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Prevalence and determinants of resistance to use drugs among adolescents who had an opportunity to use drugs[☆]

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ABSTRACT

Background: As drugs remain ubiquitous and their use increasingly viewed as socially normative, vulnerable population groups such as adolescents face continued and growing risk. A better understanding of the factors that discourage individuals from initiating drug use, particularly in enabling scenarios, is therefore needed. This study aims to identify individual, interpersonal and school-contextual factors associated with resistance to using drugs in the presence of a drug use opportunity among adolescents in Bogotá, Colombia.
Methods: Data are analyzed from 724 school-attending adolescents (15.1 years, SD = 1.3) who have had an opportunity to use drugs. Schools were selected in a multistage probability cluster sample. Random intercept multilevel logistic regression models were implemented to estimate the effect of individual, interpersonal and school-contextual level variables on the likelihood of resisting using drugs.
Results: Drug use resistance was observed in less than half (41.4%) of those students who experienced an opportunity to use drugs. Drug use resistance was strongly associated with having experienced a passive drug use opportunity (AOR = 3.1, 95% CI = 2.0, 4.9), the number of drugs offered (AOR = 0.7, 95% CI = 0.6, 0.8) and family factors such as not having a drug-using first-degree relative (AOR = 2.3, 95% CI = 1.2, 4.3) and a high degree of parental supervision (AOR = 1.9, 95% CI = 1.0, 3.2).
Conclusions: A large proportion of students who experienced a drug-use opportunity did not initiate drug use despite living in a context of high drug availability and social disorganization. The findings highlight the need for effective family-based drug use prevention interventions within the Colombian context.

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1. Introduction

Worldwide, drugs remain ubiquitous despite intensive military, legal and political efforts to reduce their production, trafficking and commercialization over the last decades. Today, it is estimated that globally between 167 and 375 million people aged 15–64 years old use drugs at least once a year (United Nations Office on Drugs and Crime, 2013). Worrisomely, the drug use phenomenon is shifting toward new markets and novel drugs, with an increasing use of drugs in developing countries and a growing demand for amphetamine-type stimulants and prescription drugs everywhere (United Nations Office on Drugs and Crime, 2013).

Globalized drug markets have primarily affected young populations (United Nations Office on Drugs and Crime, 2013). According to the World Mental Health Survey Initiative the risk of drug use initiation at any given age is consistently higher in more recent cohorts than in older cohorts (Degenhardt et al., 2008). Moreover, many of these new drug markets emerge in the context of poverty, where youth experience limited opportunities to develop, drug policy lacks scientific support, and social practices and environmental cues that enable and reinforce drug use behaviors prevail (Singer, 2008; United Nations Office on Drugs and Crime, 2013).

In Colombia, drug production, trafficking, and use pose a tremendous social burden by fueling armed conflict, transforming moral values, and promoting corruption, individualism, and mistrust (Brook et al., 2007; Ministerio de la Protección Social, 2005; Siqueira and Brook, 2003; Thoumi, 2002). Results from the first comparative study among school adolescents in nine South-American countries organized by the Inter-American Drug Abuse

Control Commission showed that the rate of drug use among youth in Colombia exceeds rates observed in other Latin American countries (Inter-American Drug Abuse Control Commission, 2004). Analyses of the 2008 Colombian National Survey on Psychoactive Substance Use (Ministerio de la Protección Social and Dirección Nacional de Estupefacientes, 2008) and the 2011 National Survey on Psychoactive Substance Use in School Population (Ministerio de Justicia y del Derecho, 2011) also indicate a significant decline in the age of drug use onset. For instance, while the mean age of drug use onset was 23 years old for the 1943–1949 Colombian birth cohort, the mean age of drug use onset was 16 for the cohort born between 1985 and 1991 (Camacho et al., 2010).

Early drug use initiation and regular drug use during adolescence affects critical neurodevelopmental processes that can lead to multiple immediate and long-term consequences. For example, early onset of drug use has been linked to an increased risk for development of drug dependence syndromes (Chen et al., 2009; Grant and Dawson, 1998). Furthermore, longitudinal studies have shown higher risks of cognitive impairments in adults who used drugs regularly during adolescence, compared to those who abstained or were experimental users (Meier et al., 2012). In seeking to understand the mechanisms involved in drug use initiation among adolescents, previous studies have identified factors associated with transition from experiencing a drug use opportunity to drug use onset. Such factors include: male sex, late adolescence, school drop-out, low parental monitoring, smoking, alcohol consumption, low religious devotion or lack of religious affiliation, peer drug use, type of school, and county of origin (Benjet et al., 2007a; Caris et al., 2009; Chen et al., 2004; Dormitzer et al., 2004; Pinchevsky et al., 2012; Van Etten and Anthony, 2001; Wagner and Anthony, 2002; Wells et al., 2011; Wilcox et al., 2002).

Bearing in mind the multiple socio-cultural and political forces driving the drug market and drug use in Colombia, and the pressing need to identify specific factors that contribute to drug abstinence among adolescents, the present study aims to elucidate the role that individual, interpersonal and contextual factors play in promoting drug use resistance among high school students in Bogotá, Colombia. In keeping with the comprehensive ecological model proposed by McLeroy et al. (1988), individual and contextual level factors evaluated in this study were organized in levels of influence. Widely recognized health behavior theories (Ajzen and Fishbein, 1980; Bandura, 1986; Jessor and Jessor, 1977) guided the selection of covariates known to predict drug use. The results of this study may enhance our understanding of the phenomenon of drug use involvement in a context of high drug availability and help establish local priorities for primary prevention and intervention.

2. Methods

2.1. Sampling methods and study participants

We collected data from a multi-stage cluster sample of 2279 8th–10th grade students in 23 schools in Bogota, Colombia (Lopez-Quintero and Neumark, 2010, 2011; Neumark et al., 2012). The sample was selected to reflect the socio-economic characteristics of adolescents registered in Bogotá's school-system. In this report we analyze data from a subsample of 724 students who experienced an opportunity to use drugs such as marijuana, inhalants (e.g., gasoline, ether, glue or "boxer" as its commonly called), cocaine, bazuco (a semi-processed coca-paste mixed with other ingredients) or ecstasy.

Parental consent was requested by sending letters to the parents or legal guardians explaining the study's purpose and content and asking them to return the letter signed if they refuse the student's participation in the survey. Regardless of parental approval, only students assenting to complete the questionnaire participated in the study. Among the total sample, twelve parents refused their child's participation in the study, 44 students declined to participate, and 88 were absent on the day of the survey and on subsequent survey days. Eighty-two students returned incomplete questionnaires or provided incoherent or haphazard responses, or endorsed the opportunity to use a bogus drug ("Cadrina", included as a quality control measure) and were excluded from the analyses. The research protocol was approved by university-based research committees in Colombia and Israel.

The subsample of students who experienced a drug use opportunity was selected based on the question "How old were you when you first had an opportunity to try [drug]?" These drug use opportunities were further classified as "passive" or "active" by asking the students "Who provided you with the opportunity to use (drug) for the first time?" with options that included: (1) I never had the opportunity, (2) I sought it myself, (3) a parent, (4) a sibling, (5) other family member, (6) a friend, (7) another person. Students who answered "I sought it myself" for any drug were classified as having experienced an "active" opportunity, and options 3–7 were classified as having experienced a "passive" opportunity. Any "active" opportunity for any of the five drugs was classified as an "active" opportunity regardless of having experienced a "passive" opportunity for the other drugs.

2.2. Data collection methods

A standardized confidential questionnaire was administered to the students during a 1-h session by a research assistant who answered students' questions about the survey. The research assistant also read each question aloud which helped mitigate reading and literacy barriers, maintain order in the classroom, and enhance confidentiality. The questionnaire was constructed using items from the Drug Use Screening Inventory (DUSI; Tarter, 1990), the Youth Risk Behavior Survey (YRBS; Centers for Disease Control and Prevention, 2003), and particularly the questionnaire used in the multinational PACARDO research project (Dormitzer et al., 2004). Adjustments were made to the questionnaire based on the results of a pilot test and focus group sessions conducted to assess the suitability of the questionnaire with regard to duration, language appropriateness, construct comprehensiveness and answerability. YRBS test-retest reliability estimates were fair to good for self-reported life-time prevalence of legal and illegal drug-use ($\kappa = 0.45$–0.89), last-moth use ($\kappa = 0.42$–0.83), age at-first use ($\kappa = 0.66$–0.71) and offered/sold drugs on school premises ($\kappa = 0.52$) (Brener et al., 2002).

2.3. Study variables

The outcome variable, "drug use resistance", was assessed based on the question "How old were you when you first tried (drug)?". Response options included the age in years at which each specific drug was first used or an option that indicated that the student never used the drug. Students were classified as resistant to drug use when they indicated never having used the drug despite having had an opportunity to do so. A final "drug use resistance" variable was constructed summarizing the responses for the five individual drugs assessed (i.e., marijuana, inhalants, cocaine, bazuco and ecstasy), so that any student who indicated use of any drug given an opportunity were classified finally as non-resistant.

Numerous individual (e.g., socio-demographic, cognitive and psychosocial factors), interpersonal (e.g., family and peer factors) and contextual (e.g., school socio economic status – SES) factors were also assessed.

Socio-demographic and constructs of health behavioral theories [e.g., Theory of Reasoned Action and Planned Behavior; Ajzen and Fishbein, 1980), the Social Learning Theory (Bandura, 1986), and the Problem Behavior Theory (Jessor and Jessor, 1977)] that have been widely recognized as predictors of drug-use opportunity and drug use onset among adolescents were included as intrapersonal (socio-demographic and psychosocial and behavioral factors) and interpersonal level covariates (e.g., family and peer factors). These factors included: sex (male, female), age (<14, 14–16, >16 years), level of knowledge regarding physical and psychological harms of illegal drugs (tertiles), perceived risk of regular drug use (low/high), attitudes toward using illegal drugs (favorable/unfavorable), degree of problematic behavior (tertiles), monthly smoking in the past year (yes/no), lifetime drunkenness (yes/no), degree of parental supervision (quartiles), past-year illegal drug use among first-degree relatives (yes/no), number of drug using friends (0, 1, >1).

Level of knowledge was assessed by 6 questions [e.g., "Does illegal drug use lead to memory loss?" and analyzed in tertiles corresponding to all 6 questions answered correctly (high), 4–5 correct answers (medium) and <4 correct (low)]. Perceived risk of regular drug use was assessed by asking "To what extent do you think people risk harming themselves physically or psychologically, if they use [drug] weekly?". "No risk" or "slight risk" responses for any given drug were recoded as "low perceived risk" and "moderate risk" and "great risk" were recoded into "high perceived risk". Attitudes toward using illegal drugs were assessed with 5 questions such as "Do you think laws against the use of illegal drugs should be stricter?"; respondents who answered any of the questions positively were categorized as having unfavorable attitudes toward drug use. The "degree of problematic behavior" scale was composed of 9 items [(e.g., "During the last 12 months have you hit someone in a fight?", and recoded into tertiles – low (0–2), medium (3–4) and high (5–9)]. Monthly smoking was determined if the student smoked cigarettes at least once a month every month in the past year. Degree of parental supervision was determined by 6 items [(e.g., "Are your parents or guardians often aware of where you are and what you are doing?". The cumulative parental supervision scale was recoded in quartiles as 1st quartile or low parental supervision (0–3), 2nd (4), 3rd (5), and 4th quartile or high parental supervision (6)]. A detailed description of these scales including Cronbach alpha coefficients for internal reliability is presented as supplemental material.

School SES, average drug use at school and exposure to school-based drug prevention programs were included as contextual (school)-level variables. School SES