



## Effect of appreciation for Indigenous cultures and exposure to racial insults on alcohol and drug use initiation among multiethnic Argentinean youth



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### ABSTRACT

**Objectives.** This study evaluated the effect of factors reflecting appreciation of Indigenous culture and racial insults on alcohol and drug use initiation among multi-ethnic youth in Jujuy, Argentina.

**Methods.** Students were surveyed from 27 secondary schools that were randomly selected to represent the province. A total of 3040 eligible students in 10th grade, age 14 to 18 years were surveyed in 2006 and 2660 of these same students completed surveys in 11th grade in 2007. Multivariate logistic regression models assessed the effect of appreciation for Indigenous cultures and reported exposure to racial insults in 10th grade on incident current alcohol drinking in previous 30 days, binge drinking ( $\geq 5$  drinks at one sitting), and lifetime drug use (marijuana, inhalants or cocaine) in 11th grade among students not reporting these behaviors in 2006.

**Results.** In 2006, 63% of respondents reported high appreciation for Indigenous cultures and 39% had ever experienced racial insults. In 2007, incident current drinking was 24.4%, binge drinking 14.8%, and any drug use initiation was 4.1%. Exposure to racial insults increased the likelihood of binge drinking (OR = 1.6; 95% CI 1.2–2.1) but was not significant for any drug use. Appreciation for Indigenous cultures reduced the risk of any drug use initiation (OR = 0.5, 95% CI 0.3–0.7) but had no effect for alcohol drinking outcomes. These effects were independent of Indigenous ethnicity.

**Conclusions.** Enhancing appreciation for Indigenous cultures and decreasing racial insults are achievable goals that can be incorporated into programs to prevent youth substance use.

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### Introduction

Alcohol and drug use and misuse significantly contribute to the global burden of disease (Ezzati et al., 2004; Rehm and Room, 2005). Alcohol is linked to intentional and unintentional injuries and chronic diseases, and it accounts for about the same amount of the global burden of disability-adjusted life-years as tobacco (Murray and Lopez, 1996). Drug use is linked to suicide, mental health disorders and cognitive impairments (Rehm and Room, 2005; Cairney et al., 2002). Substance use among adolescents merits special attention since this is a vulnerable

period for addiction, and it may lead to social problems such as poor school performance and confronting personal and institutional violence (Crews et al., 2007; Alderete et al., 2008; Pierobon et al., 2013).

Research to understand the psychosocial etiology of adolescent alcohol and drug use has a long history in North America but research in South America is rare. Within this region, Argentina has highest rates of alcohol drinking and cocaine use and shows a rising trend in substance use in general (CICAD, 2011). Between 2001 and 2011 binge drinking increased from 29.7% to 63.4%, marijuana use from 4.6% to 13.9%, inhalants use from 0.9% to 4.5%, and cocaine use from 1.4% to 4.6%. The data indicates that current prevention efforts are insufficient, failing to address the complex phenomena that underlie youth's use of psychotropic substances. An under studied topic in a culturally diverse setting like South America, is the relationship between cultural factors and substance use (Gonzalez Burchard et al., 2005; Organization of American States, 2015; Torres-Parodi and Bolis, 2007; Kam and Cleveland, 2011). The

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province of Jujuy in Northwest Argentina is a unique environment for examining these relationships. The majority of the population is of Indigenous background of Andean and Amazonian ethnic groups, with a minority of European descent and an important segment of mixed-origin individuals (Indigenous and European). In this context a hierarchical social structure persists, with discrimination and racism against Indigenous Peoples (Organization of American States, 2015); (Torres-Parodi and Bolis, 2007). At the same time, contemporary social change processes have fostered revalorization of Indigenous cultures. This is also a border area with intense trafficking of cocaine from contiguous producing countries.

We conducted a longitudinal analysis of how cultural factors influence substance use among youth in a social setting for which there has been little if any research apart from the authors' prior work. We examined the effect of two posited protective and risk factors – appreciation for Indigenous cultures and exposure to racial insults – on alcohol, marijuana, inhalants and cocaine use. This research is relevant in view of increasing consumption rates and the need to design effective prevention programs. It is also grounded in a new social setting for examining the web of substance use causation.

#### *Longitudinal studies of cultural factors and youth substance use*

A number of studies in North America have assessed the relationship between youth substance use and risk and protective cultural factors, using different indicators across ethnic groups of varied socio-historical trajectories and yielding mixed results (Kam and Cleveland, 2011; Whitbeck et al., 2001; Whitbeck et al., 2004; Terrell et al., 2006; Umana-Taylor et al., 2009; Martin et al., 2003; Nasim et al., 2007; German et al., 2009). Few studies have used prospective designs. A prospective study among Mexican heritage adolescents showed that linguistic acculturation was a risk factor for marijuana initiation for boys, was protective for inhalant use initiation, and had no effect on alcohol use (Marsiglia et al., 2011). Another study showed that Latina/o youth experiencing discrimination reported more use on a combined measure of alcohol, cigarettes and marijuana (Kam et al., 2010). A study of American Indian adolescents found that perceived discrimination influenced early and problem alcohol drinking (Cheadle and Whitbeck, 2011). In the same population, discrimination was not found to be a predictor of marijuana use (Cheadle and Sittner Hartshorn, 2012). Among Navajo adolescents, discrimination was linked to boys' substance use, using a combined measure of alcohol, marijuana, hallucinogens, stimulants and inhalants. Navajo culture and in some cases, connection to White American culture, buffered the negative effect of discrimination (Galliher et al., 2011). Among African American adolescents, perceived discrimination was associated with an increase in a combined measure of cigarettes, marijuana and alcohol use in adulthood (Brodish et al., 2011). Similarly, early experiences of discrimination among African American adolescents were correlated with a combined measure of alcohol and marijuana use (Gibbons et al., 2004). The literature for Latin American countries is scarce and limited to adults. In Chile among adult primary health care patients, perceived discrimination was correlated with alcohol and illegal drug use (Capezza et al., 2012). A longitudinal study among adults of the Amazonian Tsimane in Bolivia showed that adherence to shared cultural norms was negatively associated with alcohol drinking (Reyes-Garcia et al., 2010).

#### *Cultural appreciation, racism and substance use*

Cultural identity indicates the degree to which individuals perceive to be included in an ethnic group and it has been a central focus of health research (Oetting and Beauvais, 1991; Cokley, 2007; Phinney, 1989). Affiliation to a cultural group however, does not imply that an individual holds a positive affect towards the group. At the cognitive and emotional levels, a range of positive or negative appraisals may emerge as individuals ascribe significance, meaning and value to a culture

(Sellers et al., 1998; Epple and Thubauville, 2012) (Morgan, 2003). A positive appraisal of one's culture is thought to contribute to well-being by conferring feelings of self-worth, connectedness, and purpose (Kiang et al., 2006), and there is indication that in educational settings, promoting a positive appraisal for the culture of others improves the learning environment. We hypothesized that appreciation for historically undervalued Indigenous cultures will be protective across ethnic groups in a multicultural context. To the contrary, we hypothesized that exposure to racial insults will have a negative effect across ethnic groups. In previous analyses, exposure to racial insults referring to Indigenous stereotype characteristics was reported by all ethnic groups in this research site. (Alderete et al., 2012) Racism refers to an organized system that assigns hierarchical status to specific groups and uses this ranking to preferentially allocate societal goods and resources to those who are regarded as inherently superior. Stress elicited by exposure to racial insults, even if the receptor does not identify with the posited group, may induce or contribute to alcohol or drug use as a coping strategy (Gerrard et al., 2012).

The ecological public health model (Green et al., 1996) provides an overall framework for model building in this study. It is understood that substance use behavior is influenced by a wide array of individual, interpersonal and contextual variables. The social norms (Berkowitz, 2003) and tension reduction theories (Goldman et al., 1999; Greely and Oei, 1999) are used to posit plausible explanations of the relations found among variables.

## **Methods**

### *Sampling and study procedures*

The study was conducted between 2006 and 2007 in the Province of Jujuy, in Northwest Argentina. Procedures were described in a previous publication (Alderete et al., 2009). The 27 participating schools included 3690 8th grade students age 12 to 16 in 2004. Surveys were self-administered in class and students who were not located in the school at follow-up were surveyed at home. For this report we used data from the 3040 students between ages 14 and 18 years who completed surveys in 2006. In 2007, 2660 of 3040 students (87.5% response rate) completed surveys at time 2 for the one-year cohort. The UCSF Committee on Human Research and an NIH-certified human subjects research board in Buenos Aires based at *Centro de Educación Médica e Investigaciones Clínicas* (CEMIC) approved the research protocol. Passive consent was requested from caretakers and students signed an active consent. The questionnaire consisted of translated items from surveys of adolescents in the U.S. (Fryar et al., 2009; MMWR, 1992), and questions developed through qualitative research in the target population (Alderete et al., 2012; Alderete et al., 2010).

### *Exposure variables: appreciation for indigenous cultures and racial insults*

The variable assessing appreciation for Indigenous cultures was developed through in depth qualitative interviews and was measured with the following items: 1) "It is important to teach children about traditions like *Pachamama* or *Pin Pin*"; 2) "It is important to continue with the traditions and customs of the elders"; and 3) "It is important to learn traditional languages like Quechua, Aymara, Guaraní". The items have a disagreement-agreement response set with a range of 1 to 5. For this analysis we converted to a binary indicator of high versus low appreciation (3.6 to 5 vs. 1 to 3.5, respectfully).

Questions on experiences of racial insults were also developed through qualitative research (Alderete et al., 2012). We created two items to assess whether respondents had ever been called any of the following names in a way that was intended to insult or to bother them: 1) "*coya tonto*", "*chaguanco*", or "*indio cabeza dura*"; or 2) "*boliviano or bolita*". The items were assessed with a Yes or No response and we constructed a binary variable indicating ever versus never being exposed to one of these two sets racial insults.

### *Demographics and family characteristics*

Respondents reported their sex, age, religion, and school attendance. They selected their ethnic identity from the following list: Indigenous, mixed Indigenous and European, and European (Alderete et al., 2009). A few respondents

endorsing a category of “other ethnicity” including groups of more privileged social status locally (e.g., Arabs) were grouped with Europeans. Respondents who self-identified as Indigenous, were also asked to select their identity from a list of Andean and Amazonian Indigenous groups.

The use of an Indigenous language in the family was ascertained as an indicator of family cultural context. Students reported on education and employment status of the primary provider. If the provider had not completed elementary school, was unemployed or on government welfare, youth were categorized as having low socioeconomic status. Religion was categorized as Catholic, Christian or Evangelical, and other low frequency religions.

#### Psychosocial factors

Depressive symptoms were ascertained by asking whether the respondent in the past year felt sad and/or could not carry on his/her normal activities or obligations for at least two weeks (Benjet et al., 2007). Thrill seeking orientation was measured with three items using a five-point disagreement–agreement response set: “I do not mind getting in trouble as long as I have fun”; “I like to do dangerous things”; and “I like to do things that people say should not be done” (Vega et al., 1993). We defined scores of 3 to 5 as high and less than 3 as low. The Cronbach’s alpha for the items was 0.71.

Positive expectations for the future were measured with the following two questions: “I think that when I am older I will be able to have all that I need” and “I think that when I am older I will be able to work in what I like”. A list of role models was presented to respondents. Identification with “athletes” was used as an indicator of a conforming role model. “Villeros”, a stereotyped young shantytown dweller with a rebellious attitude towards established norms was used as an indicator of a defiant role model. To assess concern for body image we asked whether respondents were trying to lose/gain, maintain their weight, or were not concerned about their weight.

#### Outcome variables

Participants reported on the consumption of any alcoholic beverages in the previous month (defined current drinking), and the consumption of five or more drinks on one occasion in the past month (episode of binge drinking). Respondents were asked if they had ever used marijuana, inhalants or solvents (e.g. glue, gasoline), cocaine, or other drugs (e.g. ecstasy, heroin). We also constructed a variable of lifetime use of any of these drugs.

#### Data analysis

The sampling design was incorporated into all models by specifying geographic areas as strata and schools as clusters, as well as including weights to adjust for disproportionate stratification. A finite population correction was applied to adjust for the relatively large proportion of available schools sampled within each geographic area. Standard errors and confidence intervals were estimated via the Taylor expansion approximation (Stata version 11.2). We conducted descriptive analyses examining the distribution of demographic and family characteristics and of cultural and psychosocial factors by sex. Chi-square tests and *p* values were calculated. We estimated the total and sex-specific prevalence rates of alcohol drinking and drug use variables in 2006 or at Time-1 when students were in 10th grade, and the respective incidence rates in 2007 or at Time-2 when students were in 11th grade.

Multivariate logistic regression models included cultural appreciation and racial insults as simultaneous independent variables. The models assessed the effect of the independent variables at Time-1 net of one another and of the control variables, on alcohol and drug use at Time-2. Models with the “other drug” outcome (e.g. ecstasy, heroin) yielded unstable results because they were rarely endorsed. These drugs were only included in the any drug use outcome models. For each outcome the models were fit to data from the subsample of respondents who were negative for the outcome at Time-1 to capture incident alcohol and drug use at Time-2. Covariates were selected on the basis of those related to substance use in the literature or in our previously published studies (Alderete et al., 2008; Alderete et al., 2012; Mejia et al., 2013). We estimated adjusted odds ratios and 95% confidence intervals. For each outcome we tested interactions of cultural appreciation by sex and by ethnicity, of exposure to racial insults by sex and by ethnicity, and of cultural appreciation levels by exposure to racial insults.

## Results

### Demographic characteristics

Among the 3040 participants who were in the selected age range of 14 to 18 years in 2006, 63.4% reported high levels of cultural appreciation (Table 1) and the proportion did not differ by ethnicity. A smaller

**Table 1**

Demographic, cultural and psychosocial variables by sex among youth age 14 to 18 years, from Jujuy, Argentina, 2006.

Total N = 3040	Girls N = 1645	Boys N = 1395	Chi square p value
	%	%	
<b>Cultural variables</b>			
<b>Ethnic self-identification</b>			
European	6.8	11.8	<b>0.003</b>
Indigenous	71.1	65.8	
Mixed Indigenous–European	22.0	22.3	
<b>Indigenous Language spoken in the family</b>			
No	68.7	69.2	0.876
Yes	31.3	30.8	
<b>Appreciation for indigenous cultures score</b>			
Low	35.1	39.1	0.077
High	64.9	60.9	
<b>Exposure to racial insults</b>			
Never	65.5	55.9	<b>&lt;0.001</b>
Ever	34.5	44.1	
<b>Demographic variables</b>			
<b>Age in years</b>			
14–15	67.2	66.4	0.699
16–18	32.8	33.6	
<b>Currently attending school</b>			
No	17.7	20.9	0.128
Yes	82.3	79.1	
<b>Religion</b>			
Catholic	85.3	85.5	0.652
Evangelical/Christian	10.6	9.9	
Other	4.1	4.6	
<b>Low SES</b>			
No	74.2	79.4	<b>0.014</b>
Yes	25.8	20.6	
<b>Psychosocial variables</b>			
<b>Symptoms of depression</b>			
No	55.3	70.8	<b>&lt;0.001</b>
Yes	44.7	29.2	
<b>Positive expectations for the future</b>			
Never to almost always	30.3	29.5	0.692
Always	69.7	70.5	
<b>Parental support</b>			
Never/almost never	13.7	6.6	<b>&lt;0.001</b>
Sometimes	23.9	20.6	
Almost always/always	62.4	72.8	
<b>Thrill seeking orientation</b>			
Low	89.6	83.1	<b>0.004</b>
High	10.4	16.9	
<b>Body image</b>			
No action	31.4	44.5	<b>&lt;0.001</b>
Trying to maintain weight	29.4	31.0	
Trying to lose/gain weight	39.2	24.5	
<b>Identification with defiant role model</b>			
None	58.9	58.0	0.522
Almost none to a lot	41.1	42.0	
<b>Identification with conforming role model</b>			
Low	40.7	20.2	<b>&lt;0.001</b>
High	59.3	79.8	

proportion of girls than boys reported ever exposure to racial insults (34.5% vs. 44.1%), but the proportions did not differ by ethnicity.

Nearly 20% of youth were not attending school. A larger proportion of girls were classified as low SES (25.8% vs. 20.6%). Girls reported lower levels of parental support (62.4% vs. 72.8%) and thrill seeking orientation (10.4% vs. 16.9%), and were less likely to identify with a conforming (athletic) role model (59.3% vs. 79.8%). On the other hand a greater proportion of girls reported having depressive symptoms (44.7% vs. 29.2%) and trying to lose or gain weight (39.2% vs. 24.5%).

#### Prevalence and incidence rates

Current alcohol drinking prevalence rates were higher among boys (40% vs. 33%) and their prevalence of binge drinking was more than double that of girls (27% vs. 13%; Table 2a). At time 2, boys and girls without current drinking in 2006 had similar rates of current drinking in the past 30 days (27% vs. 23%) but the rate of incident binge drinking was higher among boys (19% vs. 12%; Table 2b).

Lifetime drug use prevalence rates were higher among boys for marijuana (5% vs. 2%) and any drug use (7% vs. 4%), but similar across both sexes for inhalants (2.7%), cocaine (0.9%) and other drug use (0.7%) at time 1 (Table 2a). Incidence rates were similar across boys and girls for the use of marijuana (3.3%), inhalants (1.6%) and other drugs (0.5%). Rates were higher among girls for cocaine (1.3% vs. 0.4%) and higher among boys for any drug use (5.1% vs. 3.3%; Table 2b). To evaluate reliability of responses, we found that 2.6% of respondent answered “yes” to using any drugs in 2006 but responded “no” in 2007.

#### Predictors of alcohol drinking

In multivariate logistic regression models exposure to racial insults increased rate of binge drinking in the previous 30 days (OR = 1.6; 95% CI = 1.2–2.1; Table 3). Appreciation for Indigenous cultures did not have a significant effect on the alcohol drinking outcomes. Among the covariates, being a boy (OR = 1.7; 95% CI = 1.3–2.3), reporting high levels of thrill seeking orientation (OR = 1.9; 95% CI = 1.3–2.8) and identifying with a defiant role model (OR = 1.6; 95% CI = 1.2–1.9) increased the likelihood of binge drinking in past 30 days. Reporting high levels of thrill seeking orientation (OR = 2.1; 95% CI = 1.4–3.1) and identifying with a defiant role model (OR = 1.4; 95% CI = 1.1–1.9) increased the rate of current alcohol drinking among those not reporting this behavior the previous year. European youth had increased likelihood of current drinking in previous 30 days

at time 2 compared with Indigenous Andean youth (OR = 1.6; 95% CI = 1.2–2.1) (data not shown).

#### Predictors of drug use

High levels of appreciation for Indigenous cultures reduced by half or less the odds of drug use initiation in multivariate models. However, exposure to racial insults was not a significant risk factor for drug use. Boys were more likely to initiate marijuana (OR = 2.1; 95% CI = 1.2–3.8) or any drug use (OR = 1.7; 95% CI = 1.1–2.7), but the likelihood of inhalant use initiation was similar for boys and girls, and the risk of cocaine initiation was lower for boys (OR = 0.2; 95% CI = 0.1–0.7). Youth who self-identified as being Indigenous had lower odds of inhalant use initiation compared with Europeans (OR = 0.3; 95% CI = 0.1–0.7). When examining disaggregated Indigenous categories European (OR = 3.7; 95% CI = 1.5–9.3) and Amazonian youth (OR = 4.3; 95% CI = 1.1–17.0) had higher risk of inhalant use compared with Andeans (data not shown).

The perception of having high parental support was protective for incident marijuana use (OR = 0.3; 95% CI = 0.1–0.5) and any drug use initiation (OR = 0.4; 95% CI = 0.2–0.7). Thrill seeking orientation increased the risk of incident inhalant use (OR = 5.0; 95% CI = 2.4–10.4) and cocaine initiation (OR = 5.7; 95% CI = 2.1–15.0). Reduced positive expectations for the future were a risk factor only for cocaine use initiation (OR = 3.6; 95% CI = 1.3–9.9). Identification with defiant role models increased the risk of incident inhalant use (OR = 4.9; 95% CI = 2.4–10.1) and any drug use initiation (OR = 1.9; 95% CI = 1.1–3.5). Identification with a conforming role model was protective only for cocaine (OR = 0.3; 95% CI = 0.2–0.7).

#### Interaction effects

The protective effect of appreciation for Indigenous cultures on marijuana (OR = 0.2; 95% CI = 0.1–0.3) was significant only among girls. The effects of the exposure variables did not vary across groups by ethnic identity and the effect of appreciation for Indigenous cultures was similar for youth with and without exposure to racial insults.

#### Discussion

This is the first study in Latin America to assess the effect of cultural factors on youth's substance use behavior. Appreciation for Indigenous cultures resulted in beneficial effects and reporting racist insults had detrimental effects, across the different ethnic groups in the study.

**Table 2a**

Prevalence rates of alcohol and drug use among 3040 youth in Jujuy, Argentina, 2006.

Prevalence rates (T1)							
Alcohol use	Current		Lifetime drug use				
	Current N = 2981 (1606 Girls/ 1375 Boys)	Current binge N = 3005 (1634 Girls/ 1371 Boys)	Marijuana N = 3032 (1643 Girls/ 1389 Boys)	Inhalants N = 3029 (1640 Girls/1389 Boys)	Cocaine N = 3025 (1638 Girls/1387 Boys)	Other drugs N = 3031 (1641 Girls/1390 Boys)	Any drugs N = 3016 (1634 Girls/1382 Boys)
	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)
<b>Girls</b>	506 32.9% (1.5)	203 13.2% (1.5)	31 2.2% (0.4)	40 2.6% (0.4)	12 0.7% (0.2)	9 0.5% (0.3)	66 4.4% (0.5)
<b>Boys</b>	536 40.1% (2.1)	344 26.7% (1.8)	64 5.0% (0.8)	37 2.8% (0.3)	18 1.3% (0.3)	13 1.0% (0.3)	88 6.9% (0.8)
<b>Total</b>	1,042 36.2% (1.2)	547 19.3% (0.6)	95 3.5% (0.5)	77 2.7% (0.3)	30 0.9% (0.2)	22 0.7% (0.2)	154 5.5% (0.6)
<b>p-Value</b>	<b>0.011</b>	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.631	0.077	0.281	<b>&lt;0.001</b>

Current drinking is defined by consuming one alcohol drink in the previous 30 days.

Binge drinking is defined by consuming ≥5 drinks at one sitting.

\* Percentages are weighted so the Ns will not add up to the weighted percentages of the total.



**Table 2b**  
Rates of past 30-day alcohol use and incident drug use among 2660 youth in Jujuy, Argentina, 2007.

Incidence rates (T2)							
Incident alcohol use			Drug use initiation				
	Current N = 1620 (929 Girls/ 691 Boys)	Current binge N = 2074 (1225 Girls/ 849 Boys)	Marijuana N = 2464 (1381 Girls/ 1083 Boys)	Inhalants N = 2464 (1368 Girls/ 1096 Boys)	Cocaine N = 2506 (1391 Girls/ 1115 Boys)	Other drugs N = 2511 (1394 Girls/ 1117 Boys)	Any drugs N = 2391 (1338 Girls/ 1053 Boys)
	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)	N %* (SE)
<b>Girls</b>	203 22.6% (1.5)	137 12.0% (0.6)	29 2.6% (0.5)	18 1.4% (0.4)	15 1.3% (0.4)	9 0.8% (0.4)	38 3.3% (0.5)
<b>Boys</b>	188 26.9% (3.1)	168 18.9% (2.0)	39 4.3% (0.7)	17 1.7% (0.4)	4 0.4% (0.2)	3 0.2% (0.1)	46 5.1% (0.7)
<b>Total</b>	391 24.4% (1.9)	305 14.8% (1.1)	68 3.3% (0.5)	35 1.6% (0.3)	19 0.9% (0.2)	12 0.5% (0.2)	84 4.1% (0.5)
<b>p-Value</b>	0.155	<0.001	0.060	0.609	<b>0.034</b>	0.167	<b>0.024</b>

Current Drinking is defined by consuming one alcohol drink in the previous 30 days.

Current Binge drinking is defined by consuming  $\geq 5$  drinks at one sitting in the previous 30 days.

Sample N for each behavior varies to reflect the number who did not report the behavior in 2006.

\* Percentages are weighted so the Ns will not add up to the weighted percentages of the total.

Significant effects were found after controlling for a wide set of covariables. Among longitudinal studies reporting effects on single substance use, our results are in agreement with those showing that discrimination influences alcohol use among North American Indian youth (Cheadle and Whitbeck, 2011) but does not predict marijuana use (Cheadle and Sittner Hartshorn, 2012; Galliher et al., 2011), with studies showing that discrimination influences alcohol drinking among African American youth (Gibbons et al., 2004; Gibbons et al., 2007), and with a study showing no relationship between a cultural identity indicator and alcohol drinking among Mexican American youth (Marsiglia et al., 2011).

Different effect patterns of cultural appreciation on alcohol and drug use initiation may be explained by the social norms associated with each substance type (Shmulewitz et al., 2012; Lewis et al., 2010; Holmila et al., 2009; Room, 2001; Caetano and Clark, 1999). Argentina is a permissive society and underage drinking commonly occurs under adult supervision (Pilatti et al., 2013). However, Indigenous communities in the region maintain comparatively strong social sanctions against drug use (Knight et al., 2011).

The tension reduction approach provides a basis for explaining the effect of racism on alcohol drinking initiation (Goldman et al., 1999; Greely and Oei, 1999), a salient finding, given the high prevalence of alcohol drinking in this sample. Alcohol drinking may occur in response to negative emotional states (Martin et al., 2003) (Terrell et al., 2006; Gerrard et al., 2012). In Argentina alcoholic beverages are easily available to youth. The lack of effect of exposure to racial insults on drug use merits further investigation. One possible explanation may be related to greater difficulties in accessing illegal substances. It is also possible that aspects of racism not assessed in this study may play a role in drug use initiation.

The protective effect of cultural appreciation on marijuana use was significant only among girls. Several studies have shown that the weakening of cultural connectedness has a greater impact on adolescent girls than boys (Marsiglia et al., 2010; Wahl and Eitle, 2010). More lax social trends regarding marijuana use in Argentina (Inter-American Drug Abuse Control Commission, 2010) may be influencing boys to a greater extent than girls.

The effects of covariates varied across substances, highlighting the importance of evaluating substances separately. Indicators of externalizing behavior (Gibbons et al., 2012) like thrill-seeking orientation and identification with a defiant role model were in general associated with increased odds of alcohol and drug use initiation, but not for marijuana. This may be related to the increasing social acceptance of this substance. For cocaine initiation, low expectations for the future were

a risk factor and identification with a conforming role model was protective. Parental support was protective for marijuana and for any drug use initiation.

The two main independent variables of appreciation of Indigenous culture and exposure to racial insults may be susceptible to potential confounding with the youths' ethnic identification. The question raised is whether European youth's responses to these questions have the same meaning as those of Indigenous or mixed identity and thus affect interpretation of these results. For example, asking youth whether it is important to learn traditional Indigenous languages would carry a different meaning depending on whether those are the languages of their own cultures (as is the case for the Indigenous and mixed youth) or the languages of an ethnic culture that is different from one's own (as is the case for the European youth). Youth of European origin who express appreciation for Indigenous cultures may have a greater degree of social integration and higher esteem for the social context in which they live, factors that contribute to substance use risk reduction.

We found similar results in re-analysis of the data excluding the European youth. However, it is possible that in a geographical context where Indigenous and Mixed youth do not make up the vast majority of the sample (as would be the case in other provinces of Argentina), analyses by racial group may differ from these findings. Similarly, the detrimental effect of racism was not restricted to Indigenous youth. Racial insults affect the human dignity of Indigenous individuals and may also affect the non-Indigenous by eliciting the perception of possessing socially devalued characteristics. To our knowledge this is the first study to assess cultural variables across all ethnic groups, indicating that having a positive evaluation of a subaltern social sector may contribute to collective wellbeing in a multicultural context (Alderete, 1999). Future studies are granted to further elucidate this issue.

Our findings are subject to several limitations. Self-reports from youth who might under- or over-report their substance use, may bias the results. Furthermore reliability may vary due to inattentiveness, misrepresentation or other reasons. Regardless, this is the standard methodology used in population-based surveys (ND et al., 2013), and the lack of perfect reliability of outcome variables does not bias regression parameter estimates as reported. Although the data are not current, as the sociocultural environment remains stable and increasing rates persist, results remain relevant. Cultural factors were measured with indicators encompassing few dimensions of complex psychosocial phenomena. Therefore, lack of significance with the outcomes of interest should be interpreted with caution. On the other hand, the longitudinal study design is a strength over cross-sectional studies. We interviewed

**Table 3**  
Cultural, demographic and psychosocial predictors of current drinking behavior and incident substance use among youth in Jujuy, Argentina, 2006–2007.

	Alcohol use				Incident drug use in one year							
	Current drinking (past 30 days) N = 1428		Current binge Drinking N = 1825		Marijuana N = 2176		Inhalants N = 2177		Cocaine N = 2214		Any drug N = 2114	
	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)
<b>Cultural variables</b>												
<b>Ethnic self-identification</b>												
European (ref)	116	–	147	–	182	–	185	–	188	–	176	–
Indigenous	1003	0.7 (0.5–1.0)	1288	0.8 (0.5–1.2)	1524	0.7 (0.3–1.8)	1520	<b>0.3 (0.1–0.7)*</b>	1542	0.7 (0.2–2.3)	1481	0.6 (0.3–1.1)
Mixed	309	0.9 (0.6–1.2)	390	0.8 (0.6–1.1)	470	1.1 (0.5–2.5)	472	0.4 (0.1–1.0)	484	0.9 (0.2–3.3)	457	0.9 (0.5–1.5)
<b>Indigenous language spoken in the family</b>												
No (ref)	951	–	1210	–	1443	–	1441	–	1472	–	1400	–
Yes	477	1.1 (0.9–1.5)	615	1.3 (0.9–1.7)	733	0.9 (0.4–1.8)	736	1.5 (0.6–3.6)	742	1.3 (0.5–3.4)	714	0.9 (0.4–1.9)
<b>Appreciation for Indigenous cultures:</b>												
Low (ref)	464	–	608	–	732	–	734	–	749	–	709	–
High	964	1.1 (0.9–1.4)	1217	1.0 (0.8–1.3)	1444	<b>0.5 (0.3–0.7)*</b>	1443	<b>0.4 (0.2–0.7)*</b>	1465	<b>0.4 (0.2–0.9)*</b>	1405	<b>0.5 (0.3–0.7)*</b>
<b>Exposure to racial insults</b>												
Never (ref)	961	–	1172	–	1363	–	1358	–	1375	–	1328	–
Ever	467	1.3 (1.0–1.6)	653	<b>1.6 (1.2–2.1)*</b>	813	0.8 (0.5–1.4)	819	1.1 (0.5–2.6)	839	1.5 (0.5–4.3)	786	1.2 (0.7–1.8)
<b>Demographic variables</b>												
<b>Sex</b>												
Girls (ref)	823	–	1078	–	1217	–	1208	–	1229	–	1181	–
Boys	605	1.3 (1.0–1.7)	747	<b>1.7 (1.3–2.3)*</b>	959	<b>2.1 (1.2–3.8)*</b>	969	1.1 (0.5–2.1)	985	<b>0.2 (0.1–0.7)*</b>	933	<b>1.7 (1.1–2.7)*</b>
<b>Age in years</b>												
14–15 years (ref)	1042	–	1323	–	1547	–	1549	–	1574	–	1509	–
16–18 years	386	1.3 (1.0–1.7)	502	1.3 (1.0–1.7)	629	1.4 (0.8–2.2)	628	0.9 (0.4–2.3)	640	0.7 (0.2–2.3)	605	1.0 (0.6–1.6)
<b>Religion</b>												
Catholic (ref)	1206	–	1552	–	1863	–	1866	–	1896	–	1812	–

(continued on next page)

Table 3 (continued)

	Alcohol use				Incident drug use in one year							
	Current drinking (past 30 days) N = 1428		Current binge Drinking N = 1825		Marijuana N = 2176		Inhalants N = 2177		Cocaine N = 2214		Any drug N = 2114	
	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)	n	OR (95% CI)
Evangelical	167	0.7 (0.4–1.1)	199	<b>0.5 (0.3–0.9)*</b>	227	0.8 (0.3–1.8)	225	0.7 (0.2–2.1)	231	1.5 (0.4–5.8)	221	0.8 (0.4–1.6)
Other	55	<b>0.5 (0.3–0.9)*</b>	74	0.8 (0.4–1.6)	86	0.6 (0.1–2.8)	86	2.3 (0.7–7.8)	87	<b>11.9 (4.5–31.4)*</b>	81	1.9 (0.7–5.0)
<b>Poverty</b>												
No (ref)	1093	–	1395	–	1658	–	1663	–	1691	–	1610	–
Yes	335	<b>0.8 (0.6–0.9)*</b>	430	0.8 (0.6–1.1)	518	0.7 (0.3–1.4)	514	1.0 (0.4–2.5)	523	0.9 (0.3–2.5)	504	0.9 (0.5–1.6)
<b>Psychosocial variables</b>												
<b>Positive expectations for the future</b>												
Always (ref)	1024	–	1306	–	1541	–	1542	–	1566	–	1500	–
Almost always/sometimes	85	0.9 (0.5–1.5)	121	1.6 (0.9–2.8)	168	0.7 (0.3–2.0)	168	1.2 (0.5–2.9)	173	3.3 (0.9–11.4)	161	0.8 (0.3–1.7)
Never/almost never	319	0.8 (0.7–1.0)	398	1.0 (0.7–1.5)	467	0.7 (0.4–1.2)	467	1.5 (0.5–4.4)	475	<b>3.6 (1.3–9.9)*</b>	453	1.3 (0.7–2.3)
<b>Parental support</b>												
Never/almost never (ref)	116	–	159	–	204	–	196	–	204	–	188	–
Sometimes	304	1.0 (0.6–1.6)	402	1.2 (0.7–2.0)	488	0.6 (0.3–1.3)	493	1.0 (0.3–3.6)	506	1.1 (0.3–3.9)	472	0.7 (0.3–1.5)
Always/almost always	1008	0.7 (0.5–1.1)	1264	0.9 (0.6–1.5)	1484	<b>0.3 (0.1–0.5)*</b>	1488	0.9 (0.3–2.3)	1504	1.3 (0.4–4.1)	1454	<b>0.4 (0.2–0.7)*</b>
<b>Thrill seeking orientation</b>												
Low (ref)	1305	–	1639	–	1918	–	1921	–	1943	–	1873	–
High	123	<b>2.1 (1.4–3.1)*</b>	186	<b>1.9 (1.3–2.8)*</b>	258	1.5 (0.9–2.7)	256	<b>5.0 (2.4–10.4)*</b>	271	<b>5.7 (2.1–15.0)*</b>	241	1.5 (0.8–2.8)
<b>Identification with defiant role model</b>												
None (ref)	959	–	1146	–	1310	–	1304	–	1315	–	1279	–
Any	469	<b>1.4 (1.1–1.9)*</b>	679	<b>1.6 (1.2–1.9)*</b>	866	1.6 (0.9–3.0)	873	<b>4.9 (2.4–10.1)*</b>	899	1.8 (0.8–4.2)	835	<b>1.9 (1.1–3.5)*</b>
<b>Identification with conforming role model</b>												
Low (ref)	421	–	564	–	673	–	669	–	690	–	645	–
High	1007	0.8 (0.6–1.1)	1261	0.8 (0.6–1.1)	1503	1.4 (0.8–2.6)	1508	0.5 (0.2–1.1)	1524	<b>0.3 (0.2–0.7)*</b>	1469	1.2 (0.7–2.0)

OR = odds ratios.

\* p &lt; 0.05; All models also adjusted for school attendance, symptoms of depression and body image.

school dropouts, broadening the representativeness of results, and we used separate measures of substance use.

These results may have implications for framing public health policies that incorporate a vision of equity and human rights. Enhancing appreciation for Indigenous cultures and decreasing racist acts are potentially modifiable factors in multi-ethnic communities that can be incorporated into programs to prevent youth substance use in Latin America.

### Transparency document

The Transparency document associated with this article can be found in the online version.

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### Appendix A. Supplementary data

Supplementary data to this article can be found online at <http://dx.doi.org/10.1016/j.ypmed.2015.12.017>.

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