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The role of parenting in predicting patterns of risk behaviors among Brazilian adolescents

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Abstract
Risk behaviors frequently co-occur in adolescence and may share the same risk and protective factors, including parental factors. However, few longitudinal studies analyze this relationship with an approach that considers that adolescents may engage in more than one risk behavior simultaneously, especially in low-and-middle-income countries. Therefore, the present study aimed to extend existing knowledge by (1) identifying different latent patterns of risk behaviors; (2) evaluating whether parental factors (such as parenting styles, parental alcohol use, and parental living status) predicted these patterns of risk behaviors in a sample of Brazilian students. Seventy-two public schools with 6,391 seventh and eighth grade students participated in this longitudinal study. Measures used were collected at baseline and 21 months later. Four latent classes of adolescent risk behaviors (drug use, bullying, and unprotected sex) were identified through latent class analyses: "low-risk behaviors," "high bullying," "high alcohol use and bullying," and "high-risk behaviors." We found that authoritative parenting style is a protective factor for all risk behavior classes, and an indulgent parenting style seems to protect against the "high bullying" group. In addition, maternal drunkenness is a risk factor for adolescents' likelihood of belonging to the "high alcohol use and bullying" and "high-risk behavior" classes. Thus, prevention programs should focus on building positive parenting skills and raising awareness of the parental alcohol abuse effects once they seem to act as a protective factor to different types of risk behaviors simultaneously.

Keywords Adolescence · Risk behaviors · Latent class analysis · Parental alcohol use · Parenting style

Introduction

Adolescence is a period of life marked by intense biological, social, and emotional changes and is characterized as a critical period for increased chances of engaging in risk behaviors (Patton et al., 2016). Risk behaviors are typically defined as actions that can negatively affect adolescents well-being and healthy development, exposing youth to harm and risk of physical injury or death (Centers for Disease Control and Prevention, 2014). These behaviors tend to shape adult behavior with negative impacts on several health outcomes, resulting in considerable societal and individual costs (Kann et al., 2018; Kipping et al., 2012; WHO, 2011). Previous studies showed that these behaviors are associated with increased rates of morbidity and mortality later in life (Gore et al., 2011).

The Center for Disease Control and Prevention highlights substance use, violence related behaviors, and unprotected sex as the most relevant risky behaviors to focus on in adolescence (Centers for Disease Control and Prevention, 2017). Worldwide a large proportion of adolescents engage in risky behaviors (WHO, 2020). Data from the Brazilian most recent National Survey (IBGE, 2021) that reported data of 13- and 17-years students showed that 65.5% have already consumed alcohol and 13% illicit drugs, at least once in their lifetime. Bullying is also frequent, with 23% of respondents reporting experiences of being bullied, while 12% admitted to bullying others in the past month. Among sexually active adolescents, risky sexual behaviors are of concern, with 37% indicating that they did not use condoms during their first sexual encounter.

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Risk behaviors commonly co-occur during adolescence, suggesting that those who engage in any one risk behavior are likely to engage in others (Guilamo-Ramos et al., 2005; Hale & Viner, 2016), which means that resulting harms can be cumulative or even exponential (Akasaki et al., 2019). According to the gateway theory, the co-occurrence may occur because the involvement in one risky behavior may lead to others either through increased exposure or decreased perception of danger (Kandel, 2002). Some studies have already examined the co-occurrence of adolescents' risk behaviors, such as: (1) multiple substances (Tomczyk et al., 2016); (2) substance use and bullying (Luk et al., 2012); (3) substance use and unprotected sex (Connell et al., 2009); and (4) unprotected sex and bullying (Hong et al., 2016). Studies typically identifies distinct groups based on risk behaviors: one characterized by high engagement in risk behaviors, another exhibiting low-risk behaviors, and, in some cases, an intermediated class with a combination of some of the risk behaviors. However, due to the diverse nature of the variables used across studies, the comparability of these risk behaviors' classes is limited.

The Theory of Planned Behavior posits that risk behaviors share common determinants including attitudes toward the behavior, subjective norms, and perceived behavioral control, which influence individuals' intentions to engage in these behaviors (Jessor & Jessor, 1977). Therefore, understanding the risk and protective factors related to risky behaviors during adolescence is essential to inform evidence-based prevention policies (Hale & Viner, 2012).

Parental influence has traditionally received considerable research attention as one of the main factors influencing adolescents' engagement in risky behaviors. There are some theoretical models to explain associations between parental factors and adolescent risk behaviors. The Developmental-Ecological Framework, enriched by Ecological Systems Theory, asserts that an adolescent's development is shaped by interconnected environmental systems, with family playing a crucial role. This model underscores the influence of multiple layers of an adolescent's environment, from immediate settings to societal structures (Bronfenbrenner, 1979). The Social Development Model complements this by suggesting that adolescents acquire behavior patterns from their primary socializing agents, reinforcing the idea that behavior is learned within the context of social interactions (Catalano & Hawkins, 1996). Among the main parental factors that influence adolescent development, parental styles and parental alcohol use have been most consistently cited in the literature (Yap et al., 2017).

Parenting style is a typological model that classifies patterns of child-rearing considering the characteristics of the parent–child relationship. Parenting styles classification came from two broad dimensions: responsiveness, described as parental support and warmth, and demandingness, defined as rule-setting and parental supervision (Maccoby & Martin, 1983). Parents are classified as: authoritative parenting style (high demandingness and high responsiveness), neglectful style (low demandingness and low responsiveness), authoritarian parents (high demandingness and low responsiveness), and indulgent parents (low demandingness and high responsiveness). Many studies have shown that an authoritative style is associated with lower drug use (Berge et al., 2016), lower risk of sexual behavior (Huebner & Howell, 2003), and less bullying victimization and perpetration (Georgiou et al., 2017) by adolescents. Findings related to an indulgent style, in turn, remain very controversial. Previous studies found that indulgent parents might result in aggressive behaviors in children (Masud et al., 2019), such as bullying perpetration (Luk et al., 2016). A multicenter study conducted in Europe showed that the indulgent style performs as well as the authoritative in protecting against substance abuse (Calafat et al., 2014). On the other hand, Brazilian studies found a consistent association between indulgent styles, adolescent drug abuse (Zuquetto et al., 2019), and early sexual activity (Reis et al., 2020). The inconsistent results suggest that parental styles seem to be culture-dependent, and further studies must be carried out to understand these cultural differences (Calafat et al., 2014).

Evidence also points to the role of parental alcohol use in the development of risk behavior in adolescents, especially externalizing problems (Hussong et al., 2010) and alcohol-related negative consequences (Yap et al., 2017). Studies on parental alcohol use influencing child violence and sexual risk behaviors are rarer and present mixed results. Some findings indicate a positive association with parental alcohol use (Christoffersen & Soothill, 2003), while other studies found no evidence to support this association (Mahedy et al., 2017).

Another parental factor that may affect child outcomes is parental living status. Studies have shown that children in single-parent households can present more vulnerability to engage in risk behaviors (Jekielek & Moore, 2007). The most popular explanation is related to resource deprivation, which suggests that a single parent has fewer resources (economic resources, time, and energy), resulting in more inconsistent monitoring, discipline, and communication (Amato & Patterson, 2017).

In summary, the literature review indicates that the authoritative parenting style serves as a protective factor against risk behaviors in general, whereas the negligent style is considered a risk factor. Parental alcohol use consistently correlates with the onset of adolescent alcohol use

and alcohol-related problems. Single-parent households are linked to engagement in risk behaviors in general.

Even though there is consistent evidence highlighting the role of parental factors in influencing adolescents' engagement in risk behaviors, none of these studies evaluated simultaneously these specific three behaviors (substance use, bullying, and sexual risk behavior) clustered in the same model. Therefore, they fail to capture the complexity of adolescent's behaviors, as they overlook the fact that adolescents can simultaneously engage in multiple risk behaviors (Collins & Lanza, 2009). Additionally, the scarcity of evidence from low- and middle-income countries (LMICs) limits the generalizability of findings, especially because the effects of parenting factors on adolescents' risk behaviors may be influenced partly by cultural norms (Calafat et al., 2014).

In this context, our aims were (1) to identify the patterns of risk behaviors among Brazilian early adolescents using latent class analysis; and (2) to evaluate whether parental factors (such as parenting styles, parental alcohol use, and parental living status) at baseline predicted the patterns of risk behaviors 21 months later.

Based on previous theory and literature review, we hypothesize that the risk behaviors will cluster, forming a minimum of two latent classes: the smallest latent classes will be characterized by adolescents with more chances to engage in all risk behaviors in opposite the largest class will be characterized by adolescents with less chances to engage in all risk behaviors. Moreover, the authoritative parental style will protect adolescents from engaging in the high-risk behavior class, compared to the low-risk behavior class. No hypotheses regarding the intermediated classes are proposed, considering that none of the previous studies analyzed all these specific variables in the same model.

Methods

Participants

This is a longitudinal study conducted with seventh and eighth-grade students in 72 public schools in six Brazilian cities (São Paulo, São Bernardo do Campo, Federal District, Florianópolis, Tubarão and Fortaleza) who participated in the evaluation study of the culturally adapted version of the European drug prevention program Unplugged, renamed #Tamojunto in Brazil (Sanchez et al., 2018). The target population comprised all students attending seventh and eighth grades in randomly selected participating schools. The school randomization was performed using the complete list of public middle schools in each of the participating municipalities (according to the national school registration list from the Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, or INEP).

Researchers collected data by an anonymous self-report questionnaire applied in classrooms without the presence of teachers in three point-times (baseline, 9- and 21-months follow-up). This article examined the data from the baseline assessment and 21 months follow-up (after baseline assessment). A total of 6,391 students answered the baseline questionnaire, 4,234 students answered the 9 months follow-up questionnaire (66,25% linked), and 3,638 students answered the 21months follow-up questionnaire (57% linked).

All procedures in the present study were in accordance with the ethical standards of the institutional and/or national research committee, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Consent to participate in the study was written and obtained from the schools' directors before randomization and from students, after randomization. This study was part of a PhD thesis (Valente & Sanchez, 2020).

Instruments and measures

Data were collected using an anonymous self-report questionnaire developed and tested by EU-DAP translated and adapted to Portuguese (Sanchez et al., 2018). Students completed the same questionnaire before and after the intervention (21 months later). All variables used in this study were collected at both data points.

The **outcome variables** assessed were extracted from the **21-month follow-up**, and they were included in the latent class analysis of adolescent risk behaviors.

Recent drug use

Adolescent drug use was assessed by five dichotomous (yes-or-no) questions, asking whether they have used/consumed any of the following drugs in the past month: alcohol (especially binge drinking), tobacco, marijuana, and inhalants, using this question as an example: "From 1 month to the next, i.e., in the last 30 days, have you drunk alcoholic beverages?" Binge drinking was assessed by the consumption of five or more drinks of alcohol during a 2-h period. These drug use questions were based on a World Health Organization questionnaire, that has been widely used in studies with Brazilian students by the Brazilian Center for Information about Psychotropic Drugs. In previous studies, all these questions to assess adolescents' drug use (alcohol, tobacco, marijuana, inhalants, and binge drinking) showed substantial levels of agreement (Kappa 0.60–0.79) or almost perfect (Kappa > 0.8) (Galvão et al., 2021).

Bullying

Bullying victimization and perpetration were measured by two questions: "In the past 30 days, how often have your classmates scolded, bullied, or teased you so much that you felt hurt, harassed, annoyed, offended, or humiliated?" and "In the past 30 days, have you scolded, mocked, manipulated, intimidated, or teased any of your classmates so much that they were hurt, annoyed, offended, or humiliated?" The original response items ("never," "sometimes," and "always") were transformed into binary responses (yes/no) due to the low prevalence in each category and to improve the LCA fit indices: "sometimes" and "always" answers were grouped to obtain the "yes" group; "never" was considered "no." These questions used to assess bullying were from a questionnaire that has been widely used in studies with Brazilian students from the National Survey of Student Health questionnaire (IBGE, 2016). We decided to include bullying victimization and perpetration for constructing the latent classes because previous studies that used the same pattern-centered approach to identify underlying patterns of bullying found that bullying victimization and perpetration tend to cluster together. In this sense, grouping students as pure victims or as pure bullies confounds the understanding of bullying complexity (Walters, 2020).

Sexual risk behavior

Adolescents' risky sexual behavior was assessed with the question, "When you have sex, do you use condoms?" Responses included "never had sex," "always use," "sometimes use," and "never use." These were dichotomized into yes/no, grouping "never had sex" and "always use" as "No," an indication of safe sex, and "sometimes use" and "never use" as "Yes," an indication of risk behavior. The decision to dichotomize the bullying questions was based on the low prevalence of students who reported having sex ("always use" "sometimes use," and "never use) and to improve the LCA fit indices. This question used to assess adolescents' risky sexual behavior was from a questionnaire that has been widely used in studies with Brazilian students called the National Survey of Student Health questionnaire (IBGE, 2016).

The **explanatory variables** (predictors of the latent classes of risk behaviors) were extracted from four sets of variables from the baseline data assessment.

Parental alcohol use

Sporadic alcohol use and drunken episodes by parents was assessed by four dichotomous questions, asking whether the adolescent's mother/stepmother and father/stepfather (1) drinks alcohol occasionally; or (2) gets drunk. These questions regarding parental alcohol use were adapted from the EU-DAP questionnaire (Faggiano et al., 2010).

Parenting style

Neglectful, authoritative, authoritarian, and indulgent parenting style were assessed using the parental demandingness and responsiveness scale (Lamborn et al., 1991). Each item in the instrument (six on the demandingness dimension; 10 on the responsiveness dimension) is assessed by a three-point Likert scale, where values closer to three indicate greater perceived demandingness and responsiveness (ranging from 0 to 12 and 0 to 20, respectively). Following previous studies (Calafat et al., 2014; García & Gracia, 2009; Valente et al., 2019) the dimensions of parenting styles were defined through the implementation of the median split method. Parents whose scores reached or exceeded the median point for demandingness or responsiveness were categorized as having a high level of demandingness or responsiveness, respectively. On the other hand, parents whose scores fell at or below the median were categorized as having a low level of demandingness or responsiveness. Parenting styles were arranged into four categories by combining these two factors: authoritative (parents scoring high on demandingness and responsiveness), authoritarian (parents scoring high on demandingness and low on responsiveness), indulgent (parents scoring low on demandingness and high on responsiveness), or neglectful (parents scoring low on demandingness and responsiveness) (Calafat et al., 2014). Validity evidence, based on internal consistency, was obtained using CFA, showing that the model was a good fit for the two-factor solution (demandingness and responsiveness): $X^2 = 1518.249$, $p < 0.001$, RMSEA = 0.050, CFI = 0.940, TLI = 0.929, WRMR = 2.377 (Valente et al., 2019).

Parental living status

Parental living status was obtained by three dichotomous questions, asking whether the adolescent lived with both parents in the same house, or in a single-parent household (mother or father).

The **model adjustment variables** were extracted from four sets of variables from the baseline data assessment. Model adjustment variables were age, gender, socioeconomic class (SES), baseline outcomes variables (drug use, bullying, risky sexual behavior), and group of randomization. The socioeconomic status of the students was evaluated utilizing the Brazilian Association of Research Companies scale (Associação Brasileira de Empresas de Pesquisa, or ABEP) (ABEP, 2012). This assessment considered the

educational attainment of the household's primary earner and the consumption of various goods and services. Scores on this scale range from 0 to 46, where higher scores correspond to more favorable economic circumstances. The socioeconomic classes are hierarchically ranked from A (highest) to E (lowest).

To correlate the questionnaires responded to during both stages of the investigation, students devised an anonymous code grounded in their personal information. This methodology afforded them the indispensable safeguards of anonymity and confidentiality that are imperative in inquiries about illicit behaviors. Additionally, the procedure included incorporating school and class codes in the matching process. The Levenshtein algorithm was employed to match students' codes, using a method that detects similarities within a sequence of characters (Sanchez et al., 2018).

Data analysis

We conducted LCA to identify groups of students with similar patterns of risk behaviors considering the observed variables: use of the following drug use in the past month (alcohol, tobacco, marijuana, inhalants, and binge drinking), bullying (perpetration and victimization), and risky sexual behavior at the 21-month follow-up.

Latent class extraction ceased when the inclusion of a new class yielded little additional information. The final model was selected based on the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the sample-size-adjusted Bayesian information criterion (SSABIC), and the Vuong-Lo-Mendell-Rubin (VLMR) test, considering the parsimony and interpretability of the classes. Finally, the study used entropy, a formula that includes the mean of the weighted estimates, to assess the accuracy of the classification; values close to 1 indicate clear and very precise classification. The best solution was defined by combining all the above indexes.

Multivariate multinomial logistic regressions were then performed in Mplus using the R3STEP option of the AUXILIARY command (Asparouhov & Muthén, 2014), with the baseline covariates affecting the outcome at the 21-month follow-up. All analyses considered the multilevel structure of data and were adjusted for sex, age, SES, baseline outcomes and group of randomization. Inferential point estimates are presented as adjusted odds ratios (aORs), with their respective 95%CIs and p-values. A significance level of 5% was adopted.

Since data on the outcome variables at the 21-month follow-up were lost due to missing data, they were calculated by multiple imputations, using intercorrelations of data from existing variables to estimate plausible values for the missing data (Little & Rubin, 2002). Imputations were performed in Mplus by sequential imputation, assuming a random pattern of missing values. Cluster, school, gender, age, SES, past month drug use, bullying, and risky sexual behavior at baseline were used as variables in the unrestricted model. Covariates were included in the model to support the missing-at-random data under the multiple imputation assumption; five imputed data sets were generated.

Results

We presented the baseline characteristics of the sample in Table 1. Students in the sample had a relatively similar distribution in gender (girls 51.2%). Most students belong to socioeconomic class C (53.97%), and the mean age was 12.61 years. Regarding risk behavior, the drug most used by students in the past month was alcohol (16.01%); bullying victimization (28.69%) was more prevalent than bullying perpetration (18.81%); and 4.48% of adolescents reported engaging in unsafe sex in the previous month. Parental alcohol use was more prevalent among fathers compared to mothers for both episodic alcohol use (30.52% and 21.30%, respectively) and drunkenness (9.94% and 2.44%, respectively). The most prevalent parenting style was neglectful (37.84%).

The four-class model presented the lowest values of BIC and SSABIC (adjusted BIC), suggesting that the four-class solution was slightly superior to the others. In addition, the entropy of the four-class model was 0.749 and VLMR/LRT < 0.001. Taking the fit indices and considering the most coherent theoretical description of risk behaviors, the four-class solution was chosen as the most appropriate model (Table 2).

Figure 1 provide the description of the four identified latent classes, with the indicators collected at 21month follow-up. The high-risk behavior class consisted of adolescents who had the highest probability of having engaged in all eight categories of risk behaviors. The high alcohol use and bullying class contained adolescents who had high probabilities of self-reporting binge drinking, alcohol use, bullying perpetration and victimization in the past month; but lower probabilities of having used other drugs in the past month. The High bullying class consisted of adolescents with very low probabilities of both drug use and having engaged in unprotected sex in the past month, but a higher probability of self-reporting bullying behaviors. Finally, students classified in the low-risk behavior class had low probabilities of having engaged in all eight categories of risk behaviors. Regarding class classification, the high-risk behavior class was the smallest, followed by high alcohol use and bullying, high bullying, and low-risk behavior, the largest class.

Table 1 Baseline distribution of Brazilian early adolescents according to sociodemographic characteristics, baseline outcomes (bullying, drug use and unsafe sex) and parental factors ($N = 6{,}391$)

Variables	N	%	95%CI
Gender			
Male	3,130	48.79	[47.03; 50.55]
Female	3,261	51.20	[49.44; 52.97]
Average Age		12.61	[12.56; 12.67]
Socioeconomic Status Score		27.67	[26.92; 28.41]
A (35–42)	244	3.78	[2.80; 5.11]
B (23–34)	2,467	36.64	[33.54; 39.85]
C (14–22)	3,343	53.97	[50.41; 57.50]
D/E (0–13)	322	5.60	[4.60; 6.80]
Past-Month Drug Use			
Alcohol	1,002	16.01	[14.58; 17.56]
Binge Drinking	787	13.17	[11.92; 14.53]
Tobacco	115	1.84	[1.39; 2.42]
Inhalants	176	2.75	[2.26; 3.35]
Marijuana	76	1.22	[0.88; 1.67]
Past-Month Bullying			
Perpetration	1,156	18.81	[17.30; 20.42]
Victimization	1,702	28.69	[27.75; 30.71]
Past-Month Unsafe Sex	249	4.48	[03.76; 05.33]
Parenting Style			
Authoritative	1,447	28.69	[26.65; 30.83]
Authoritarian	960	19.66	[18.56; 20.80]
Indulgent	662	13.81	[12.72; 14.98]
Neglectful	1,863	37.84	[35.66; 40.07]
Parental Alcohol Use			
Paternal Alcohol Use	1,913	30.52	[28.03; 33.14]
Paternal Drunkenness	600	09.94	[09.10; 10.84]
Maternal Alcohol Use	1,313	21.30	[19.54; 23.16]
Maternal Drunkenness	151	2.44	[2.00; 2.96]
Parental living status			
Living only with mother	688	11.15	[09.96; 12.46]
Living only with father	2,631	42.93	[40.95; 44.93]
Living with mother and father	3,444	52.24	[49.91; 54.57]

Table 3 displays the results of longitudinal multivariate analyses, showing how parental factors collected at baseline impact the latent classes of risk behaviors at the 21-month follow-up. The analysis was adjusted for age, gender, socioeconomic class, randomized group, and baseline outcome variables. The low-risk behavior class was the reference group. Students whose parents adopted an authoritative style were less likely to belong to the risk behavior classes after 21 months (e.g., high-risk behavior (aOR = 0.41, 95%CI=[0.16; 0.10]). Students with indulgent parent style parents were less likely to belong to the high bullying class after 21 months (aOR = 0.59, 95%CI=[0.40; 0.87]). The reference parenting style was the negligent style. In addition, maternal episodes of drunkenness predicted the chances of being in the high alcohol use and bullying and high-risk behavior classes after 21 months (aOR = 3.73, 95%CI=[1.25; 11.11] and aOR = 4.98, 95%CI=[1.20; 20.76], respectively) compared to the abstainers students. Finally, our analysis yielded no discernible effect of the prevention program with regard to the likelihood of affiliation with any of the risk behavior classes.

Discussion

This longitudinal research employs LCA to explore how parental alcohol use and parenting styles influence the prediction of risky behaviors among adolescents. The analysis revealed a solution consisting of four latent classes: "low-risk behavior," "high bullying," "high alcohol use and bullying," and "high-risk behavior." Moreover, the study identified several parental factors that contribute to the prediction of these classes of risk behaviors over time. An authoritative parenting style demonstrated a protective influence against being classified into any of the risk behavior classes. An indulgent parenting style emerged as a protective factor against being categorized in the high bullying class. Maternal episodes of intoxication were identified as a risk factor associated with being grouped into the high alcohol use and bullying as well as the high-risk behavior classes.

Table 2 Fit indices for the number of latent classes of risk behaviors among Brazilian early adolescents

Models	Free Parameters	Goodness-of-fit statistics					Entropy
		AIC	BIC	ssaBIC	VLMR LRT	LMR-LR adjusted test	
1 Class	8	21668.650	21718.237	21692.817			
2 Classes	17	18456.417	18561.789	18507.772	< 0.0001	< 0.0001	0.939
3 Classes	26	18255.499	18416.657	18334.042	< 0.0001	< 0.0001	0.714
4 Classes	35	18070.840	**18287.783**	**18176.570**	**< 0.0001**	**< 0.0001**	0.749
5 Classes	44	18045.944	18318.672	18178.862	0.5981	0.6027	0.743
6 Classes	53	18024.129	18352.642	18184.235	0.3830	0.3852	0.765

AIC Akaike Information Criteria, *BIC* Bayesian Information Criteria, *ssaBIC* Sample size adjusted BIC, *VLMR-LRT* Voung-Lo-Mendell-Rubin, *LRT* Likelihood Ratio Test, *LMR-LR adjusted test* Lo-Mendell-Rubin Adjusted LRT Test

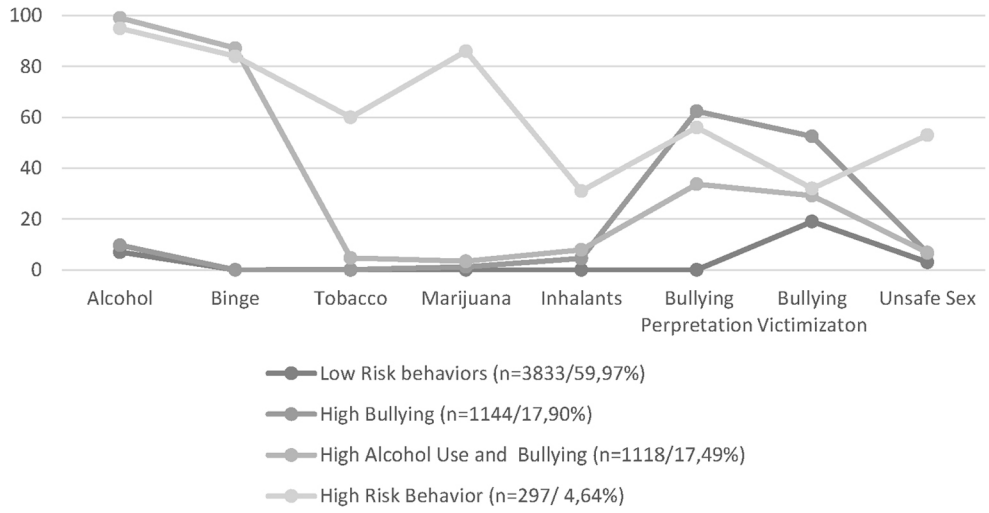

Fig. 1 Probabilities associated with drug use, bullying, and unsafe sex for the four-class model among Brazilian early adolescents

Table 3 Longitudinal description of parental variables influencing latent classes of risk behaviors among Brazilian early adolescents, derived from multivariate Analysis ($N = 6,391$)

Multivariate Analysis									
	High Bullying vs. Low Risk Behaviors[a]			High Alcohol Use and Bullying vs. Low Risk Behaviors[a]			High Risk Behavior vs. Low Risk Behaviors[a]		
	aOR	95%CI	*p*	aOR	95%CI	*p*	aOR	95%CI	*p*
Baseline Past-month Drug Use									
Alcohol	1.63	[0.87; 3.04]	0.124	**2.86**	**[1.32; 6.16]**	**0.007**	**6.55**	**[3.20; 13.43]**	**< 0.001**
Binge	0.72	[0.30; 1.70]	0.451	1.36	[0.62; 2.98]	0.439	0.94	[0.35; 2.56]	0.908
Tobacco	1.07	[0.12; 9.22]	0.948	0.96	[0.29; 3.15]	0.941	2.23	[0.65; 7.63]	0.202
Inhalants	2.20	[0.77; 6.23]	0.139	1.67	[0.67; 4.11]	0.268	1.55	[0.54; 4.43]	0.411
Marijuana	1.44	[1.89;74.55]	0.843	2.55	[0.36; 18.24]	0.351	**11.86**	**[1.88; 74.55]**	**0.008**
Baseline Unsafe Sex	1.85	[0.60; 5.66]	0.283	1.65	[0.76; 3.57]	0.202	**5.65**	**[1.88; 17.00]**	**0.002**
Baseline Bullying									
Victimization	**2.17**	**[1.54; 3.08]**	**< 0.001**	1.20	[0.91; 1.58]	0.189	1.05	[0.66; 1.65]	0.836
Perpetration	**3.35**	**[2.40; 4.65]**	**< 0.001**	**3.11**	**[1.94; 4.96]**	**< 0.001**	**3.36**	**[1.52; 7.42]**	**0.003**
Sociodemographic Variables									
Group	1.13	[0.73; 1.43]	0.896	1.07	[0.82; 1.36]	0.644	1.14	[0.75; 1.74]	0.526
Sex	**0.63**	**[0.46; 0.87]**	**0.006**	1.28	[1.01; 1.61]	0.038	0.88	[0.59; 1.30]	0.511
Age	0.89	[0.80; 1.09]	0.409	1.14	[0.95; 1.36]	0.149	1.02	[0.76; 1.35]	0.905
SES	1.01	[1.00; 1.04]	0.067	1.02	[1.01; 1.04]	0.002	1.02	[0.98; 1.06]	0.313
Parenting Style									
Neglectful	1								
Indulgent	**0.59**	**[0.40; 0.87]**	**0.008**	0.84	[0.61; 1.16]	0.292	1.01	[0.53; 1.88]	0.998
Authoritarian	0.91	[0.60; 1.37]	0.652	0.82	[0.59; 1.14]	0.245	0.63	[0.28; 1.40]	0.257
Authoritative	**0.64**	**[0.42; 0.98]**	**0.039**	**0.61**	**[0.46; 0.80]**	**< 0.001**	**0.41**	**[0.16; 0.10]**	**0.049**
Parental Alcohol Use									
Maternal Alcohol Use	1.23	[0.75; 1.89]	1.19	1.26	[0.93; 1.69]	0.130	1.20	[0.74; 1.92]	0.458
Maternal Drunkenness	2.37	[0.48; 9.74]	2.17	**3.73**	**[1.25; 11.11]**	**0.018**	**4.98**	**[1.20; 20.76]**	**0.027**
Paternal Alcohol Use	0.86	[0.54; 1.16]	0.79	1.05	[0.76; 1.44]	0.760	0.83	[0.54; 1.29]	0.419
Paternal Drunkenness	1.19	[0.68; 2.16]	1.21	1.25	[0.80; 1.95]	0.325	1.07	[0.59; 1.95]	0.825
Parental Living Status									
Absence of Mother	1.39	[0.66; 2.95]	0.383	1.41	[0.85; 2.34]	0.184	0.46	[0.15; 1.41]	0.176
Absence of Father	1.13	[0.47; 2.75]	0.783	1.15	[0.62; 2.12]	0.660	0.48	[0.13; 1.79]	0.278
Mother and Father	0.96	[0.36; 2.89]	0.96	0.87	[0.41; 1.84]	0.711	0.22	[0.04; 1.11]	0.067

[a]Latent class indicators were collected at 21-month follow-up

Theoretical and practical contributions

The results of this study confirm the previous hypotheses that an authoritative parenting style is an essential protective factor for all risk behavior classes investigated in this study, which is consistent with the previous literature. The combination of parental support and supervision, which defines an authoritative parenting style, predicts better outcomes for young's development (Chen et al., 2019), contributing to the multiple aspects of a child's well-being by developing self-regulation and resistance efficacy (Patock-Peckham et al., 2001; Wills et al., 2003). Favorable parental behaviors can mitigate the impact of risk factors and diminish the influence of less malleable moderators (such as media exposure, socioeconomic disadvantage, and neighborhood hazards) on the occurrence of risk behaviors among adolescents (Yap et al., 2017).

Moreover, our findings also indicate that beyond the well-established protective effects of authoritative parenting, indulgent parenting styles can also contribute to shielding adolescents from belonging to the high bullying class. Both authoritarian and indulgent parenting styles exhibit elevated levels of responsiveness, underscoring the significance of this parental dimension as a protective element against bullying. Responsive caregivers demonstrate substantial supportiveness, potentially assisting their offspring in surmounting challenges via open communication and facilitating the acquisition of adaptive coping mechanisms pertinent to addressing aggressive behaviors, including bullying (Kochenderfer-Ladd & Skinner, 2002). Our findings align with studies conducted in European and Latin American countries that also found that indulgent parenting style could be a protective factor for bullying (Calafat et al., 2014). Specific parenting training programs to prevent or reduce bullying should strengthen supportive involvement, promote warm and affectionate parenting, and improve family relationships (Smith et al., 2008).

Maternal episodes of drunkenness are shown to be a strong risk factor for adolescents' belonging to classes that involve alcohol and other drug use. These results are consonant with previous studies showing the same prediction path between maternal drunkenness and adolescent alcohol (Yap et al., 2017), and drug use (Valente et al., 2018). This finding may be due to the effects that exposure to maternal episodes of intoxication can cause on children's emotional development, which can lead to premature involvement with drug use (Berg et al., 2016). In addition, maternal alcohol abuse may be associated with greater accessibility to alcohol consumption (Mattick et al., 2018), promoting lower-risk perceptions of drug use (Patrick et al., 2014).

Summary of the theoretical contributions

The present study corroborates established theoretical models, demonstrating that risk behaviors tend to cluster together in various patterns. Additionally, it suggests that these risk behaviors may share common risk and protective factors, such as parental alcohol use and parenting styles.

Summary of the practical contributions

The practical implications arising from the current empirical findings underscore the importance of prevention programs targeting parental skills and maternal alcohol abuse to reduce patterns of adolescents' risk behaviors. Parental skills training is recognized as one of the most effective interventions in preventing drug use and has demonstrated positive outcomes for youth mental health and well-being (UNODC, 2018). Additionally, another strategy that has been used is the incorporation of parent-based components into individual school-based universal programs has been shown to enhance their effectiveness (Newton et al., 2017). Furthermore, public health preventive strategies should focus on fostering parental awareness of their roles as role models and acknowledging that their problematic alcohol consumption can potentially influence adolescent alcohol use.

Suggestions for educators and policymakers

To mitigate adolescent risk behaviors, educators and policymakers should promote parental education programs that encourage positive parenting styles, such as authoritative parenting, and raise awareness of the negative effects of parental alcohol use. School-based interventions should include components for parent training and bullying prevention programs, emphasizing the importance of supportive parenting. Ongoing research and regular evaluation of these programs are crucial for effectively adapting and improving prevention strategies. By integrating these insights into prevention efforts, policymakers and practitioners can effectively address adolescent risk behaviors and promote positive youth development.

Since 2009, family skills training programs have been one of the most important fields of action of UNODC. They created a guide offering a review of universal and selective family skills training programs that have proven effective in preventing risky behaviors, including substance use. The guide addresses fundamental principles for the success of these programs, including cultural adaptation, recruiting and retaining families, selecting and training group leaders, and monitoring and evaluating the programs' effectiveness and sustainability. Additionally, it emphasizes the need for a balance between theory and practice in implementation to

ensure that interventions are evidence-based and suited to the needs of the communities (UNODC, 2009).

Generalizability on the findings

The findings of this study, though derived from a robust sample of adolescents from several Brazilian cities, may not be fully generalizable to adolescents in other cultural or socioeconomic contexts. Therefore, our findings align with other studies conducted in different countries and among various populations.

Limitations and future research

One limitation of the studies limitation was to assessing only the adolescents' perceptions of parenting styles, however this is a common research practice in studies of this field (Berge et al., 2016; García & Gracia, 2009). Moreover, according to a systematic review on this topic, parents tend to be more favorable than their children's about the parents' behaviors (Korelitz & Garber, 2016). Furthermore, we decided to dichotomize our outcomes variables, e.g., bullying and unprotected sex, to get a better model fit; however, we must consider that this dichotomization may imply loss of information compared to quantitative variables. While self-report measures are commonly used in investigating adolescent risk behaviors, they can introduce bias, including social desirability and impression management. To address these potential biases, we implemented two key strategies. Firstly, we enhanced questionnaire anonymity through a unique coding system, created by the adolescent with personal information only decipherable by them, thus ensuring participant confidentiality. Secondly, we introduced a fictional drug in the questionnaire, leading participants who reported the use of this fictitious substance to be systematically excluded from the sample, thereby reducing the potential for over-reporting. Lastly, it is imperative to acknowledge the presence of missing data within the follow-up measurements, which is a limitation intrinsic to longitudinal studies. While imputation techniques offer valuable strategies for estimating this lack of information, it is essential to comprehend that the incompleteness of data diminishes statistical robustness, perpetuating its status as an ongoing constraint when deliberating trial findings. Additionally, students who drop out of the study or are absent during follow-up data collection may exhibit specific characteristics, such as engaging in more risk behaviors, which could impact the representativeness of the sample. Therefore, future research needs to replicate this study in diverse settings and with robust methodologies to validate the findings and assess their applicability across different populations.

Conclusion

The findings of this study add advantages to the literature by showing that several adolescent risk behaviors are interrelated and tend to co-occur, which means that adolescents that get involved in one risk behavior are more likely to get involved in others. In addition, some parental factors can play an important role in protecting adolescents from getting involved in these risk behaviors. Our results highlight that parental preventive programs designed to improve positive parenting skills seem to have the potential to prevent multiple adolescents' risk behaviors concomitantly. Preventive interventions must focus on building positive parenting skills, such as supervision and support, and raising awareness of the negative effect of parental alcohol abuse, especially of maternal drunkenness. Furthermore, providing clear messages for the parents about what they should do to help their child to have a healthier development is particularly important. Finally, our results are central to help understand adolescence as a particular moment of development when interventions may contribute to healthier lifestyles.

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Declarations

Compliance with ethical standards The study was registered in the Brazilian Ministry of Health's Brazilian Registry of Clinical Trials (Registro Brasileiro de Ensaios Clínicos– REBEC) under the number RBR-4mnv5g. The study protocol was approved by the Federal University of São Paulo's research ethics committee (protocol #473,498).

Competing interest None.

References

ABEP, A. B. de E. de P. (2012). Critério de Classificação Econômica do Brasil [Criteria for Economic Classification in Brazil]. Ibope, 1–6. http://www.abep.org/criterio-brasil

Akasaki, M., Ploubidis, G. B., Dodgeon, B., & Bonell, C. P. (2019). The clustering of risk behaviours in adolescence and health consequences in middle age. *Journal of Adolescence*, *77*(1), 188–197. https://doi.org/10.1016/j.adolescence.2019.11.003

Amato, P. R., & Patterson, S. E. (2017). Single-parent households and mortality among children and youth. *Social Science Research*, *63*, 253–262. https://doi.org/10.1016/j.ssresearch.2016.09.017

Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using M plus. *Structural Equation Modeling: A Multidisciplinary Journal*, *0*(June), 1–13. https://doi.org/10.1080/10705511.2014.915181

Berg, L., Bäck, K., Vinnerljung, B., & Hjern, A. (2016). Parental alcohol-related disorders and school performance in 16-year-olds-a Swedish national cohort study. *Addiction*, *111*(10), 1795–1803. https://doi.org/10.1111/add.13454

Berge, J., Sundell, K., Ojehagen, A., & Hakansson, A. (2016). Role of parenting styles in adolescent substance use: Results from a Swedish longitudinal cohort study. *British Medical Journal Open*, *6*(1), e008979. https://doi.org/10.1136/bmjopen-2015-008979

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.

Calafat, A., García, F., Juan, M., Becoña, E., & Fernández-Hermida, J. R. (2014). Which parenting style is more protective against adolescent substance use? Evidence within the European context. *Drug and Alcohol Dependence*, *138*, 185–192. https://doi.org/10.1016/j.drugalcdep.2014.02.705

Catalano, R. F., & Hawkins, J. D. (1996). The social development model: A theory of antisocial behavior. *Hawkins J.D. delinquency and crime: Current theories* (pp. 149–197). Cambridge University Press.

Centers for Disease Control and Prevention, C (2014). Youth risk behavior surveillance - United States, 2013. *Morbidity and Mortality Weekly Report - Surveillance Summaries*, *63*(4), 1–172.

Centers for Disease Control and Prevention (2017). *Youth risk behavior survey: Data summary & trends report* (pp. 1–90).

Chen, Y., Haines, J., Charlton, B. M., & VanderWeele, T. J. (2019). Positive parenting improves multiple aspects of health and well-being in young adulthood. *Nature Human Behaviour*. https://doi.org/10.1038/s41562-019-0602-x

Christoffersen, M. N., & Soothill, K. (2003). The long-term consequences of parental alcohol abuse: A cohort study of children in Denmark. *Journal of Substance Abuse Treatment*, *25*(2), 107–116. https://doi.org/10.1016/S0740-5472(03)00116-8

Collins, L. M., & Lanza, S. T. (2009). *Latent class and latent transition analysis: With applications in the social, behavioral, and health sciences*. Wiley Online Library.

Connell, C. M., Gilreath, T. D., & Hansen, N. B. (2009). A multiprocess latent class analysis of the co-occurrence of substance use and sexual risk behavior among adolescents.(Report). *Journal of Studies on Alcohol and Drugs*, *70*(6), 943. https://doi.org/10.15288/jsad.2009.70.943

Faggiano, F., Vigna-Taglianti, F., Burkhart, G., Bohrn, K., Cuomo, L., Gregori, D., Panella, M., Scatigna, M., Siliquini, R., Varona, L., van der Kreeft, P., Vassara, M., Wiborg, G., & Galanti, M. R. (2010). The effectiveness of a school-based substance abuse prevention program: 18-Month follow-up of the EU-Dap cluster randomized controlled trial. *Drug and Alcohol Dependence*, *108*(1–2), 56–64. https://doi.org/10.1016/j.drugalcdep.2009.11.018

Galvão, P. P., de Valente, O., Millon, J. Y., Melo, J. N., Caetano, M. H. S., Cogo-Moreira, S. C., Mari, H., & Sanchez, Z. M. (2021). Validation of a tool to evaluate drug prevention programs among students. *Frontiers in Psychology*, *12*(June), 1–9. https://doi.org/10.3389/fpsyg.2021.678091

García, F., & Gracia, E. (2009). Is always authoritative the optimum parenting style? Evidence from Spanish families. *Adolescence*, *44*(173), 101–131. http://www.ncbi.nlm.nih.gov/pubmed/19435170

Georgiou, S. N., Ioannou, M., & Stavrinides, P. (2017). Parenting styles and bullying at school: The mediating role of locus of control. *International Journal of School & Educational Psychology*, *5*(4), 226–242. https://doi.org/10.1080/21683603.2016.1225237

Gore, F. M., Bloem, P. J. N., Patton, G. C., Ferguson, J., Joseph, V. V., Coffey, C., Sawyer, S. M., & Mathers, C. D. (2011). Global burden of disease in young people aged 10–24 years: A systematic analysis. *The Lancet*, *377*(9783), 2093–2102. https://doi.org/10.1016/S0140-6736(11)60512-6

Guilamo-Ramos, V., Litardo, H. A., & Jaccard, J. (2005). Prevention programs for reducing adolescent problem behaviors: Implications of the co-occurrence of problem behaviors in adolescence. *Journal of Adolescent Health*, *36*(1), 82–86. https://doi.org/10.1016/j.jadohealth.2003.12.013

Hale, D. R., & Viner, R. M. (2012). Policy responses to multiple risk behaviours in adolescents. *Journal of Public Health*, *34*(suppl 1), i11–i19. https://doi.org/10.1093/pubmed/fdr112

Hale, D. R., & Viner, R. M. (2016). The correlates and course of multiple health risk behaviour in adolescence. *BMC Public Health*, *16*(1), 458. https://doi.org/10.1186/s12889-016-3120-z

Hong, J. S., Voisin, D. R., Cho, S., & Espelage, D. L. (2016). Association among subtypes of bullying status and sexually-risky behaviors of urban African American adolescents in Chicago. *Journal of Immigrant and Minority Health*, *18*(5), 1007–1016. https://doi.org/10.1007/s10903-016-0375-5

Huebner, A. J., & Howell, L. W. (2003). Examining the relationship between adolescent sexual risk-taking and perceptions of monitoring, communication, and parenting styles. *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine*, *33*(2), 71–78. https://doi.org/10.1016/S1054-139X(03)00141-1

Hussong, A. M., Huang, W., Curran, P. J., Chassin, L., & Zucker, R. A. (2010). Parent alcoholism impacts the severity and timing of children's externalizing symptoms. *Journal of Abnormal Child Psychology*, *38*(3), 367–380. https://doi.org/10.1007/s10802-009-9374-5

IBGE. (2016). *Pesquisa Nacional De Saúde do Escolar 2015*. IBGE, Coordenação de População e Indicadores Sociais.

IBGE. (2021). *Pesquisa Nacional de Saúde do Escolar PENSE 2019*. IBGE, Coordenação de População e Indicadores Sociais. https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2101852

Jekielek, S. M., & Moore, K. A. (2007). Family structure and child outcomes. *The Blackwell encyclopedia of sociology.* Wiley. https://doi.org/10.1002/9781405165518.wbeosf020

Jessor, R., & Jessor, S. L. (1977). *Problem behavior and psychological development: A longitudinal study of youth*. Academic. https://doi.org/10.1007/s10964-018-0811-z

Kandel, D. B. (2002). *Stages and pathways of drug involvement: Examining the gateway hypothesis* (p. 402). Cambridge University Press. https://doi.org/http://assets.cambridge.org/97805217/83491/frontmatter/9780521783491_frontmatter.pdf

Kann, L., McManus, T., A Harris, W., L Shanklin, S., H Flint, K., Queen, B., Lowry, R., Chyen, D., Whittle, L., Thornton, J., Lim, C., Bradford, D., Yamakawa, Y., Leon, M., Brener, N., & A Ethier, K. (2018). Youth risk behavior surveillance — United States, 2017. *MMWR Surveillance Summaries*, *67*(8), 1–114. https://doi.org/10.15585/mmwr.ss6708a1

Kipping, R. R., Campbell, R. M., MacArthur, G. J., Gunnell, D. J., & Hickman, M. (2012). Multiple risk behaviour in adolescence. *Journal of Public Health*, *34*(suppl 1), i1–i2. https://doi.org/10.1093/pubmed/fdr122

Kochenderfer-Ladd, B., & Skinner, K. (2002). Children's coping strategies: Moderators of the effects of peer victimization? *Developmental Psychology*, *38*(2), 267–278. https://doi.org/10.1037/0012-1649.38.2.267

Korelitz, K. E., & Garber, J. (2016). Congruence of parents' and children's perceptions of parenting: A meta-analysis. *Journal of Youth and Adolescence*, *45*(10), 1973–1995. https://doi.org/10.1007/s10964-016-0524-0

Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among

adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development*, *62*(5), 1049–1065. https://doi.org/10.1111/j.1467-8624.1991.tb01588.x

Little, R. J. A., & Rubin, D. B. (2002). *Statistical analysis with missing data wiley series in probability and statistics*.

Luk, J. W., Wang, J., & Simons-Morton, B. G. (2012). The co-occurrence of substance use and bullying behaviors among U.S. adolescents: Understanding demographic characteristics and social influences. *Journal of Adolescence*, *35*(5), 1351–1360. https://doi.org/10.1016/j.adolescence.2012.05.003

Luk, J. W., Patock-Peckham, J. A., Medina, M., Terrell, N., Belton, D., & King, K. M. (2016). Bullying perpetration and victimization as externalizing and internalizing pathways: A retrospective study linking parenting styles and self-esteem to depression, alcohol use, and alcohol-related problems. *Substance Use & Misuse*, *51*(1), 113–125. https://doi.org/10.3109/10826084.2015.1090453

Maccoby, E. E., & Martin, J. A. (1983). Socialization in the context of the family: Parentchild interaction. In E. M. Hetherington (Ed.). *Handbook of child psychology, v. 4. Socialization, personality, and social development* (4th ed., p. 101).

Mahedy, L., Hammerton, G., Teyhan, A., Edwards, A. C., Kendler, K. S., Moore, S. C., Hickman, M., Macleod, J., & Heron, J. (2017). Parental alcohol use and risk of behavioral and emotional problems in offspring. *PLoS One*, *12*(6), e0178862. https://doi.org/10.1371/journal.pone.0178862

Masud, H., Ahmad, M. S., Cho, K. W., & Fakhr, Z. (2019). Parenting styles and aggression among young adolescents: A systematic review of literature. *Community Mental Health Journal*, *55*(6), 1015–1030. https://doi.org/10.1007/s10597-019-00400-0

Mattick, R. P., Clare, P. J., Aiken, A., Wadolowski, M., Hutchinson, D., Najman, J., Slade, T., Bruno, R., McBride, N., Kypri, K., Vogl, L., & Degenhardt, L. (2018). Association of parental supply of alcohol with adolescent drinking, alcohol-related harms, and alcohol use disorder symptoms: A prospective cohort study. *The Lancet Public Health*, *3*(2), e64–e71. https://doi.org/10.1016/S2468-2667(17)30240-2

Newton, N. C., Champion, K. E., Slade, T., Chapman, C., Stapinski, L., Koning, I., Tonks, Z., & Teesson, M. (2017). A systematic review of combined student- and parent-based programs to prevent alcohol and other drug use among adolescents. *Drug and Alcohol Review, 36*(3), 337–351. https://doi.org/10.1111/dar.12497

Patock-Peckham, J., Cheong, J., Balhorn, M. E., & Nagoshi, C. T. (2001). A social learning perspective: A model of parenting styles, self-regulation, perceived drinking control, and alcohol use and problems. *Alcoholism Clinical and Experimental Research*, *25*(9), 1284–1292. https://doi.org/10.1111/j.1530-0277.2001.tb02349.x

Patrick, M. E., Maggs, J. L., Greene, K. M., Morgan, N. R., & Schulenberg, J. E. (2014). The link between mother and adolescent substance use: Inter-generational findings from the British Cohort Study. *Longitudinal and Life Course Studies*, *5*(1), 56–63. https://doi.org/10.14301/llcs.v5i1.241

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afi, R., Allen, N. B., Arora, M., Azzopardi, P., & Baldwin, W. (2016). *Our future: a Lancet commission on adolescent health and wellbeing*. *6736*(16). https://doi.org/10.1016/S0140-6736(16)00579-1

Reis, L. F., Surkan, P. J., Valente, J. Y., Bertolla, M. H. S. M., & Sanchez, Z. M. (2020). Factors associated with early sexual initiation and unsafe sex in adolescents: Substance use and parenting style. *Journal of Adolescence*, *79*(August 2019), 128–135. https://doi.org/10.1016/j.adolescence.2019.12.015

Sanchez, Z. M., Valente, J. Y., Sanudo, A., Pereira, A. P. D., Schneider, D. R., & Andreoni, S. (2018). Effectiveness evaluation of the school-based drug prevention program #Tamojunto in Brazil: 21-month follow-up of a randomized controlled trial. *International Journal of Drug Policy*, *60*(August 2017), 10–17. https://doi.org/10.1016/j.drugpo.2018.07.006

Smith, P. K., Smith, C., Osborn, R., & Samara, M. (2008). A content analysis of school anti-bullying policies: Progress and limitations. *Educational Psychology in Practice*, *24*(1), 1–12. https://doi.org/10.1080/02667360701661165

Tomczyk, S., Isensee, B., & Hanewinkel, R. (2016). Latent classes of polysubstance use among adolescents-a systematic review. *Drug and Alcohol Dependence*, *160*, 12–29. https://doi.org/10.1016/j.drugalcdep.2015.11.035

UNODC (2009). *Guide to implementing family skills training programmes for drug abuse prevention*. New York. https://syntheticdrugs.unodc.org/uploads/syntheticdrugs/res/library/prevention_html/Guide_to_implementing_family_skills_training_programmes_for_drug_abuse_prevention.pdf

UNODC, U. N. O. for D. C., and C. P. (2018). International Standards on Drug Use Prevention - Second updated edition. United Nations Office on Drugs and Crime and the World Health Organization. http://www.unodc.org/documents/prevention/standards_180412.pdf

Valente, J., & Sanchez, Z. (2020). *Aplicando a modelagem de equações estruturais ao campo da prevenção ao uso de drogas: análises resultantes de um ensaio controlado randomizado para avaliação do programa de prevenção ao uso de drogas #Tamojunto*. Universidade Federal de São Paulo.

Valente, J. Y., Cogo-Moreira, H., & Sanchez, Z. M. (2018). Predicting latent classes of drug use among adolescents through parental alcohol use and parental style: A longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, *0*(0), 1–13. https://doi.org/10.1007/s00127-018-1645-4

Valente, J. Y., Cogo-Moreira, H., & Sanchez, Z. M. (2019). Evaluating the effects of parenting styles dimensions on adolescent drug use: Secondary analysis of #Tamojunto randomized controlled trial. *European Child & Adolescent Psychiatry*, *0123456789*. https://doi.org/10.1007/s00787-019-01410-9

Walters, G. D. (2020). School-age bullying victimization and perpetration: A Meta-analysis of prospective studies and research. *Trauma Violence & Abuse*, 152483802090651. https://doi.org/10.1177/1524838020906513

WHO (2011). *Young people: health risks and solutions*.

WHO (2020). *Global school-based student health survey (GSHS)*.

Wills, T. A., Gibbons, F. X., Gerrard, M., Murry, V. M., & Brody, G. H. (2003). Family Communication and Religiosity related to Substance Use and sexual behavior in early adolescence: A test for pathways through self-control and prototype perceptions. *Psychology of Addictive Behaviors*, *17*(4), 312–323. https://doi.org/10.1037/0893-164X.17.4.312

Yap, M. B. H., Cheong, T. W. K., Zaravinos-Tsakos, F., Lubman, D. I., & Jorm, A. F. (2017). Modifiable parenting factors associated with adolescent alcohol misuse: A systematic review and meta-analysis of longitudinal studies. *Addiction*, *112*(7), 1142–1162. https://doi.org/10.1111/add.13785

Zuquetto, C. R., Opaleye, E. S., Feijó, M. R., Amato, T. C., Ferri, C. P., & Noto, A. R. (2019). Contributions of parenting styles and parental drunkenness to adolescent drinking. *Brazilian Journal of Psychiatry*. https://doi.org/10.1590/1516-4446-2018-0041