consumption of alcoholic drinks. The biggest numbers were for students that perceived a small risk on frequent tobacco use and getting drunk, respectively.

In addition, students who were not able to describe their risk perception (or indicated unknown risk) towards frequent tobacco use and towards getting drunk showed a past-year tobacco and alcohol prevalence equal (for tobacco) and smaller (for alcohol) than those showed by students with a highly risky perception towards either kind of abuse.

It can also be observed that past-year prevalence was more similar between those who perceived no and moderate risks than could be expected from a monotonous linear assumption, that is, if there was a linear reduction in prevalence as risk perception becomes higher.

This makes a difference with past-year consumption of marijuana, inhalants, and cocaine, where higher risk perception is associated with lower use of the corresponding drug (Figure 4). However, in the cased of alcohol and tobacco, students with unknown risk perception showed a similar prevalence of either drug use as that shown by students with a high risk perception of the potential damage.

It may be noteworthy that the prevalence of marijuana use for different frequent use risk perceptions seems to be halfway between tobacco prevalence (a licit drug) and cocaine prevalence (an illicit drug).

Summarizing, lower levels of past-year consumption associated with higher levels of risk perception may not be consistent for alcohol and tobacco but do hold true for the remaining drugs: marijuana, inhalants, and cocaine.

Discussion

Overall, students who report a low perception of risk associated with the use of any substances are more likely to use those substances. In addition, unknown risk perception of frequent drug consumption is associated with past-year use at similar rates to those shown by subjects with high risks perception.

Females showed greater proportions of high or moderate perception of risk for nearly all substances, licit or illicit. At the

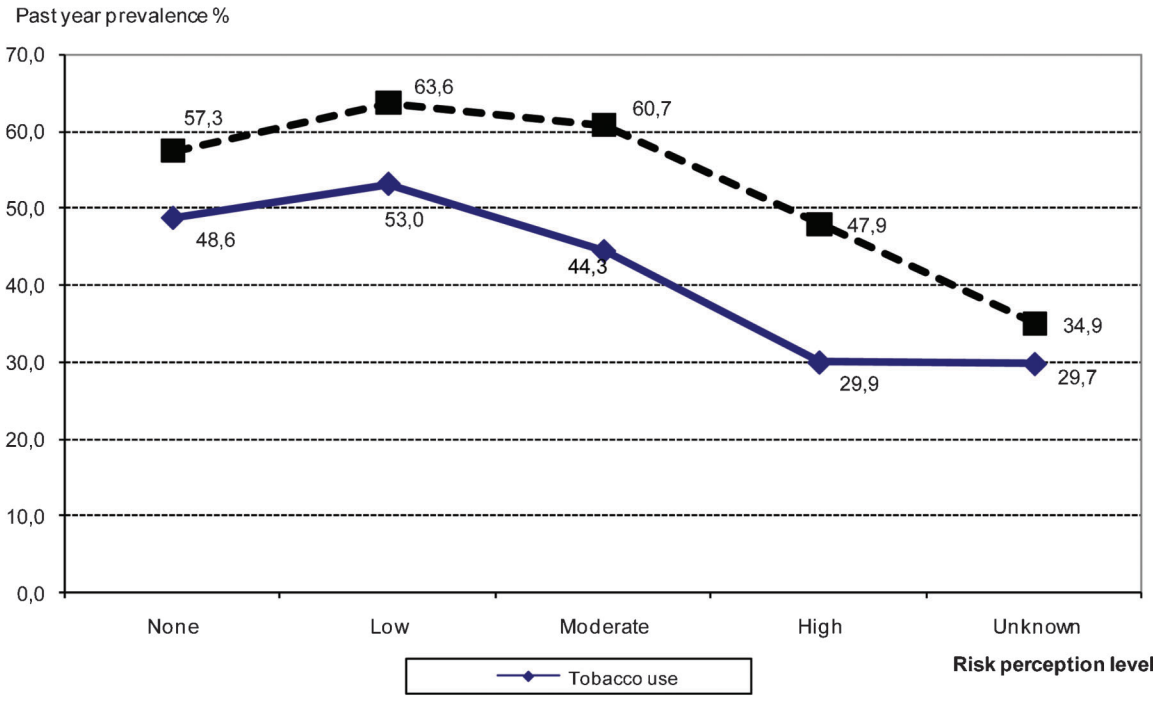

Figure 3. Past year tobacco and alcohol consumption percentages among high school students in levels 8th, 10th and 12th, according to risk perception of frequent use of tobacco and getting drunk with alcohol 2005 (Argentina, Chile, Ecuador, and Uruguay) and 2004 (Bolivia).

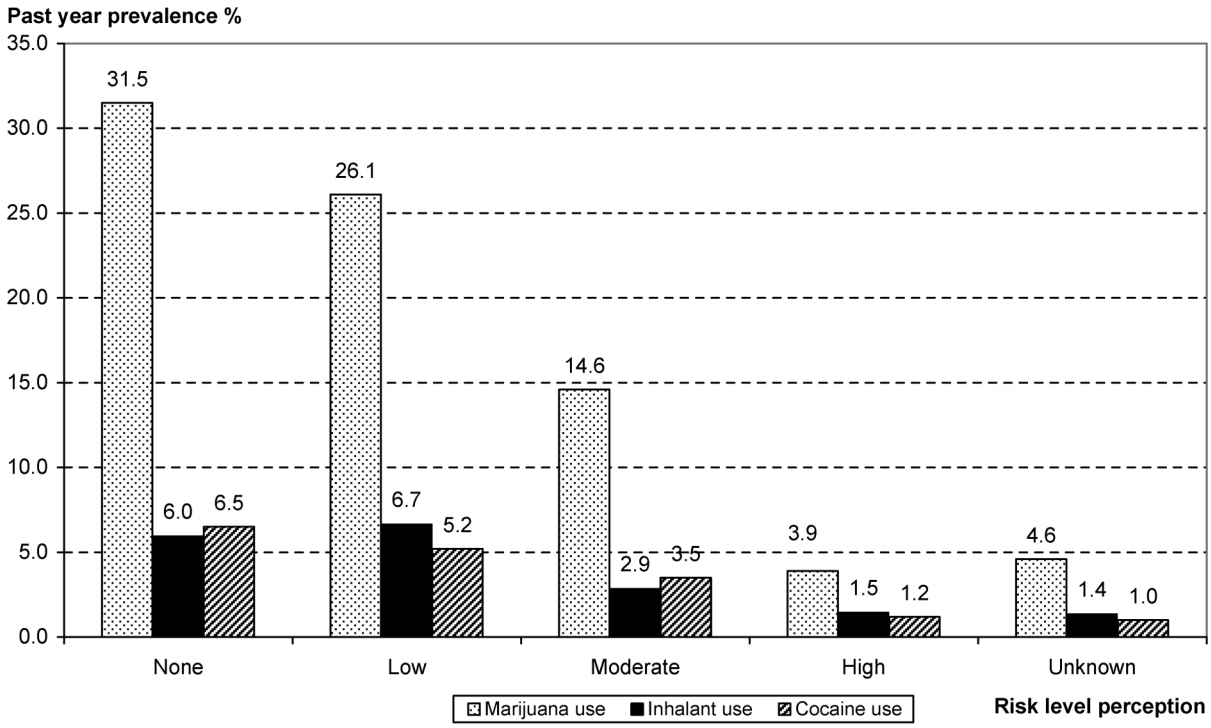

Figure 4. Past year consumption of marijuana, inhalants and cocaine among high school students of levels 8th, 10th and 12th, for frequent use riskperception of corresponding substance 2005 (Argentina, Chile, Ecuador, Uruguay) y 2004 (Bolivia).

same time, the prevalence of use of nearly every substance is lower among females than males.

Students viewed licit substances use such as alcohol, tobacco, inhalants, and pharmaceuticals in greater proportion as a low risk practice as compared to illicit substances use such as marijuana and cocaine. Nevertheless, nearly 15% of students answered they did not know the risk associated with tranquilizer use without medical prescription, a little above the 13% that perceived inhalant use as of unknown risk.

Differences in perception of risk can be seen by country. Chile shows the lowest proportion of students who assign high risk to frequent smoking and also has the higher prevalence of smoking.

In Argentina and Uruguay, nearly 30% of students viewed low/no risk associated with marijuana use, higher than in the other countries (Figure 2). Argentina and Uruguay (as well as Chile) have some of the highest rates of marijuana use in the region.

Among students who had smoked at some time in their life, risk perception of occasional drug use was low/none. This may be of interest basically because that risk perception is congruent with reality. That is to say that occasional use of any of the illicit substances cited does not imply, in the students' minds, serious long-term consequences, and any potential harm would be much less risky than that derived from the abuse of any of the licit substances (Table 3), although the physical damage and abuse potential that have been reported systematically in drug literature (Macleod, et al., 2004; Lynskey, et al., 2003).

It is also worth mentioning that nearly half of the students who had smoked at some time in their life perceived the risk associated with occasional drug use as being either low risk or none at all, while only 20% of students who had never smoked shared this perception.

Similar to other studies carried out in Europe, Spain, and North America, the perception of risk appears to be negatively associated with drug use prevalence in the South American countries in this analysis. However, perception of risk is not uniform across countries. Students show different perceptions of risk associated with different substances, which may translate into different prevalence rates across countries as well. Although this analysis does not permit us to make recommendations regarding best practices in drug prevention, it is clear that the perception of risk associated with drug use plays a role in the manifestation of drug use in different populations. However, we are not discarding the possibility that specific practices on drug use may affect the risk perception associated to such practices.

Perception of risk is also not uniform across types of drugs. Fewer students perceived high risk associated with occasional marijuana use than for occasional cocaine use. At the same time, crack/pasta base—particularly noxious substances—and ecstasy were associated with lower perceptions of high risk. However, for both crack/pasta base and ecstasy, close to 20% of students responded "don't know risk." This may imply that the risk associated with these substances is largely unknown among students.

The cross-sectional nature of the study makes it difficult to draw conclusions about perception of risk increases or

decreases. The results of this analysis are limited to whether perception of risk is associated with different levels of consumption, or different groups.

It may be important to note that, although the common model did not include questions on race or ethnicity, this does not imply that the populations studied were homogeneous. On the contrary, questions regarding race and ethnicity were not included because of the extreme diversity of the populations from one country to another and the different local concepts and definitions of race and ethnicity that made it impossible for the countries to agree on a standardized question. Individual countries may have included their own questions regarding race and ethnicity but these data are not available in the cross-national databases.

Of notable absence are questions regarding socioeconomic status. Early SIDUC questionnaires in the late 1990s included questions regarding household income; however, it was found that the secondary school students were unable to answer these questions consistently and the majority left the questions blank. This may have to do with the fact that in many countries, although parents are employed, their employment may be informal and salaries received in cash only. This makes it difficult for youth to be able to answer clearly questions regarding monthly income. For these reasons, questions regarding household income and socioeconomic status were left out of the core questionnaire.

A further limitation is that this study did not survey the strengths, resources, or social capital of the samples' daily functioning and adaptation in a range of roles, networks, contexts, and environments that may be associated with the abilities of these students to perceive, judge, make decisions, implement them or not, learn from what they do or not, and are relevant to the development of policies and interventions.

Future analyses from different researchers with other approaches may enhance the role risk perception plays as a predictor for drug use among the student population.

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