Drug and Alcohol Dependence 199 (2019) 27–34

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Leisure activities and alcohol consumption among adolescents from Peru and El Salvador

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ARTICLE INFO

Keywords:
Adolescents
Alcohol
Underage drinking
Structured leisure
Unstructured leisure

ABSTRACT

Introduction: Structured and unstructured leisure are known protective and risk factors, respectively, for alcohol consumption during adolescence. However, little is known about the interaction between the two leisure types and alcohol consumption.

Method: A cross-sectional study was performed among high-school students in El Salvador and Peru. Schooled adolescents, aged 13–18 (N = 5640), completed a self-administered questionnaire about risk behaviors, including their leisure activities and whether they had consumed alcoholic beverages. They were classified into tertiles of the amount of time of both structured and unstructured activities. A non-conditional multivariate logistic regression was conducted to evaluate the association of both types of leisure with alcohol consumption. We also used a likelihood ratio test to assess the potential interaction of structured and unstructured leisure time in alcohol consumption.

Results: Alcohol consumption was much more frequent among adolescents in the highest tertile of unstructured leisure time compared to the lowest one (Adjusted OR: 5.52; 95% CI: 4.49–6.78), and less frequent among those from the highest tertile of structured leisure time compared to the lowest one (Adjusted OR: 0.66; 95% CI: 0.55–0.80). We did not find an interaction effect between structured and unstructured leisure time with regard to initiation of alcohol consumption.

Discussion: The study suggests that structured leisure is not enough to compensate for the possible harmful effect of unstructured leisure. Parents, educators and policy makers might be advised to discourage unstructured leisure among adolescents, and not simply to encourage structured leisure.

1. Introduction

Alcohol consumption is common among adolescents (World Health Organization, 2014). Results from multiple surveys show that 13.4% of adolescents from the United Kingdom have consumed alcohol before 5th grade (age 10–11) (Maggs et al., 2015). In South America, more than 50% of students aged 13–15 years of age had their first drink before age 14 (Pan American Health Organization, 2015). Among U.S. 12th grade students (age 17), more than 40% have consumed alcohol at least once during the previous 30 days, and more than 20% have experienced binge drinking during that same period (Kann et al., 2018, supp. tables 98, 102).

Alcohol consumption during adolescence may disturb normal brain development, causing behavioral and neurological disorders in adulthood such as altered adult synapses and reduced adult neurogenesis (Crews et al., 2016). Adults who were alcohol drinkers during adolescence are at higher risk of health problems such as depression, suicide, chronic alcoholism (Cheng et al., 2016; Marshall, 2014), and lower academic competence (Koutra et al., 2012) compared to nondrinkers. Moreover, alcohol use contributes to the risk of injury, violence, risky sex, suicide attempts and illicit substance use in adolescents (Pan American Health Organization, 2015).

Because of these consequences, underage drinking has been considered a risky behavior (Centers for Disease Control and Prevention, 2018). Fortunately, some progress in reducing teenage alcohol intake and related problems has been made in recent years (de Looze et al.,

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https://doi.org/10.1016/j.drugalcdep.2019.03.002
Received 18 December 2018; Received in revised form 6 March 2019; Accepted 9 March 2019
Available online 06 April 2019
0376-8716/

2015; Harding et al., 2016), although alcohol consumption rates among adolescents are still high (Pan American Health Organization, 2015; World Health Organization, 2014). Given the high prevalence and the serious consequences of this behavior among young people, it is important to assess the risk factors related to the initiation of drinking in minors, in order to establish proper prevention strategies.

Some established risk factors for this initiation include having substance-using peers (Wang et al., 2015), having delinquent behaviors, provision of alcohol by parents, having a high amount of pocket money and having used other substances previously (Gaete and Araya, 2017; Marshall, 2014). Protective factors for alcohol consumption are parental monitoring (Kristjansson et al., 2010; Newbury-Birch et al., 2009), having frequent family meals (Harrison et al., 2015), and having a strong religiosity (Delva et al., 2015; Gaete and Araya, 2017). Leisure activities can be either risk or protective factors, depending on the type of activities.

Leisure time has a great impact on adolescent development because it represents a place for free and meaningful choices (Fawcett, 2007; Padhy et al., 2015). According to Davis and Csikszentmihalyi, in order to achieve optimal development, individuals must learn to train their life skills during their free time and mandatory work time (Davis and Csikszentmihalyi, 1977).

Social scientists distinguish two types of leisure activities. On the one hand, structured leisure (Fawcett, 2007) activities require a longer term commitment, include adult supervision and stimulate participants physically or mentally. These activities, such as playing sports, creating expressive art or attending a religious club, have a protective effect against adolescent disruptive behavior such as substance abuse, school absenteeism and delinquency (Adachi-Mejia et al., 2014; Driessens, 2015). On the other hand, unstructured leisure activities are those without the characteristics mentioned above, such as watching TV, surfing the internet, hanging out with friends or spending time in malls, pool halls and bars. In general, this type of leisure has been described as a risk factor for substance abuse (Lee and Vandell, 2015). However, the existence of differences among types of unstructured leisure activities should be taken into account.

The protective effect of structured leisure activities can be explained because these activities require more concentration and have a higher challenge component, compared to unstructured leisure time activities (Kleiber et al., 2014). Because of this, structured leisure time activities can offer more opportunities to train personal abilities such as concentration skills (Caldwell, 2005), which are important in preventing alcohol consumption. These kinds of leisure activities are usually conducted during a limited weekly time within an associative context, which has also been described as having a protective effect on alcohol consumption in young people (Eisman et al., 2018; Ramos et al., 2012).

In contrast, unstructured leisure activities require low skills and motivation. Adolescents focused on this kind of leisure report a lower subjective well-being (Padhy et al., 2015), so they may be using substances as a means of coping with their discomfort (Kuntsche et al., 2014). In addition, unstructured activities usually involve meeting in places related to higher alcohol consumption (Koutra et al., 2012), or to a higher exposure to alcohol-promoting messages in the media (Moreno and Whitehill, 2014; Slater and Henry, 2013).

However, in most cases, adolescents usually spend time involved in both types of activities. In fact, health education campaigns usually focus on making structured leisure activities more available to teenagers, while reducing their unstructured leisure time. One successful example is the Youth in Iceland program, which has succeeded in reducing rates of alcohol use by more than 90% over the last two decades. This intervention focused on reducing multiple risk factors for substance use, while enhancing several protective factors at a family, school and community level. One key element of the program was leisure management. On the one hand, structured leisure activities were encouraged by funding extracurricular activities for all teenagers. On the other hand, unstructured leisure activities were discouraged by enforcing curfews, supporting parental supervision and promoting networks between parents and local authorities (Kristjansson et al., 2016).

To the best of our knowledge, there are few studies that have assessed the effect of combining both types of leisure on the onset of alcohol consumption (Badura et al., 2018; Lee and Vandell, 2015; Oropesa et al., 2014; Sharp et al., 2015; Tibbits et al., 2009). Furthermore, research on this topic has been conducted mostly in North American and European regions. The objective of this study is to verify the association between structured and unstructured leisure and alcohol consumption within a sample of adolescents from Peru and El Salvador. In addition, we will assess whether the effects of structured and unstructured leisure on alcohol use are independent of each other.

2. Methods

This research is part of an international study (Project YOURLIFE) into what young people feel and think about relationships, love and sexuality. The project's methods have been described elsewhere (Carlos et al., 2016; de Irala et al., 2009; Osorio et al., 2012; Osorio et al., 2015). The following is a description of the issues that are relevant for this article.

A cross-sectional study was performed among high-school students in El Salvador and Peru. Students, aged 13–18 (N = 6208), completed a self-administered questionnaire about relationships, love, sexuality and related risk behaviors. Ethical approval was obtained for the project.

2.1. The sample

The recruitment was carried out in El Salvador and Peru. In both countries, we aimed to recruit approximately 3000 students aged 13–18. In El Salvador, 30 public and private schools were randomly selected by multistage sampling from within the three main urban areas (San Salvador, Santa Ana and San Miguel). In Peru, 62 public and private schools were randomly selected by multistage sampling from among all the schools in the country.

These sample sizes were calculated on the basis of the approximate sample size estimation criteria (Ortega Calvo and Cayuela Domínguez, 2002). We worked with the criteria that 10 subjects in the dependent variable category with the lower frequency would be needed per parameter included in the statistical model used to adjust for confounding. With these samples we were confident of having sufficient statistical power to be able to include a sufficient number of variables in a given model.

2.2. Questionnaire and variables

Questionnaires on paper were used to gather information on young people's lifestyle, personality traits, environmental influences, and opinions and perceptions about risk behaviors. The questionnaires, written in Spanish, had primarily closed questions. They were pilot tested and adjusted to ensure comprehension, clarity and suitability for local conditions and to make sure no more than 45 min would be required to complete them.

2.2.1. Outcome variable: alcohol consumption

Participants were asked how frequently they consumed alcoholic beverages (never, almost never, sometimes, almost always, always). Participants who reported consuming alcoholic beverages "almost never", "sometimes", "always" or "almost always" were considered as alcohol consumers. We decided to establish the cut-off point of this variable to completely separate "never" drinkers, because any alcohol consumption during adolescence is considered a risk behavior (Centers for Disease Control and Prevention, 2018b).

2.2.2. Exposure variables: leisure time activities

Participants were asked how frequently they participated in different leisure activities. For each activity, we produced a score ranking

from 0 to 4 according to the questionnaire items (0 = never, 1 = less than 1 day a month, 2 = 1–3 days a month, 3 = 1–2 days a week, 4 = 3 or more days a week).

All leisure activities, except reading books, were classified as "structured" and "unstructured". "Structured" activities included: 1) Practicing sports or going on excursions with the family, 2) Volunteering, 3) Engaging in artistic activities (painting, playing an instrument, etc.), and 4) Engaging in cultural activities (going to museums, theatre, etc.). "Unstructured" activities included the following: 1) Hanging out with friends, 2) Spending time in malls, 3) Spending time in places without adult supervision, 4) Going to the disco, 5) Watching TV, listening to music and/or reading magazines, and 6) Playing videogames and/or surfing the internet.

For both structured and unstructured leisure, we defined two new variables by averaging the scores of the activities of each leisure type. We stratified both scores into tertiles for analytical purposes.

We did not include reading books in any of the leisure scores because, although it does not fit the adult supervision criteria in order to be classified as a structured activity, it also implies some degree of motivation and commitment which does not fit with unstructured leisure activities either.

2.2.3. Covariates

The first variables used for adjustment in multivariable analyses were age, sex (male, female), country (El Salvador, Peru), and type of school (public, private).

Religiosity was assessed by asking whether participants had a religion, how frequently they attended their religion's place of worship, and whether they agreed with this sentence: "My faith is an important influence in my life which I am willing to consider in my decisions" (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree). Participants were considered as having a high religiosity if they met all the three following criteria: they had a religion, they attended their religion's place of worship at least once a week, and they agreed or strongly agreed with the sentence about the importance of their faith.

Socioeconomic status was assessed based on the respondent's perception of family economic status (very low, low, middle, high, very high). Very low and very high socioeconomic statuses were reclassified as low and high socioeconomic status, respectively.

Regarding impulsivity traits, the questionnaire included three items: "I usually think and plan my future", "I usually finish what I've started", and "I usually want to achieve everything immediately" (Response options: Yes, No, Don't know). Participants were considered as having impulsivity traits if they answered "yes" to the last question or if they answered "no" to any of the first two questions.

The availability of money was assessed by asking how much money participants spent monthly. Participants were considered to have a large amount of money available if they spent more than 25 dollars a month.

Parental supervision was assessed by means of the question "Do your parents, or the people responsible for you, know where you go or what you do during your leisure time?" (never, almost never, sometimes, almost always, always). Participants were considered to have high parental supervision if they answered "almost always" or "always".

Participants were asked how frequently they had dinner with their parents. "Never", "almost never" and "sometimes" were considered as "low frequency"; "almost always" and "always" were considered as "high frequency".

2.3. Data collection

The study was implemented in El Salvador and Peru using standardized data-collection protocols. Survey procedures were designed to protect students' privacy by ensuring voluntary and anonymous participation. Schools were responsible for obtaining parental consent, in accordance with the local laws and policies. To increase the respondents' feeling of privacy and their willingness to disclose sensitive information, local data collectors travelled to each participating school to distribute the survey answer sheets during regular class time without the teachers' supervision. Students were informed that their participation was voluntary and anonymous, and that they could leave the room and/or leave the questionnaire or any question unanswered.

2.4. Analysis

Participants not in the age range of 13–18, or with missing data in more than a half of the activities in each leisure type, were excluded from the analysis.

Main characteristics were described as frequencies and percentages for each country.

A non-conditional multivariate logistic regression was conducted to evaluate the association between both structured and unstructured leisure scores and alcohol consumption. We adjusted the analyses for sex, age, socioeconomic status, religiosity, parental supervision, having dinner with parents, amount of pocket money and impulsivity traits.

To evaluate the interaction between structured and unstructured leisure in alcohol consumption, we performed a likelihood ratio test between the fully adjusted model including structured and unstructured leisure tertiles, and the same model including the product-term of the two leisure variables.

An additional non-conditional multivariate logistic regression model was run. In this model, alcohol use was again the dependent variable, but the independent variables were the specific leisure activities. For this model, we dichotomized each leisure activity with a median split. We adjusted this model for the same covariates used in the previous model.

Then, in order to describe the effect of the combination of structured and unstructured leisure, we classified the participants into 9 categories, resulting from combining the different tertiles of structured and unstructured leisure. We estimated the odds ratio of alcohol consumption for each of these 9 categories using the category that includes the low tertile of both leisure types as the reference category. We adjusted this analysis for the same covariates used in previous models.

As a sensitivity analysis, a new unstructured leisure variable was created by excluding solitary leisure activities (playing videogames and watching TV) from the unstructured leisure variable. All analyses run with the original unstructured leisure variable were repeated with the new one, using the excluded activities as confounders.

Similarly, we made two other different sensitivity analyses by including reading books as part of either the unstructured leisure time or the structured one.

Moreover, given that experimentation with substances is common during adolescence, we decided to make another sensitivity analysis, reclassifying adolescents who answered that they "almost never" drink alcohol as "never" drinkers, and repeating all the analysis with this new outcome.

Additionally, analyses were repeated with quintiles instead of tertiles, in order to further check for the linearity of the association between leisure time and alcohol consumption.

Lastly, in order to test the effect of both structured and unstructured leisure in each country, we repeated the analysis classifying both leisure variables into specific tertiles per country.

All analyses were performed using Stata V.12; two tailed p values < 0.05 were considered statistically significant.

3. Results

In this study, 2809 students from El Salvador and 3399 students from Peru were recruited. We excluded 123 respondents (Salvadorians) who were not in the 13–18 age range. We also excluded 445 respondents with missing values in the main variables. Finally, 5640 participants were included in our analysis (2439 from El Salvador and 3201 from Peru).

Table 1
Main characteristics of participants.

Characteristics	El Salvador n (%) (N = 2439)	Peru n (%) (N = 3201)	Total n (%) (N = 5640)
Sex			
Male	1,400 (57.4)	1439 (45.0)	2839 (50.3)
Female	1,039 (42.6)	1762 (55.0)	2801 (49.7)
Age (years)			
13	432 (17.7)	108 (3.4)	540 (9.6)
14	501 (20.5)	818 (25.6)	1319 (23.4)
15	477 (19.6)	1011 (31.6)	1488 (26.4)
16	389 (15.9)	916 (28.6)	1305 (23.1)
17	385 (15.8)	291 (9.1)	676 (12.0)
18	255 (10.5)	57 (1.8)	312 (5.5)
School			
Public	1,472 (60.4)	1461 (45.6)	2933 (52.0)
Private	967 (39.6)	1740 (54.4)	2707 (48.0)
Religion			
No religion	314 (13.1)	319 (10.0)	633 (11.4)
Catholic	1,265 (52.9)	2314 (72.8)	3579 (64.2)
Protestant	708 (29.6)	357 (11.2)	1065 (19.1)
Other[a]	106 (4.4)	188 (5.9)	294 (5.3)
Religiosity			
None/low	1,188 (48.7)	2370(74.0)	3558 (63.1)
High[b]	1,251 (51.3)	831 (26.0)	2082 (36.9)
Socioeconomic status			
Low	360 (15.2)	377 (11.8)	737 (13.3)
Middle	1,643 (69.3)	2351 (73.8)	3994 (71.9)
High	369 (15.6)	457 (14.3)	826 (14.9)
Impulsivity traits			
No	881 (36.4)	543 (17.0)	1424 (25.4)
Yes	1,538 (63.6)	2642 (83.0)	4180 (74.6)
Amount of pocket money			
Low (< 25 dollars/month)	1245 (52.1)	2059 (68.0)	3304 (61.0)
High (≥25 dollars/month)	1145 (47.9)	969 (32.0)	2114 (39.0)
Parental supervision			
Low	841 (34.7)	1028 (32.2)	1869 (33.3)
High	1,581 (65.3)	2166 (67.8)	3747 (66.7)
Frequency of dinner with parents			
Low ("never", "almost never", or "sometimes")	865 (36.3)	1367 (42.9)	2232 (40.1)
High ("almost always" or "always")	1518 (63.7)	1821 (57.1)	3339 (59.9)
Structured leisure[c]			
Low tertile	1,159 (47.5)	998 (31.2)	2157 (38.2)
Middle tertile	883 (36.2)	1286 (40.2)	2169 (38.5)
High tertile	397 (16.3)	917 (28.6)	1314 (23.3)
Unstructured leisure[d]			
Low tertile	1,029 (42.2)	858 (26.8)	1887 (33.5)
Middle tertile	853 (35.0)	1354 (42.3)	2207 (39.1)
High tertile	557 (22.8)	989 (30.9)	1546 (27.4)
Alcohol consumption			
No	1,973 (80.9)	2052 (64.1)	4025 (71.4)
Yes	466 (19.1)	1149 (35.9)	1615 (28.6)

[a] Includes Jehovah witnesses, Mormons, Jews, Muslims, Orthodox and "other".

[b] Participants were considered to have high religiosity if they met the three following criteria: they had a religion, they went to their religion's place of worship at least once a week, and they considered their faith as "important" or "very important.

[c] Structured leisure includes: practicing sports or going to excursions with family, volunteering, engaging in artistic activities and engaging in cultural activities.

[d] Unstructured leisure includes hanging out with friends, spending time in malls, spending time in places without adult supervision, going to the disco, watching TV, listening to music and/or reading magazines, and playing videogames and/or surfing the internet.

The main characteristics of the participants are described in Table 1. Half of the participants (49.7%) were female. In Peru, most participants were between 14 and 16 years old, whereas in El Salvador the ages of participants showed a more even distribution between 13 and 18. Overall, most participants were Catholics (64.2%), had low religiosity (63.1%), a middle socioeconomic status (71.9%), high parental supervision (66.7%) and less than 25 dollars/month as pocket money (61.0%). Almost half of the participants from El Salvador (47.5%) were allocated in the low tertile in structured leisure, whereas Peruvian adolescents were distributed in a more homogenous way. The prevalence of alcohol consumption was higher in Peru than in El Salvador (35.9% vs. 19.1%, $p < 0.001$).

Variables associated with higher alcohol consumption were: being older, male, and from Peru; studying in a private school; having a low religiosity, a high socioeconomic status, higher impulsivity traits, and greater amount of pocket money (Table 2). Among family-related variables, low parental supervision and not having dinner with parents were associated with a higher alcohol consumption. Regarding leisure activities, alcohol consumption was lower in adolescents from the highest tertile of structured leisure (Adjusted OR: 0.66; 95% CI: 0.55–0.80). Conversely, alcohol consumption was much higher among adolescents in the highest tertile of time devoted to unstructured leisure activities (Adjusted OR: 5.52; 95% CI: 4.49–6.78).

In the likelihood ratio test comparing the fully adjusted model with the same model additionally adjusted by the structured and unstructured interaction term, no statistically significant difference was observed between the two models ($p = 0.757$, data not shown).

In the analysis of the 9 categories resulting from combining structured and unstructured tertiles, the highest odds ratios of alcohol consumption were found in the three groups with the highest frequency of unstructured activities (Fig. 1). Conversely, the lowest odds ratios of alcohol consumption were found in the three groups with the lowest frequency of unstructured activities. Within each frequency of unstructured leisure tertile, having a high frequency of structured leisure time was associated with a lower alcohol consumption. This effect was particularly apparent among those with a high level of unstructured leisure.

In all our sensitivity analyses the results did not change significantly (data not shown).

Furthermore, when analyses were repeated with quintiles instead of tertiles, the results were similar (data not shown). Due to the small changes observed between the two analyses, we decided to report results using only tertiles for clarity purposes.

Lastly, we assessed the association between each specific leisure activity and alcohol consumption (Table 3). All unstructured activities were associated with higher alcohol consumption. Going to discos was the activity with the strongest association with alcohol consumption (Adjusted OR: 3.84; 95% CI: 3.19–4.61). In terms of structured activities, practicing sports and engaging in artistic activities were associated with a lower alcohol consumption. Reading books was also found to be inversely associated with alcohol consumption. We did not find collinearity: the maximum variance inflation factor (VIF) was 2.05.

4. Discussion

Our study shows that the amount of time spent in unstructured leisure activities was associated with alcohol consumption, independently of covariates such as parental supervision and socioeconomic status. Structured leisure time was also inversely associated with alcohol consumption. However, the harmful effect of unstructured leisure in alcohol consumption was much higher than the protective effect of structured leisure (the ORs for the highest tertiles were 5.52 and 0.66, respectively).

We did not find an interaction effect between structured and unstructured leisure on alcohol consumption. To explain this, we hypothesize that both types of leisure have different pathways to act on the initiation of alcohol consumption, because they are practiced for different purposes and in different contexts. For example, structured leisure activities may increase an adolescent's self-efficacy because they usually take place in a supportive environment with adults who help adolescents to stay engaged in the activity (Larson et al., 2015). In contrast, unstructured leisure activities can be practiced as a quick

Table 2
Variables associated with alcohol consumption.

Independent variables	Consumed alcohol[a] n (%)	AOR (95% CI)[b]	p[c]
Age (years)	–	1.40 (1.33–1.49)	< 0.001
Sex			
Male (N = 2839)	1003 (35.3)	(ref)	
Female (N = 2801)	612 (21.9)	0.50 (0.43–0.58)	< 0.001
Country			
El Salvador (N = 2439)	466 (19.1)	(ref)	
Peru (N = 3201)	1149 (35.9)	2.70 (2.29–3.18)	< 0.001
School			
Public (N = 2933)	621 (21.2)	(ref)	
Private (N = 2707)	994 (36.7)	1.48 (1.27–1.72)	< 0.001
Religiosity			
None/low (N = 3558)	1189 (33.4)	(ref)	
High (N = 2082)	426 (20.5)	0.78 (0.66–0.91)	0.001
Socioeconomic status			
Low (N = 737)	161 (21.9)	(ref)	
Middle (N = 3994)	1126 (28.2)	1.12 (0.89–1.40)	0.321
High (N = 826)	307 (37.2)	1.47 (1.11–1.94)	0.007
Impulsivity traits			
No (N = 1424)	254 (17.8)	(ref)	
Yes (N = 4180)	1349 (32.3)	1.40 (1.17–1.66)	< 0.001
Amount of pocket money			
Low (< 25/month) (N = 3304)	752 (22.8)	(ref)	
High (≥25/month) (N = 2114)	814 (38.5)	1.61 (1.39–1.87)	< 0.001
Parental supervision			
Low (N = 1869)	690 (36.9)	(ref)	
High (N = 3747)	923 (24.6)	0.70 (0.61–0.81)	< 0.001
Frequency of dinner with parents			
Low (N = 2232)	833 (37.3)	(ref)	
High (N = 3339)	764 (22.9)	0.57 (0.49–0.66)	< 0.001
Structured leisure[d]			
Low tertile (N = 2157)	588 (27.3)	(ref)	
Middle tertile (N = 2169)	666 (30.7)	0.83 (0.71–0.98)	0.027
High tertile (N = 1314)	361 (27.5)	0.66 (0.55–0.80)	< 0.001
Unstructured leisure[e]			
Low tertile (N = 1887)	222 (11.8)	(ref)	
Middle tertile (N = 2207)	591 (26.8)	2.27 (1.87–2.75)	< 0.001
High tertile (N = 1546)	802 (51.9)	5.52 (4.49–6.78)	< 0.001

ref = reference.

[a] Number (and percentage) of participants answering “almost never”, “sometimes”, “almost always” or “always”.

[b] Odds ratio (and 95% confidence interval) of alcohol consumption, adjusted for all variables shown in the table, in a multivariate logistic regression model. All variables had previously shown significant odds ratios in the unadjusted regression analyses.

[c] p value for the adjusted odds ratio.

[d] Structured leisure includes: practicing sports or going to excursions with family, volunteering, engaging in artistic activities and engaging in cultural activities.

[e] Unstructured leisure includes hanging out with friends, spending time in malls, spending time in places without adult supervision, going to the disco, watching TV, listening to music and/or reading magazines, and playing videogames and/or surfing the internet.

escape from boredom. But, paradoxically, these activities can also be experienced as tiresome, thus increasing the odds of alcohol consumption in those who are looking for arousal experiences (Iso-Ahola and Crowley, 1991).

Moreover, adolescents can be with different peers during structured and unstructured leisure times (Eisman et al., 2018). As they grow, adolescents tend to move away from structured activities towards unstructured ones with the aim of spending time with their preferred peers (Persson et al., 2007). It is known that maintaining adult supervision during this period of life is important to prevent them from consuming alcohol (Albertos et al., 2016; Kristjansson et al., 2010), but the effect of parental supervision ends up being smaller as activities with peers increase (Bergh et al., 2011).

There are few studies which have researched the combined effects of structured and unstructured leisure activities on adolescent risk behaviors. This is the first study which analyzes the association of both leisure types on alcohol consumption in samples of Peruvian and Salvadorian adolescents.

In a cross-sectional study, Oropesa et al. (2014) used a multiple correspondence analysis to identify leisure patterns within two groups: 1) at-risk adolescents (who had attended a social integration program) and 2) their classmates. They found that at-risk adolescents spent a larger part of their free time on the streets with friends, going to bars, or “doing nothing”, compared to adolescents from the other group, whose free time included more varied daily routines and structured leisure activities.

One longitudinal cohort, which followed 766 U.S. adolescents from aged 15 to the end of their high school years, analyzed the effect of 4 types of out-of-school activities on substance use initiation (Lee and Vandell, 2015). In this study, unsupervised time with peers and paid employment were linked to initiating substance use. Practicing sports was associated with decreased odds of initiating marijuana and tobacco use, but increased risk of initiating alcohol consumption. However, this study did not find a protective effect of organized leisure activities spent in high school, although these associations “approached” significance. The authors argued that the lack of significant findings in organized leisure activities could be explained because this variable was generated by aggregating different activities (arts, going to academic clubs, going to non-academic clubs, volunteering) and some of them might not be protective at all. In our research, structured leisure showed a significant protective effect on alcohol consumption, after adjusting for important

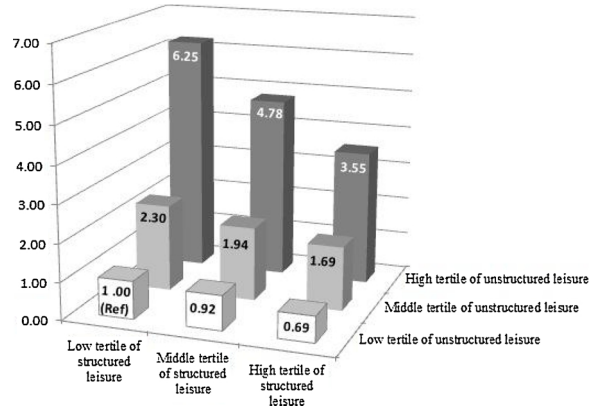

Fig. 1. Adjusted odds ratios of alcohol consumption according to structured and unstructured leisure tertiles.

Notes: Ref = reference.

Unstructured leisure includes: practicing sports or going to excursions with family, volunteering, engaging in artistic activities and engaging in cultural activities.

Structured leisure includes: hanging out with friends, spending time in malls, spending time in places without adult supervision, going to the disco, watching TV, listening to music and/or reading magazines, and playing videogames and/or surfing the internet.

* Adjusted for age, sex, country, type of school, religiosity, socioeconomic status, impulsivity traits, amount of pocket money, parental supervision, and frequency of dinner with parents.

confounders. Also, practicing sports and engaging in art showed an independent protective effect against alcohol consumption after adjusting for other structured activities. This could be explained by the following reasons: 1) our study had a higher sample size; 2) in our study, the item about practicing sports also asked about going on excursions with the family (in contrast, in the U.S. study, the sport category only included sports practiced at school) and 3) both our study and the cited U.S. one could not assess which kind of sports were practiced, and it is known that some sports, such as team-based ones, have more risk of increasing alcohol consumption than individually practiced sports like cycling and running (Wichstrøm and Wichstrøm, 2009).

Our results are somewhat different from another cross-sectional study which assessed the association between leisure styles and substance use among South African youth (Tibbits et al., 2009). In that study, adolescents were classified into several leisure profiles according to the choice of their free time activities during the previous month. Among males, the "uninvolved" group, described as having a low involvement in all activities (except for watching TV, which had a high involvement in all groups) had the lowest prevalence of alcohol consumption over the previous month, and almost tied with the "Sports and Volunteer" group. Among females, the lowest prevalence was found in the "Mixed" group (characterized by a high involvement in volunteering, sports, music and hobbies). These results are not very different from ours, where the lowest prevalence of alcohol was among participants with a great deal of structured leisure (activities such as volunteering and sports) but little unstructured leisure (hanging out with friends or spending time in malls). However, in the South African study, the "highly involved" group (described as participating in all measured activities) had the highest prevalence of alcohol use in both sexes. The authors explained this by arguing that young people who engage in multiple leisure activities have some unknown risk factor related to substance use. By contrast, in our study, the highest risk of alcohol consumption was found in adolescents spending the highest amount of time on unstructured leisure, although structured leisure seems to reduce that risk. The differences between the two studies can be explained by the methods followed: in our study we used self-reports of the monthly time spent in each leisure activity to classify the sample tertiles of both leisure types, whereas in the South African study leisure patterns were classified based merely on the presence or absence of the activity over the previous month (not classifying adolescents by the amount of time spent in leisure activities). Furthermore, their way of classifying participants did not produce a group similar to our highest risk group. In any case, cultural differences might also be at the root of these differences.

A longitudinal study on adolescents from the US found that adolescents who do the widest variety of leisure activities, including structured and unstructured ones, had the lowest risk of alcohol consumption at grade 10 (Sharp et al., 2015). They categorized their sample according to the degree of involvement in both structured and unstructured activities into three groups: consistently low, consistently average, and consistently high. Therefore, there is no group with a high involvement in one type of activities and a lower involvement in the other. And then the possible specific effects of each type cannot be isolated. Furthermore, there are other differences with our study. In this study, participants were asked whether they practiced 17 possible activities over the previous year (yes/no, regardless of time spent). Also, activities such as volunteering, playing instruments at home or going to a cultural center were classified as unstructured leisure when they were not practiced with adult supervision. In our study, the structured and unstructured scores assess time spent, and all activities included in our unstructured leisure score were shown to increase the risk of alcohol consumption, as expected. However, we did not ask about adult supervision, so it is possible that some activities in our structured score, such as engaging in art, might be unstructured according to the study mentioned. Despite our differences regarding the classification of structured activities, our results are consistent with theirs in that a variety of structured leisure activities seem to have a protective effect against the onset of alcohol consumption.

A recent study from the Health Behaviour in School-Aged Children (HBSC) study in the Czech Republic found results similar to ours (Badura et al., 2018). Peer-oriented unstructured activities, such as hanging out with friends or going to malls for fun, was associated with risk behaviors, while structured activities were inversely (and more weakly) associated with such behaviors. Participation in structured activities didn't safeguard against the risk of getting drunk associated with unstructured activities.

Our results seem to confirm that even if it is beneficial for adolescents to have structured leisure time activities, it is also necessary to simultaneously avoid having too many unstructured activities. This goal has been achieved in Iceland by means of the Youth in Iceland Program, which included other school-based, family and community actions aimed at lowering the risk factors and increasing the factors protecting against substance use (Kristjansson et al., 2010). To replicate this success, their methods might have to be culturally adapted to other settings. Because of this, it is important to study the risk and protecting factors of substance use in other populations. The present study sheds some light on this matter by studying the relationship between alcohol consumption and leisure in 2 countries from Central and South America.

We are aware of some limitations in our study. Firstly, the cross-sectional design does not necessarily allow us to describe the direction of the association. However, we have discussed which pathways link structured and unstructured leisure activities with alcohol consumption initiation. For example, both types of leisure can affect the proneness of adolescents to self-efficacy and boredom, which decrease or increase the risk of alcohol consumption (Shin and You, 2013). Secondly, the results are based on self-reported answers from adolescents, and a social desirability bias may exist. Adolescents might have reported less unstructured leisure time and less alcohol consumption, which may have biased our results. To control this possible bias, the questionnaires were anonymous, were implemented by a local research team instead of the school teachers, and students were informed that their participation was anonymous and voluntary and that they could leave the room or leave any question in the questionnaire unanswered. Thirdly, we could not assess whether some of the structured activities, such as volunteering and engaging in artistic activities, were supervised by adults. Therefore, they may be wrongly classified as structured leisure instead of unstructured leisure. However, being at the highest tertile of the

Table 3
Specific leisure activities associated with alcohol consumption.

Independent variables[a]	Consumed alcohol[b] n (%)	AOR (95% CI)[c]	p[d]
Non-Structured Leisure			
Going to nightclubs			
Never (N = 2956)	346 (11.7)	(ref)	
Sometimes[e] (N = 2620)	1255 (47.9)	3.84 (3.19–4.61)	< 0.001
Playing videogames or surfing the internet			
< 3 days/month (N = 3345)	688 (20.6)	(ref)	
3+ days/month (N = 2240)	913 (40.8)	1.36 (1.16–1.60)	< 0.001
Spending time in places without adult supervision			
Never (N = 1992)	288 (14.5)	(ref)	
Sometimes[e] (N = 3601)	1318 (36.6)	1.37 (1.14–1.65)	0.001
Hanging out with friends			
< 1 day/month (N = 2850)	551 (19.3)	(ref)	
1+ days/month (N = 2763)	1060 (38.4)	1.28 (1.09–1.49)	0.002
Watching TV, listening music or reading magazines			
< 6 days/month (N = 2437)	617 (25.3)	(ref)	
6+ days/month (N = 3150)	985 (31.3)	1.27 (1.09–1.48)	0.002
Spending time in malls			
Never (N = 1863)	283 (15.2)	(ref)	
Sometimes[e] (N = 3733)	1318 (35.3)	1.24 (1.02–1.50)	0.029
Structured Leisure			
Volunteering			
Never (N = 3398)	934 (27.5)	(ref)	
Sometimes[e] (N = 2103)	654 (31.1)	1.08 (0.92–1.27)	0.363
Doing cultural activities			
Never (N = 2651)	779 (29.4)	(ref)	
Sometimes[e] (N = 2936)	820 (27.9)	0.91 (0.78–1.07)	0.261
Engaging in artistic activities			
Never (N = 2560)	730 (28.5)	(ref)	
Sometimes[e] (N = 3018)	874 (29.0)	0.85 (0.73–0.99)	0.038
Practicing sports or going to excursion with family			
< 1 day/month (N = 2158)	555 (25.7)	(ref)	
1+ days/month (N = 3449)	1055 (30.6)	0.78 (0.67–0.92)	0.004
OTHER[f]			
Reading books			
< 1 day/month (N = 2539)	796 (31.4)	(ref)	
1+ days/month (N = 3030)	807 (26.6)	0.82 (0.70–0.95)	0.010

ref = reference.

[a] Each independent variable was split at the median. In some variables, the category "never" stands alone, while in others it is included in the lowest group together with other categories.

[b] Number (and percentage) of participants answering "almost never", "sometimes", "almost always" or "always".

[c] Odds ratios for alcohol consumption adjusted for age, sex, country, type of school, religiosity, socioeconomic status, impulsivity traits, pocket money, parental supervision, frequency of dinner with parents, and the variables in the table.

[d] p value for the adjusted odds ratio.

[e] "Sometimes" includes all the categories other than "never": < 1 day/month, 1–3 days/month, 1–2 days/week, 3+ days/week.

[f] Reading books was not clearly attached to any of the two leisure categories.

structured leisure score was shown to be protective against the onset of alcohol consumption. Future research may assess the effect of different schedules and contexts of leisure activities on alcohol consumption initiation among adolescents from other populations. Furthermore, because of the multipurpose nature of the questionnaire, two or more activities were grouped into the same single question. Future studies would likely benefit from examining activities separately.

Despite these limitations, our study has several strengths. First of all, the large sample size allowed us to conduct a multivariate analysis, adjust for important potential confounders and assess for interactions. Secondly, we analyzed not only the association of alcohol with structured and unstructured leisure (as aggregate variables), but also with each specific leisure activity. Thirdly, the sample was representative of schooled adolescents from El Salvador and Peru.

5. Conclusion

Spending time in structured leisure activities is associated with lower alcohol consumption among adolescents, although these activities do not seem to be enough to compensate for the possible harmful effect of being engaged in too many unstructured activities. Therefore parents, educators and policy makers may have to be advised to increase their efforts to reduce unstructured leisure time and to increase structured leisure among adolescents.

Role of funding source

None.

Contributors

JI conceived of the YourLife project; JI, CLB, MC and AO participated in the design of the YourLife project; BP designed the specific study on leisure and alcohol; MC and AO coordinated the study; BP, PdR and AO performed the statistical analysis; BP and PdR drafted the manuscript; AA helped to draft the manuscript and contributed to the interpretation of data; All authors critically revised the successive versions of the manuscript, and read and approved the final manuscript.

Conflict of interest

None.

Acknowledgements

This study received funding from Concultura (El Salvador) and from the University of Piura, Peru.

The authors are grateful to Intermedia Consulting (Italy), who collaborated in the collection of the data, and to Blarlo Global Solutions S.L. for their professional language revision.

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