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Parent-Child Connectedness and its Association with alcohol, tobacco, and cannabis use among Argentinian Adolescents

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Abstract: The objective of this study was to assess the association between parent-child connectedness and substance use among Argentinian adolescents using the 2012 Global School-based student Health Survey (GSHS). We analyzed the 2012 GSHS of 28,159 Argentinian adolescents aged 11 – 17 years. The GSHS is a self-administered survey asking students about the use of substances (alcohol, cigarette smoking, and cannabis), demographic variables, and social and psychological factors. Latent class analyses were conducted to identify patterns of substance use. Associations between parent-child connectedness and substance latent classes were assessed using multinomial logistic regression after adjusting for other factors. Latent class analysis identified three classes. The first class (67% of sample) comprised of mainly nonsubstance users and mild alcohol users. The second class (13%) included mainly moderate alcohol/tobacco/cannabis users. The third class (20%) was made up of mainly moderate alcohol/tobacco users and non-cannabis users. Lower parental connectedness was associated with a higher likelihood of polysubstance use (classified as either class 2 or 3) (aOR = 2.49; 95% CI: 2.24, 2.76). Parental connectedness is an important factor when concerning Argentinian adolescent alcohol, tobacco, and cannabis use and should be the focus of interventions to prevent substance-related burden among adolescents.

Keywords: Adolescent substance use; Parental influence; latent class analysis

1. Introduction

Puberty often results in an individual increasing their likelihood to partake in substance use as the shifts in their emotional regulations make them more vulnerable to peer influences and other social factors [1]. At the same time, these adolescents are attending school, forming invaluable relationships and friendships, as well as learning practical skills which are all crucial building blocks to help them in their future aspirations.

It is not unusual for other common mental disorders, such as depression and anxiety, to co-occur with substance use disorders making the increasing importance of substance use treatment and management in global health for young people imperative [2]. Individuals who consume cannabis, tobacco, and alcohol are more likely to develop anxiety disorders or experience depression or even the less common psychotic disorders later in life [3-8]. Longitudinal studies have identified that heavy alcohol intake is frequently associated with increased suicide risk [9,10]. Similar findings have been reported concerning smokers, revealing that both former and current smokers are two times more likely to report having thoughts about suicide [11]. Regular smoking has also been reported to result in a greater risk of suicide attempts [12,13]. In countries such as Australia, USA, and Sweden, parental supply of alcohol has been shown to result in an increased likelihood of their children adopting risky drinking behaviour during adolescence [14]. Numerous other factors including; parental provision of alcohol, favourable parental attitudes

towards alcohol use, and parental drinking have all been positively associated with adolescent substance use [15,16].

In research predominantly from Western countries, studies have been identifying links of parental and peer influences towards adolescent substance use. Evidence from countries that may differ in parental-child relationships across different cultures are limited, e.g. in Argentina, where prevalence of adolescent substance use is high. Therefore, the purpose of this study was to assess the association between parent-child connectedness and substance use among Argentinian adolescents using the 2012 Global School-based student Health Survey (GSHS).

2. Methods

2.1. Participants

All data were drawn from the GSHS completed by Argentinian adolescents in 2012. The GSHS is a cross-sectional school-based survey completed by students [17]. A total of 28,368 Argentinian students from 23 cities aged 11-17 (51.6% female, 48.4% male) completed the GSHS and were included in this study. 209 students were excluded from the sample (0.7%) as they failed to answer more than 50% of the questions in the survey, resulting in a final sample size of 28,159.

2.2. Measures

Substance use: substance use (alcohol tobacco, and cannabis) was assesses by the questions "During the past 30 days, on how many days did you [have at least one drink containing alcohol?], [smoke cigarettes?], and [used cannabis?]"? Responses were "0 days", "1 or 2 days", "3 to 5 days", "6 to 9 days", "10 to 19 days", "20 to 29 days", and "all 30 days". These responses were categorized for each substance into "non-users" for those who did not consume any substance in the past 30 days, "light users" for those who consumed at least one substance on 1-5 days in the past 30 days, and "moderate users" for those who consumed on 5 or more days during the past 30 days.

Demographic and social variables: From demographic data, sex and age were recorded. The survey also asked if the students did go hungry because there was not enough food, if they were been exposed to physical violence in the past 12 months or been bullied in the past 30 days, and if they ever been felt lonely in the past 12 months.

Parental variables: Parental variables include smoking status of the parents/guardians and parents' connectedness to child. Parent-child connectedness was measured using 4 items asking the parents close moments to their child in the last 30 days. The first item asked, "how often did your parents/guardians check to see if your homework was done?" The second item asked, "how often did your parents/guardians understand your problems and worries? The third item asked, "how often did your parents/guardians really know what you were doing with your free time?" The last item asked, "how often did your parents/guardians go through things without your approval?"

2.3. Statistical analyses

Missing data analysis was conducted using little Mcar's test [18] and multiple imputation method [19,20]. Multigroup latent class analysis was performed on past 30 days use of the 3 substances (Alcohol, Cannabis, Smoking) using Mplus 8. All three substances were entered into the model as nominal variables. Information criteria (Bayesian Information Criteria [BIC], Akaike Information Criterion [AIC], Sample size adjusted Bayesian Information Criterion [SBIC] and classification quality statistics (entropy and average posterior probabilities), were used to determine how many latent classes gave the best model fit. Better balance between model parsimony and model fit is indicated by a lower information criterion value [21]. Entropy values were considered in the decision, with values closer to 1 indicating clearer class separation and classification.

A multinomial logistic regression was then performed using SPSS 25 to model the relationship between the independent variables and one's association to the three latent classes. The traditional .05 criterion of statistical significance was employed. The reference group was class 1 (nonsubstance users and mild alcohol users). Accordingly, each independent variable had two parameters, one for predicting membership in class 2 (mainly heavy alcohol, cigarette, and moderate cannabis users) rather than class 1, and the other for predicting membership in class 3 (mainly moderate alcohol, cigarette, and non-cannabis users) rather than class 1.
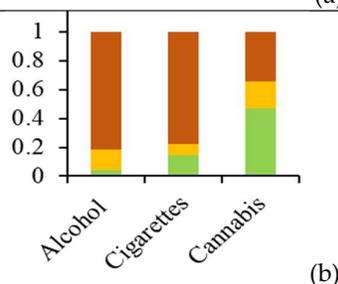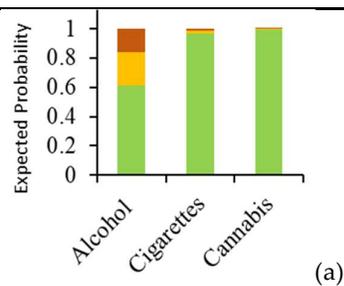
3. Results

3.1. Latent class analysis

A 3-class model was chosen as the optimal model based on its superior fit statistics (Lo-Mendell-Rubin likelihood ratio test LRT=614.62, p <0.001 for 3 classes, LRT=8.46, p=0.128 for 4 classes).

Class 1: Approximately 67% of the sample constitute this class. Participants in this class were characterized by moderate probabilities (61%) of no alcohol use and small probabilities of mild (23%) and moderate (16%) alcohol use. Probabilities of using other substances (smoking, cannabis) were essentially zero in this class. This class was labelled as "mainly nonsubstance users and mild alcohol users" [NSA] (Figure 1 a).

Class 2: 13% of the sample constitute class 2. This class was characterized by small probabilities of no alcohol use (4%) and mild alcohol use (14%), and very high probabilities (82%) of moderate alcohol use. Similarly, it contained small probabilities of no smoking (14%) and mild smoking (8%), while having a very high probability (78%) of moderate smoking. Additionally, it contained moderate probabilities of no cannabis use (47%) and moderate cannabis use (34%). The probability for mild cannabis use was 19%. This class was labelled as "mainly moderate alcohol, cigarette, and cannabis users" [ATC] (Figure 1 b).

Class 3: made up 20% of the sample, this class was characterized by small probabilities (15%) of no alcohol use, large probabilities (49%) of mild alcohol use, and moderate probabilities (35%) of moderate alcohol use. All probabilities relating to smoking in this class were moderate and for no smoking (39%), mild smoking (37%) and moderate smoking (24%). Very high probabilities (87%) for no cannabis use were seen, while the probabilities for mild cannabis use (3%) and moderate cannabis use (10%) were very small. This class was labelled as "mainly moderate alcohol, cigarette and non-cannabis users" [AT] (Figure 1 c).
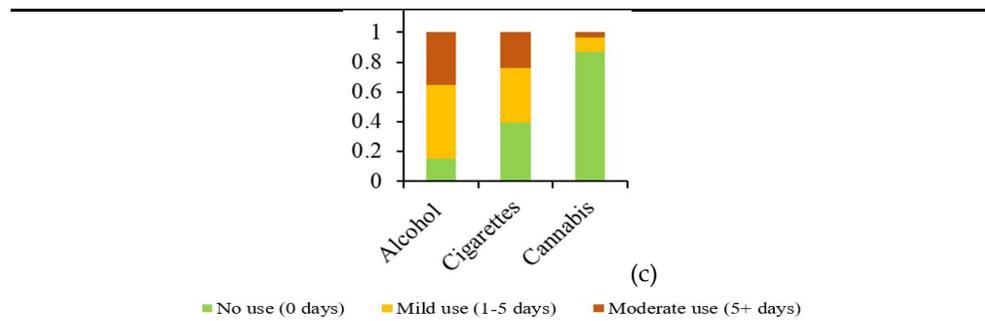

(a)

(b)

Figure 1. Probabilities of substance use for each substance: (a) class 1 'NSA' (67%); (b) class 2 'ATC' (13%); (c) class 3 'AT' (20%).

3.2. Multinomial Logistic Regression

Results from a multinomial logistic regression analysis show that less parent-child connectedness were associated with higher likelihood of being in ATC or AT classes. Those who first started smoking and using cannabis at an older age were more likely to be either ATC or AT. On the contrary, those who started drinking at a younger age were more likely to be in class ATC or AT. Those who felt lonely most of the time were more likely to be in ATC or AT. Students whose mother, father or both smoked were all more likely to be in ATC or AT groups (Table 1).

Table 1. Multinomial logistic regression with class membership (reference group = class 1 - NSA).

Variables	Class 2 - ATC			Class 3 - AT		
	aOR	95% CI	p	aOR	95% CI	p
Age	1.03	[0.99, 1.07]	0.122	0.9	[0.89, 0. 94]	<.001
Onset (Alcohol)	0.67	[0.62, 0.71]	<.001	0.9	[0.83, 0.92]	<.001
How many fights (12mos)	0.83	[0.80, 0.87]	<.001	0.9	[0.84, 0.89]	<.001
How many days bullied	0.9	[0.86, 0.93]	<.001	0.9	[0.86, 0.93]	<.001
Sex (ref = female)						
Male	1.13	[1.01, 1.25]	.031	1.2	[1.10, 1.32]	<.001
Hungry (ref = never)						
Rarely	0.85	[0.76, 0.97]	.012	0.8	[0.76, 0.93]	<.001
Sometimes	0.90	[0.77, 1.05]	.184	1.10	[0.94, 1.22]	.283
Most of the time	1.32	[1.04, 1.67]	.021	1.10	[0.93, 1.42]	.210
Felt lonely (12mos) (ref = never)						
Rarely	0.93	[0.82, 1.06]	.275	1.00	[0.89, 1.12]	.981
Sometimes	0.92	[0.81, 1.06]	.265	1.10	[0.95, 1.20]	.258
Most of the time	1.54	[1.30, 1.82]	<.001	1.20	[1.03, 1.39]	.019
Parents who use tobacco (ref = neither)						
Father only	1.29	[1.13, 1.47]	<.001	1.20	[1.10, 1.38]	<.001
Mother only	1.47	[1.26, 1.72]	<.001	1.10	[0.98, 1.30]	.085
Both	1.99	[1.71, 2.32]	<.001	1.50	[1.29, 1.70]	<.001
I don't know	2.45	[1.90, 3.15]	<.001	1.50	[1.17, 1.87]	<.001
Parents check homework (ref = Most of the time)						
Never	1.79	[1.61, 1.99]	<.001	1.20	[1.61, 1.99]	<.001
Rarely	1.59	[1.42, 1.78]	<.001	1.20	[1.42, 1.78]	<.001
Sometimes	1.32	[1.17, 1.48]	<.001	1.00	[1.17, 1.48]	.756
Parents understand troubles (ref = Most of the time)						
Never	1.12	[1, 1.245]	.05	1.20	[1, 1.25]	<0.01
Rarely	1.15	[1.04, 1.26]	.009	1.30	[1.04, 1.29]	<.001
Sometimes	1.13	[1.02,1.26]	.017	1.20	[1.02, 1.26]	<.001
Parents know what you do (ref = Most of the time)						
Never	2.49	[2.24, 2.76]	<.001	2.00	[2.24, 2.76]	<.001

Rarely	2.20	[1.98, 2.45]	<.001	1.80	[1.98, 2.45]	<.001
Sometimes	1.88	[1.70, 2.09]	<.001	1.80	[1.70, 2.09]	<.001
Parents go through things (ref = never)						
Rarely	1.32	[1.20, 1.45]	<.001	1.30	[1.11, 1.35]	<.001
Sometimes	1.39	[1.26, 1.54]	<.001	1.40	[1.10, 1.36]	<.001
Most of the time	1.43	[1.29, 1.59]	<.001	1.70	[0.91, 1.14]	<.001

4. Discussion and conclusion

While the overall distribution of our sample within these classes varied greatly, with around 67% being in NSA, 13% being in ATC, and 20% in AT, distinct differences were observed between each class and the independent variables. The findings from this study showed that adolescents whose parents are not involved in their lives have higher likelihoods of polysubstance use. This is consistent with existing literature that has demonstrated parents' open communication, involvement in their children's lives, and understanding of their feelings to be important protective factors for adolescent substance use [22].

These findings may provide important implications for the implementation of specific interventions to address adolescent polysubstance use. It is likely that treatment and prevention approaches that look to target specific characteristics of adolescents, or the substance use class they belong to, will be more effective in mitigating polysubstance use, as has been shown for particular drug use [23]. Interventions focusing in adolescent substance use and risk reduction should consider involving parents.

Conflicts of Interest: None

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