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Parental protective and risk factors regarding cannabis use in adolescence: A national sample from the Chilean school population

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ABSTRACT

Background: Research has increased our understanding of the parental factors associated with the initiation and development of cannabis use disorder in adolescents, but few studies about this have been performed in middle- or low-income countries.

Objective: First, to examine whether perceived past parental drug use, parental monitoring, and attitude toward adolescent cannabis use are associated with general and problematic cannabis use in Chilean adolescents. Second, to explore whether perceived past parental drug use weakens the associations of protective factors with general and problematic adolescent cannabis use.

Methods: Regression analyses were performed on cross-sectional data from a multistage probabilistic sample stratified by clusters (municipalities, school and grade) of 43,060 students (47% male, mean age 15.5 years) from grades 8 to 12, which was collected from the Chilean National School Survey on Drug Use (2013).

Results: Perceived past parental drug use increased the likelihood of adolescent cannabis use in general, but not its problematic use. Parental monitoring of adolescents' whereabouts and parental opposition to adolescent cannabis use decreased the likelihood of adolescent cannabis use in general, as well as problematic use. Perceived past parental drug use only interacted with parental monitoring of school activities.

Conclusions: In line with research from the United States, the Netherlands and Spain, parental monitoring of adolescents' whereabouts and a strong parental opposition to cannabis use appear to be protective factors, irrespective of past parental use. However, the effectiveness of monitoring adolescents' school activities seems to decrease when parents are perceived as having used drugs in the past.

Introduction

An early initiation of drug use has been associated with a higher likelihood of injuries, violence, substance use disorder, mental health problems, and chronic disease later in life (1). Individuals who develop problematic drug use (causing major health and social problems that require treatment) (2), before rather than after the age of 15, have been shown to use drugs for longer periods of time before they are able to abstain for one year (3). Cannabis is the illicit drug most used by adolescents (10–19 years old) and the substance use disorder more frequently diagnosed in young people (15–24 years old) (4). However, even though much research has been done to gain a better understanding of the factors associated with both the initiation and development of cannabis use disorder in adolescents, few of these studies have been performed in high-income countries. More research is needed to confirm that these findings also apply in low- and middle-income countries (5–7). The current study focuses on cannabis use in Chilean adolescents. This is especially important because in 2017, the annual prevalence of cannabis use was even higher in Chilean adolescents (34.2% of 10th grade students) (8) than in adolescents in the United States (25.5% of 10th grade students) (9), the Netherlands and Spain (22% and 31% of 15–16 years old students, respectively) (10).

As a risk factor, drug use within the family has received the most attention, with studies showing that parental drug use considerably increases the risk of adolescent drug use. In contrast to the well-examined role of current parental drug use (11,12), as well as the role of parental history of substance use disorder (13,14), studies have not examined the role of adolescents’ perceptions of past parental drug use. According to problem behavior theory by Jessor & Jessor, the perceived
environment system may instigate (or control against) drug use. In this system, parents may not only be positive role models and give support to their child, but also instigate negative or deviant behavior in their child if the parent behaves in less conventional ways (15). Thus, perceiving that parents used or experimented with drugs when they were young may encourage adolescents to use drugs themselves. Studies have shown that Latino immigrant families rate higher than North American families in ‘familism’, a cultural value relating to strong family ties, support and loyalty (16). This may suggest that parents are even more influential regarding less conventional behaviors that violate legal norms in Chilean adolescents, when compared to North American adolescents.

Protective factors that have been studied include parental monitoring and negative parental attitudes toward adolescent drug use. Even though monitoring has different dimensions, many researchers agree that knowledge of one’s children’s activities seems to be a critical factor that might prevent drug use in youth (17,18). This is because monitoring activities is a way of becoming involved in adolescents’ decisions (19,20), and encourages adolescents to avoid certain places, friends and/or behaviors that would be disapproved of by their parents. Thus, parents promote self-regulatory behaviors in children through monitoring (15). Research from the United States (17,18,20–22), Spain (19) and the Netherlands (23) has revealed that parental monitoring is associated with onset of use and a lower probability of adolescent use. In addition, studies from the United States have revealed that adolescents are less likely to use drugs if their parents show disapproving attitudes toward drug use (12,24–26). However, there are also a number of studies from the United States that found no such associations (22,27), one of them with Latino adolescents (21). Furthermore, one study from the United States found that only strong (rather than moderate) parental disapproval was associated with decreased adolescent cannabis use (15). In addition, we do not know whether potential parental risk and protective factors interact. The question remains as to whether adolescents’ perceptions of past parental drug use not only increase the likelihood of cannabis use in adolescents, but also diminish the potential protective impact of parental monitoring and a negative parental attitude toward use.

Therefore, the present study attempted to fill in these aforementioned gaps. First, examining a Chilean sample, this study tested the associations between past parental drug use, parental monitoring and parental attitude toward adolescent cannabis use, as perceived by adolescents, and the presence and severity of adolescent cannabis use. It was hypothesized that adolescents who perceived that their parents used drugs in the past were more likely to use drugs themselves. In contrast, greater parental monitoring of adolescent whereabouts, school activities and friends, as well as a more negative parental attitude toward adolescent cannabis use, were hypothesized to be associated with a lower likelihood of adolescent cannabis use in general and in relation to problematic use. Second, this study explored whether perceived past parental drug use moderated the associations between parental monitoring and attitude, and adolescent cannabis use. Specifically, it was hypothesized that perceived past parental drug use would weaken the associations between parental protective factors (i.e., monitoring and negative attitude toward drug use) and the adolescent outcome variables (i.e., general and problematic cannabis use).

**Methods**

**Participants**

The National Survey on Drug Use in the School Population is a cross-sectional study conducted every two years, which started in 2001. The sample analyzed each time is representative of the Chilean school population from grades 8 to 12, including male and female students attending all types of school (public, private, and mixed-funds). The sample size was based on the number of students registered in the educational system of the Ministry of Education. The study design was a multistage probabilistic sample stratified by clusters. Municipalities were randomly selected from urban areas of the country. The next stage involved random selection of schools and grades. The final units of sampling were the classroom grades, which served as the clusters. Then, from selected classrooms, randomly selected students were invited to answer a self-administered questionnaire. The response rate was 85.6%. The national survey is described in more detail in the National Report (28). This research included 43,060 adolescents from the survey conducted in 2013. The research department from SENDA (the national alcohol and drug service of the Chilean government) approved the survey information used in this study, and all ethical safeguards relevant to human participants involved in data collection were met. Assent was verbally obtained from all individual participants, and passive informed consent was used with parents (i.e., parents signed a form if they refused to allow their child to participate in the research) (29). Participants were informed that the survey was
completely anonymous and voluntary, and that the data would be handled under strict confidentiality protocols in accordance with national legislation (30).

**Measures**

**Explanatory variables**
The following variables include questions referring to tutors, a term used to identify the responsible adult, usually parents (93.5%) or grandparents (2.6%).

**Perceived past parental drug use.** Participants answered yes or no to the question “Regarding your parents or tutors, do you think that they tried illicit drugs when they were young? (Do not include alcohol, tobacco or tranquilizers).”

**Parental monitoring.** This variable was assessed with three items: 1) “After school or during weekends, how often do your parents or tutors know where you are (when you are away for a period of an hour or longer)?” (1 = Never or almost never to 3 = Always or almost always), 2) “How aware are your parents or tutors about what you do at school?” (1 = very to 4 = not at all), and 3) “In general, how well do your parents or tutors know your close friends?” (1 = a lot to 3 = little). Items 2 and 3 were reverse-scored, with a higher value indicating higher monitoring. As the items were not sufficiently correlated (Cronbach’s alpha = 0.37), they were treated as separate variables in the analyses.

**Parental attitude toward adolescents’ cannabis use.** Participants were asked the question “How do you think your father/mother/tutor would react if s/he discovered that you used marijuana?” Separate answers were required for mother and father. Answers were based on a 5-point Likert scale, ranging from 1 = extremely annoyed to 5 = indifferent, with a sixth option for when no father or mother was present. Items were reverse-scored and averaged into a single scale if adolescents answered for both parents (Cronbach’s alpha = 0.84). A higher score indicated a more negative attitude toward adolescents’ cannabis use.

**Covariates**

Based on their associations with cannabis use in previous research (5,11,31), we included the following variables as potential covariates:

**Demographics.** Demographic variables included age, gender, type of school and occupational status. Imputation was carried out for missing data regarding age (N = 890; 1.5%), using grade as a proxy (e.g., 13 years of age for 8th grade and 17 years of age for 12th grade students). We used type of school as a proxy for socio-economic status (SES) (private as high level, mixed funds as middle level, and public as low level), as Chilean society is highly stratified and SES is highly correlated with type of school (32). Occupational status was recorded with yes/no answers to the question “Do you regularly work in addition to studying?”

**Adolescent alcohol use within the previous year.** Participants were asked to indicate the last time they had used alcohol by choosing 1 of 4 options: 1 = within the last 30 days, 2 = more than 30 days ago but less than 12 months ago, 3 = more than 12 months ago, and 4 = I have never tried alcohol. Thus, participants who answered options 1 or 2 met the criterion for alcohol use within the previous year (28).

**School risk.** This variable was assessed with three questions (requiring yes/no responses) such as “Do you think there are students that bring, share or drink alcohol within your school?” The items were averaged into a single scale if at least two answers were given (Cronbach’s alpha = 0.74). A higher score indicated higher school risk.

**Perceived peer cannabis use.** This variable required participants to answer the question “How many of your friends regularly use marijuana (every weekend or more often)?” Responses were given on a 5-point Likert scale ranging from 1 = none to 5 = all or almost all.

**Perceived sibling drug use.** This variable was assessed by the question “As far as you know, do any of your siblings use illicit drugs?” Response options ranged from 1 = I am sure they have not done it to 4 = I am sure they do it, and the option 0 = I do not have siblings.

**Outcome variables**

**Adolescent cannabis use within the previous year.** This variable was assessed in a similar way to adolescent alcohol use within the previous year.

**Adolescent problematic cannabis use.** The Cannabis Abuse Screening Test (CAST) is a 6-item scale that assesses the degree to which cannabis use is harmful (2). The items (e.g., “Have you ever smoked marijuana before midday?”) were answered on a 5-point Likert scale (ranging from 1 = never, to 5 = very often, plus the option 0 = I have never tried marijuana) (Cronbach’s alpha = 0.96). Because the continuous variable was not normally distributed (i.e., skewness = 1.8; kurtosis = 4.3), we used the dichotomized version of the scale (2). Items
were dichotomized into risk/no risk (for adolescents who answered ≥1) and summed up, with the final score ranging from 0 to 6. Based on this final score, participants who obtained 4 or more points met the criterion for problematic cannabis use.

**Data analysis**

Data management and analysis were performed using SPSS 22.0 (2013). After coding all variables and carrying out imputation for age, we excluded participants with incomplete information for outcomes, predictors or covariates (8.8%). We followed data-cleaning criteria used every year by the team in charge of the National Survey (Figure 1) (33). Participants were therefore excluded in the following cases:

1. If they responded inconsistently between items on the CAST (i.e., indicating not using cannabis in some items, but then also declaring a degree of problematic use in other items) (8.7%).
2. If they responded inconsistently between cannabis use within the previous year and problematic cannabis use (i.e., indicating not using cannabis within the previous year but then also indicating a degree of problematic use in items on the CAST) (6.2%). The exceptions were participants who claimed not to have used cannabis in the last year but also selected option 1 never (e.g., *never smoked cannabis before midday*) for all items of the CAST. Our assumption was that adolescents not using drugs misunderstood the option *never* as indicating “no use of the drug”, which was option *0 I have never tried marijuana*. These cases were changed accordingly to *no marijuana use* in the CAST.
3. If they declared overuse (0.3%) (i.e., having used 10 or more drugs in the last year), because the assumption is that adolescents are too young to have tried more than 10 drugs (30).
4. If they responded inconsistently between three questions (i.e., “Have you ever tried drug x?” *When was the first time you used drug x?* and “When was the last time you used drug x?”) for at least three of seven drugs included in the questionnaire (1.5%) (for more detail, see supplemental material, Table A).

The original sample size was therefore reduced by 25.6% (n = 14,786) to 43,060. Adolescents from the excluded group were more likely to be older males, using more drugs, and having more problematic use than those adolescents in the included group (p < .001, results not presented). Similarly, these individuals seemed to live within contexts of higher risk (i.e., having parents, siblings and friends who used drugs). A possible explanation could be that because these adolescents were more at-risk, they were more afraid of always giving complete and/or truthful answers regarding their drug use.

![Flow chart](image.png)

**Figure 1.** Flow chart of research sample size.
To increase generalizability and to account for the sample design, analyses were performed with the complex samples module of SPSS, which takes into account variables used for clustering the sample (i.e., municipality and class). Therefore, results are shown as weighted (i.e., OR$_{wt}$ = weighted odds ratio). Due to the large sample, the threshold for statistical significance was set at $p = .01$ for all analyses, and we conducted false discovery rates using the Benjamini-Hochberg method (34). Two logistic regression analyses were performed to test parental factors: one regarding cannabis use within the previous year (whole group) and a second regarding problematic cannabis use (subsample of adolescents using cannabis) as dependent variables. These analyses were performed in three steps: 1) univariate analyses, 2) multivariate analyses, including all predictors and controlling for covariates, and 3) analyses including interaction terms with perceived past parental use, monitoring and attitude toward drug use.

**Results**

Participants had a mean age of 15.5 years (SE = 0.04; range = 12–19) and 47% were male (see Table 1). Thirty three percent of adolescents were in a public school, 60% were in a mixed-funds school, and 6.8% were in a private school. Less than a fifth of the participants studied and worked (16%; N = 6,846).

Adolescent cannabis use (Table 2) was associated with all predictors in the univariate analyses (step 1), but not with parental monitoring of adolescents’ friends ($p = .05$) in the multivariate analysis (step 2). Adolescents were 2.33 times more likely to use cannabis if they thought that their parents had used drugs in their youth. On the contrary, adolescents were 1.49 times less likely (1/OR = 1/0.67) to use cannabis when parents monitored adolescents’ whereabouts to a higher degree, and 1.15 times less likely to use it when parents monitored adolescents’ school activities to a higher degree. Similarly, adolescents were 1.02 times less likely to use cannabis when parents displayed a more negative attitude toward adolescent cannabis use. Moderation analysis (step 3) showed that only one interaction was associated with adolescent cannabis use. Specifically, parental monitoring of adolescents’ school activities decreased the likelihood of adolescents using cannabis depending on whether adolescents believed that their parents used drugs in their youth or not. Additional analysis showed that monitoring of adolescents’ school activities was associated with adolescent cannabis use only for the group that did not perceive that their parents used drugs in their past.

Among adolescents using cannabis (Table 3), univariate analyses (step 1) showed that problematic use was associated with all protective predictors, but was not associated with perceived past parental drug use ($p = .42$). Multivariate analysis (step 2) showed that parental monitoring of adolescents’ whereabouts and friends, as well as parental attitude, remained significantly associated with problematic use. However, parental monitoring of school activities was no longer associated with problematic use in this analysis ($p = .46$). Furthermore, after applying the Benjamini-Hochberg method, parental monitoring

**Table 1. Summary of statistics. Weighted sample characteristics (number, percentage, mean and standard error).**

<table>
<thead>
<tr>
<th>Variables</th>
<th>items</th>
<th>n</th>
<th>$%_{wt}$ (99% CI)</th>
<th>$M_{wt}$ (99% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>1</td>
<td>43,060</td>
<td>100 (100–100)</td>
<td>15.5 (15.4–15.6)</td>
</tr>
<tr>
<td>Age (range: 12–19)</td>
<td>1</td>
<td>43,060</td>
<td>47.6 (45.8–49.4)</td>
<td></td>
</tr>
<tr>
<td>Gender (male)</td>
<td>1</td>
<td>43,060</td>
<td>16.2 (15.3–17.1)</td>
<td></td>
</tr>
<tr>
<td>Working (yes)</td>
<td>1</td>
<td>43,060</td>
<td>30.0 (30.1–30.2)</td>
<td></td>
</tr>
<tr>
<td>Type of School (SES)</td>
<td>1</td>
<td>43,060</td>
<td>60.2 (57.2–63.2)</td>
<td></td>
</tr>
<tr>
<td>Public (Low-SES)</td>
<td>1</td>
<td>43,060</td>
<td>6.8 (5.8–8.0)</td>
<td></td>
</tr>
<tr>
<td>Mixed-Funds (Middle-SES)</td>
<td>1</td>
<td>43,060</td>
<td>26.0 (16.2–22.9)</td>
<td></td>
</tr>
<tr>
<td>Private (High-SES)</td>
<td>1</td>
<td>43,060</td>
<td>8,947 (19,647)</td>
<td></td>
</tr>
<tr>
<td>Adolescent Alcohol Use within the Past Year (yes)</td>
<td>1</td>
<td>43,060</td>
<td>26,031 (60.6)</td>
<td></td>
</tr>
<tr>
<td>School Risk (range: 0–3)</td>
<td>1</td>
<td>43,060</td>
<td>1.5 (1.4–1.5)</td>
<td></td>
</tr>
<tr>
<td>Peer Cannabis Use (range: 1–5)</td>
<td>1</td>
<td>43,060</td>
<td>1.9 (1.8–1.9)</td>
<td></td>
</tr>
<tr>
<td>Current Sibling Drug Use (range: 1–4) *</td>
<td>1</td>
<td>43,060</td>
<td>1.6 (1.5–1.6)</td>
<td></td>
</tr>
<tr>
<td>Past Parental Drug Use (yes)</td>
<td>1</td>
<td>43,060</td>
<td>38.1 (37.0–39.3)</td>
<td></td>
</tr>
<tr>
<td>Parental Monitoring: Whereabouts (range: 1–3)</td>
<td>1</td>
<td>43,060</td>
<td>2.7 (2.7–2.7)</td>
<td></td>
</tr>
<tr>
<td>Parental Monitoring: School Activities (range: 1–4)</td>
<td>1</td>
<td>43,060</td>
<td>3.3 (3.2–3.3)</td>
<td></td>
</tr>
<tr>
<td>Parental Monitoring: Friends (range: 1–3)</td>
<td>1</td>
<td>43,060</td>
<td>2.3 (2.2–2.3)</td>
<td></td>
</tr>
<tr>
<td>Parental Attitude Toward Cannabis Use (range: 1–10)</td>
<td>2</td>
<td>43,060</td>
<td>8.0 (8.0–8.1)</td>
<td></td>
</tr>
<tr>
<td>Adolescent Cannabis Use within the Past Year (yes)</td>
<td>1</td>
<td>43,060</td>
<td>8,947 (22.9)</td>
<td></td>
</tr>
<tr>
<td>Adolescent Problematic Cannabis Use (yes)</td>
<td>6</td>
<td>43,060</td>
<td>4.5 (4.0–5.1)</td>
<td></td>
</tr>
</tbody>
</table>

* The majority of the participants had at least one sibling (89.3%).

n = number; $\%_{wt}$ = weighted percentage; CI = confidence interval; $M_{wt}$ = weighted mean.

Type of school is a proxy for socioeconomic status (SES).
Table 2. Results of the binary logistic regression analysis for adolescent cannabis use within the previous year.

<table>
<thead>
<tr>
<th>(Ref. Category: No cannabis use within the past year)</th>
<th>Step 1: Univariate analyses</th>
<th>Step 2: Multivariate analysis a</th>
<th>Step 3: Interaction terms a, b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (99% CI)</td>
<td>p (BH method)</td>
<td>OR (99% CI)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.004</td>
<td>&lt;.001</td>
<td>(0.002–0.009)</td>
</tr>
<tr>
<td>Perceived Past Parental Drug Use (Yes)</td>
<td>4.12 (3.70–4.58)</td>
<td>&lt;.001</td>
<td>2.33 (2.06–2.64)</td>
</tr>
<tr>
<td>Parental Monitoring: Whereabouts</td>
<td>0.48 (0.44–0.52)</td>
<td>&lt;.001</td>
<td>0.67 (0.61–0.74)</td>
</tr>
<tr>
<td>Parental Monitoring: School Activities</td>
<td>0.65 (0.61–0.70)</td>
<td>&lt;.001</td>
<td>0.87 (0.80–0.95)</td>
</tr>
<tr>
<td>Parental Monitoring: Friends</td>
<td>0.83 (0.77–0.89)</td>
<td>&lt;.001</td>
<td>1.07 (0.98–1.17)</td>
</tr>
<tr>
<td>Parental Attitude Toward Cannabis Use</td>
<td>0.92 (0.91–0.94)</td>
<td>&lt;.001</td>
<td>0.98 (0.96–0.99)</td>
</tr>
<tr>
<td>PM-W * PPDU (Yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM-SA * PPDU (Yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATMU * PPDU (Yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| a: Controlling for age, gender, work, type of school (SES), adolescents’ alcohol use within the previous year, school risk, peer cannabis use, and siblings’ drug use. b: Interactions were assessed only for significant protective factors in step 2. ORₚ = weighted odds ratio; CI = confidence interval; p = p-value; BH method = Benjamini-Hochberg method; PPDU = Perceived Past Parental Drug Use; PM-W = Parental Monitoring: Whereabouts; PM-SA = Parental Monitoring: School Activities; PATMU = Parental Attitude Toward Cannabis Use. n = 43,060.

Table 3. Results of the binary logistic regression analysis for adolescent problematic cannabis use (subsample: adolescents using cannabis).

<table>
<thead>
<tr>
<th>(Ref. Category: No problematic cannabis use)</th>
<th>Step 1: Univariate analyses</th>
<th>Step 2: Multivariate analysis a</th>
<th>Step 3: Interaction terms a, b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (99% CI)</td>
<td>p (BH method)</td>
<td>OR (99% CI)</td>
</tr>
<tr>
<td>Intercept</td>
<td>3.49</td>
<td>.040</td>
<td>(0.73–16.80)</td>
</tr>
<tr>
<td>Perceived Past Parental Drug Use (Yes)</td>
<td>0.94 (0.74–1.19)</td>
<td>.471</td>
<td>0.81 (0.64–1.03)</td>
</tr>
<tr>
<td>Parental Monitoring: Whereabouts</td>
<td>0.59 (0.51–0.70)</td>
<td>&lt;.001</td>
<td>0.67 (0.57–0.78)</td>
</tr>
<tr>
<td>Parental Monitoring: School Activities</td>
<td>0.83 (0.72–0.97)</td>
<td>.001</td>
<td>0.96 (0.82–1.12)</td>
</tr>
<tr>
<td>Parental Monitoring: Friends</td>
<td>0.72 (0.61–0.85)</td>
<td>&lt;.001</td>
<td>0.84 (0.70–0.99)</td>
</tr>
<tr>
<td>Parental Attitude Toward Cannabis Use</td>
<td>0.92 (0.88–0.95)</td>
<td>&lt;.001</td>
<td>0.95 (0.91–0.98)</td>
</tr>
<tr>
<td>PM-W * PPDU (Yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PATMU * PPDU (Yes)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| a: Controlling for age, gender, work, type of school (SES), adolescents’ alcohol use within the previous year, school risk, peer cannabis use, and siblings’ drug use. b: Interactions were assessed only for significant protective factors in step 2. Note 1: ORₚ = weighted odds ratio; CI = confidence interval; p = p-value; BH method = Benjamini-Hochberg method; PPDU = Perceived Past Parental Drug Use; PM-W = Parental Monitoring: Whereabouts; PATMU = Parental Attitude Toward Marijuana Use. n = 8,946.

of friends was no longer significantly associated with problematic use. Thus, adolescents using cannabis were 1.49 times less likely to develop problematic use when parents monitored their adolescents’ whereabouts more, and were 1.05 times less likely to do so when parents displayed a more negative attitude toward adolescent cannabis use. Moderation analysis (step 3) showed that no interactions were significantly associated. A sensitivity analysis was conducted with the CAST as a continuous variable,
but showed neither changes in significance nor in direction of associations (supplemental material, Table B).

Discussion

This study examined the role of parental risk and protective factors concerning general and problematic cannabis use in adolescents, and investigated the interaction between these factors in a Chilean national sample. Perceived past parental drug use increased the likelihood of adolescent cannabis use in general, but not its problematic use. Parental monitoring of adolescents’ whereabouts and parental opposition to adolescent cannabis use decreased the likelihood of adolescent cannabis use in general, as well as problematic use. Perceived past parental drug use only interacted with parental monitoring of school activities. That is, monitoring activities were associated with decreased drug use if parents had not used drugs in the past.

Concerning the risk factor addressed by this study, perceived past parental drug use was significantly associated with general cannabis use but was not associated with problematic use. Problem behavior theory provides a possible explanation for this finding. Past parental drug use may act as a less conventional or deviant parental behavior that influences adolescents (15). Thus, adolescents may think that it is possible to use cannabis during adolescence without consequences. It may, therefore, seem acceptable to try cannabis at this stage in life.

Past parental drug use did not seem to instigate the prolonged use of cannabis in a problematic way. It also appeared that when adolescents perceived that their parents had used drugs in their youth, the effectiveness of monitoring adolescents’ school activities decreased in relation to the prevention of adolescent cannabis use, although the effect was small. In the context of the high level of cannabis use in Chilean adolescents, this risk factor may be important to consider. As discussed in the introduction, Chilean parents are perhaps more influential regarding adolescent behaviors than parents from the United States or Europe. This has been shown in research comparing Latino and North American families (16). It would be interesting in future research to identify whether this risk factor applies to other countries, or whether it is more of a Latin American factor.

Regarding protective factors, parental monitoring appeared to be a protective factor as a whole, although we found some differences between the three aspects assessed. Similarly, parental attitude toward cannabis use was consistently found to be associated with adolescent use and problematic use. These results from our Chilean sample are in line with previous research done in the United States, the Netherlands and Spain, where higher monitoring (17) and negative parental attitudes (24) were associated with lower risk of cannabis use in the parents’ offspring. However, odds ratios regarding parental attitude indicated a small effect size and have to be taken cautiously due to the large sample size. In line with a previous study (15), additional analyses (see supplemental material, Table C) showed that only strong parental disapproval was associated with lower adolescent cannabis use, regarding general and problematic use (OR_{net} ≤ 0.7). Additionally, our findings suggest that regardless of whether adolescents perceived that their parents had used drugs in the past or not, parents may reduce cannabis use in their adolescents in part by monitoring their adolescents’ whereabouts and having a strong attitude against drug use. Therefore, both parental protective factors may help parents to be involved in adolescents’ decisions (20), promoting self-regulatory behaviors in adolescents (15). That is, adolescents may avoid drug use since they may be disapproved of or punished for this behavior.

The present study has several strengths. The results were based on a large and representative national database (43,060 participants), with a strong sampling procedure, including multiple data and empirically-driven covariates. Furthermore, this analysis focused on a middle-income country, instead of the high-income countries usually studied in this field. Moreover, these research findings make a valuable contribution to the existing literature on the potential influence of parents that have used drugs in their youth. Nonetheless, several limitations have to be considered. The cross-sectional design did not permit conclusions regarding causality. We only based our findings on adolescents’ reports, with the consequent lack of other perspectives (i.e., parental reports). However, in the case of this study, it may be more important to ascertain what adolescents think regarding whether their parents used cannabis in their youth, rather than what their parents actually did. Another limitation to note is that there was low consistency between the three parental monitoring items used, which prevented the use of a summary monitoring measure. Furthermore, we used other global single-item variables, such as alcohol use in the past year (yes/no) and other covariates, but although single-item variables have been found to be reliable (35), future designs should overcome this potential limitation with multi-item variables that provide more detailed information. Finally, the excluded participants appeared to be at higher risk, which may have led to some restrictions of range in the analyses.
Our results have some implications. Because perceived past parental drug use seems to be a potential risk factor concerning cannabis use in adolescents, it may be interesting for programs aimed at preventing adolescent cannabis use to explore this area. Although past parental drug use is a factor that cannot be changed, programs may benefit from advising parents on how to discuss this information with their children. Regarding protective factors, prevention and treatment programs may be improved by developing strategies to strengthen monitoring, focusing mainly on monitoring where adolescents spend their time when not at school. Likewise, programs could also develop strategies to enhance negative attitudes toward adolescent cannabis use. It is essential to discuss with parents what their perceptions, beliefs, and attitudes toward cannabis use are in general, as well as the ways that they communicate these messages with their offspring.

In conclusion, these findings suggest that the risk factor of perceived past parental drug use is of importance only when initiating cannabis use. Nevertheless, protective factors appear to be of similar importance regarding the likelihood of developing general or problematic cannabis use. Thus, even when adolescents perceive that parents have used drugs in the past, a high degree of monitoring of adolescents’ whereabouts and a strong negative attitude toward cannabis use seem to be protective against overall cannabis use and problematic use in adolescents. The only exception regarding parental monitoring was the monitoring of school activities. This might be important to stress when supporting and advising parents about parenting. It may also be beneficial to reassure parents that they can display a negative attitude toward their child’s drug use, even if they themselves have used drugs in their past. Some parents may feel that they are not entitled to do so; however, the results of this study suggest that it might be worthwhile.

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**Conflicts of interest**

The authors declare that they have no conflict of interest.

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