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Drug Resistance Strategies of Early Adolescents in Mexico: Gender Differences in the Influence of Drug Offers and Relationship to the Offeror

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Abstract

To address increases in substance use among Mexican adolescents, particularly females, US prevention programs are being adapted to the Mexican cultural context. Understanding how responses to substance offers by Mexican adolescents are shaped by gender and relationships to those making offers is an important step in the adaptation process. Using data from Guadalajara, Mexico middle schools (N=431), this pilot study tested for gender differences in the use of several drug resistance strategies commonly taught in US substance abuse prevention interventions. Results indicated that the drug resistance strategies of Mexican early adolescents differ by gender, type of substance offered, and the youth's relationship to the offeror. Contrary to previous research on older Mexican adolescents, in this sample females received more substance offers from age peers than males did, and employed a wider repertoire of drug resistance strategies, including active strategies such as direct refusals. Gender differences in use of the strategies persisted after controlling for number of offers received. There were gender differences in the conditional effects of greater exposure to offers. A larger volume of alcohol and cigarette offers predicted females' use of direct strategies more strongly than for males, but less strongly than males for marijuana offers. Females' use of drug resistance strategies was more strongly associated with offers from family adults, siblings and cousins, while males' use of strategies was predicted more strongly by offers from non-family adults. Interpretations and prevention implications are discussed in light of changing gender norms in Mexico and gendered patterns of substance use.

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Keywords

Drug resistance; Adolescents; Mexican youth; Substance offers; Substance use; Gender differences

Introduction

Mexico and the US are closely connected, not only by a shared border but also by the largest migration flow from a single country in the world (Passel, Cohn, Gonzalez-Barrera, 2012). The high rate of movement across the border makes both population health and the social and cultural dynamics that impact substance use in Mexico highly relevant to the US. Although Mexican adolescents have historically been less likely to use substances than their counterparts in the United States, rates of use among Mexican youth have been increasing since the 1990s (Medina-Mora et al., 2012; Villatoro-Velázquez et al., 2012). Adolescents often experiment with alcohol, tobacco, and/or other substances, however, early substance use initiation is a key risk factor for substance abuse and dependence in adulthood (Ellickson et al., 2001). This strong association is one reason that youth prevention programs designed to delay initiation have been used to address problematic substance use across the life course (Caulkins, Pacula, Paddock, & Chiesa, 2004). In reaction to increases in substance use among youth and dependence in adulthood, the Mexican government has made substance abuse prevention a national priority (Gonzalez, Sanchez, & Leon 2011). One barrier to effective action is the relative dearth of prevention programs that have been developed in Mexico, empirically tested, and found to be efficacious (Marsiglia et al., 2013). Some prevention interventions developed in the United States have been implemented in Mexico but, as yet, few have been rigorously adapted to ensure good fit to the Mexican context (Marsiglia et al., 2013).

There are reasons to believe that many components of prevention programs translate across borders, however, differences across societies in the social and cultural influences that impact substance use behavior, such as changing gender roles, can affect the efficacy of substance use prevention messages, necessitating further cultural adaptation (Félix-Ortiz, Velásquez, Medina-Mora, & Newcomb, 2001; Ferrer-Wreder, Sundell & Mansoor, 2011). For example, the applicability of communication strategies to resist substances taught to adolescents in prevention programs may differ based on gendered norms about acceptable substance use and the context of substance offers (Medina-Mora & Rojas-Guiot, 2003). Some prevailing cultural norms values in Mexico may differ from those in the United States, potentially compromising the relevance of prevention programming in the lives of Mexican youth (Ferrer-Wreder, Sundell & Mansoor, 2012). Before evidence-based prevention programs from high income societies can be adapted for Mexico more needs to be known about the social and cultural contexts in which Mexican adolescents are exposed to offers of alcohol, tobacco and other drugs, the strategies they employ to deal with them, and how drug offers and resistance strategies are shaped by gender and by the nature of relationships between those proffering and receiving the offers. The purpose of this study was to investigate if the most common strategies used by adolescents in the United States to resist offers of alcohol, cigarettes, and marijuana, were also used by adolescents in Mexico and

whether their use of drug resistance strategies differed by gender and the context of the substance offer.

Gender Differences in Substance Use in Mexico

Despite cultural values in Mexico that traditionally considered it unacceptable for women to become intoxicated (Medina-Mora & Rojas-Guiot, 2003; Kulis, Marsiglia, Ayers, Calderón-Tena, & Nuño-Gutierrez, 2011), recent studies in Mexico show that prior gaps in rates of alcohol use and tobacco use between males and females are narrowing rapidly, largely due to increases in use by younger women and girls (Marsiglia et al., 2013; Medina-Mora et al., 2012; Villatoro et al., 2002; Reynales-Shigematsu et al., 2012). In Mexico the historical gender gap in substance use is mirrored in substance use offers, with males receiving more offers than females and at an earlier age. Medina-Mora and & Rojas Guiot (2003) found that 21% of adolescent males and 10% of adolescent females reported being offered drugs and that, given the opportunity, females were just as likely to use (Wagner et al., 2003; Benjet et al., 2007).

Traditional and Changing Gender Role Expectations

A commonly cited factor for the closing gender gap in substance use among Mexican youth is that traditional gender roles regulating substance use are changing (Medina-Mora & Rojas Guiot, 2003; Villatoro, et al., 1998). However, little is known about how shifting gender roles impact the substance use offers received by females and the communication strategies that they employ to resist using alcohol, tobacco and other drugs. While this study does not explicitly measure gender norms it does examine gender differences in depth, and these differences may be explained, at least in part, by traditional norms and values.

The terms most commonly associated with gender role expectations in Mexico are *machismo* and *marianismo*. *Machismo* is characterized by expectations for males to be courageous, strong and virile; to be loyal to the family, serve as its primary or sole provider and protector, and be the family's dominant decision-maker (Gutmann, 2003; Rocha-Sanchez & Diaz-Loving, 2005). Behavioral traits often associated with *machismo* include an exaggerated sense of manliness that is expressed through aggression, risk taking, violence, and excessive alcohol and drug use (Felix-Ortiz & Newcomb 1995; Goldwert 1983; Gutmann, 1996; Kulis, Marsiglia & Hurdle, 2003; Orozco & Lukas 2000; Unger et al., 2006). *Marianismo* describes female social roles conforming to traditional gender norms that socialize women to be spiritually strong, responsible, dedicated and nurturing on behalf of the family, as well as behavioral traits such as passivity and resignation, dependence and submissiveness to men, and self-sacrifice and endurance of suffering on behalf of children, spouse and extended family (Castillo, Perez, Castillo, & Ghosheh, 2010; Piña-Watson, Castillo, Jung, Ojeda, & Castillo-Reyes, 2014; Rocha-Sanchez & Diaz-Loving, 2005).

Various factors such as economics, migration, global media, and social movements have diminished some aspects of traditional gender role expectations in Mexico, which may in turn influence substance use among adolescents. Since the 1980s women in Mexico have begun entering the workforce in ever rising proportions (Nehring, 2005; Medina-Mora et al., 2001). They now have greater access to education and exposure to international media (film,

television, internet), which serve to broaden females' expectations for themselves and their social relationships (Hirsch, 2003; Nehring, 2005). These shifts have been observed especially among younger generations in urban areas, and those with higher levels of education, while gender roles have changed more slowly in rural areas (Ariza & Oliveira, 2001; Nehring, 2005). Without completely abandoning some traditional gender role expectations, younger Mexican females and males are becoming increasingly open to different female gender roles and more direct communication styles that depart from some traditional values (Leñero Otero, 1994). It is likely that these changes are also reflected in the drug resistance strategies utilized by these youth.

Strategies to Resist Substance Offers

Studies of multicultural samples of adolescents in the United States and several samples of Mexican youth from different regions have found similarities in the strategies that are used most commonly to resist substance offers (Kulis & Brown, 2011; Kulis, Dustman, Brown, & Martinez, 2013; Kulis, Marsiglia et al., 2011; Kulis, Reeves, Dustman, & O'Neill, 2011; Marsiglia, Kulis, Rodriguez, Becerra, & Castillo, 2009; Okamoto, Helm, Giroux, Kaliades, Kawano, & Kulis, 2010; Okamoto, Helm, Poa-Kekuawela, Chin, & Nebre, 2010; Okamoto, Hurdle, & Marsiglia, 2001). The most prevalent strategies include: *Refuse*, which is to say "no" to a substance offer; *Explain*, which is to decline an offer, but with an explanation or reason for not accepting the offer; *Avoid*, which is the deliberate act of staying away from locations or situations where substances may be offered; and *Leave*, which is to depart from a location or situation where there are offers (Alberts, Miller-Rassulo, & Hecht, 1991; Marsiglia & Hecht, 2005). The REAL (*Refuse, Explain, Avoid, Leave*) strategies are the foundation of the culturally grounded substance abuse prevention program, *keepin' it REAL*, a model program on the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Registry of Evidence-Based Programs and Practices. Despite the pervasive use of the REAL strategies in U.S. and Mexican samples, studies of ethnic minority youth in the U.S. suggest that cultural background plays a role in the types of resistance strategies that adolescents prefer to use, how they are employed, and with whom (Hecht et al., 1992; Kulis & Brown, 2011; Marsiglia & Hecht, 2005; Okamoto, Helm, Kulis, Delp, & Dinson, 2012).

Communication Competence Theory

Cultural competence theory suggests that communication, in this case substance use resistance strategies, is culturally patterned and varies by context (Okamoto, LeCroy, Dustman, Hohmann-Marriott, & Kulis, 2004; Hecht & Ribeau, 1984; Bussey & Bandura, 1999; Clark & Delia, 1977). The theory also suggests that adolescents resist substance use more successfully when they are able to use multiple strategies (Hecht & Ribeau, 1984). The choice and available repertoire of drug resistance strategies may be impacted by communication styles that reflect cultural norms and values that are gendered (Gosin, Dustman, Drapeau, & Harthun, 2003; Kulis, Marsiglia, Ayers, Booth, & Nuño-Gutierrez, 2012; Kulis, Marsiglia, Castillo, Becerra, & Nieri, 2008; Moon, Hecht, Jackson, & Spellers, 1999; Okamoto, Kulis, Helm, Edwards, & Giroux, 2010). For example, some drug resistance strategies such as simple refusals may not be culturally appropriate for Latinos, especially females, because those strategies may be viewed as offensive to the person offering, causing

problems in relationships with friends or family members who offer substances (Kulis et al., 2008). In two Mexican studies conducted with older adolescents (high school age) in Monterrey and Guanajuato, use of drug resistance strategies varied by gender, with males more likely than females to use the strategies, largely but not entirely because they were exposed to more substance offers (Kulis, Marsiglia et al., 2011; Kulis et al., 2008). Even after controlling for differential exposure to substance offers, males were still more likely than females to use active, direct strategies like *refuse*, with narrower differences in passive strategies such as *avoid*.

Communication competence theory also suggests that adolescents are more likely to successfully refuse substances when they are able to assess social situations and use the most appropriate communication method (Collier, Ribeau, & Hecht, 1986; Spitzberg & Cupach, 1984). A repertoire of diverse drug resistance strategies allows adolescents to deal with drug offers while also maintaining positive relationships with those making the offers (Jackson, Henriksen, Dickinson, & Levin, 1997; Skara & Sussman, 2003). Understanding the context in which a substance use offer takes place is therefore a crucial aspect of demonstrating communication competence. The youth's relationship to the person offering, and the type of substance offered (e.g., licit or illicit), shape which communication strategies may be most effective in that context, both of which may differ based on culture (Alberts, Hecht, Miller-Rassulo, & Krizek, 1992; Kulis et al., 2008; Okamoto et al., 2004). For example, studies have shown that offers from peers are a consistent predictor of substance use initiation (Stephenson & Helme, 2006) but the relative influence of peers versus family varies across cultures (Okamoto et al., 2001). Compared to their non-Latino counterparts, Mexican American adolescents are more likely to receive substance offers from their family in the context of a party (Moon et al., 1999). In Mexico, most offers of illicit drugs come from adolescent friends and peers (Medina-Mora et al., 2001; Medina-Mora et al., 2003; Wagner et al., 2003), while offers of alcohol often come from adult family members (Mora-Ríos & Natera, 2001).

Among contemporary Mexican youth, a significant relationship has also been found between engaging in romantic relationships and substance use offers, a dynamic observed among females but not among males. Females adolescents in Mexico who were more engaged in romantic relationships reported receiving more substance use offers than the non-romantically involved (Booth, Marsiglia, Nuño-Gutiérrez, & Perez, 2014). Family and non-family sources of substance offers may require different communication strategies in order to successfully resist the use of substances. As youth mature and encounter different social situations that involve substance offers, having different communication strategies will enable them to understand the social context and choose the most effective strategy to resist the offers (Griffin, Botvin, Scheier, Epstein, & Doyle, 2002). Although there may be some similarities due to common cultural elements, the contexts of substance offers that influence resistance strategies and substance use may differ for Mexican youth in Mexico compared to Mexican American youth in the U. S. Knowledge of these differences is important for designing effective substance use prevention interventions in Mexico.

The current study

The overall aim of this study is to examine whether and how drug resistance strategies of early adolescents may differ by gender in a large metropolitan area in central Mexico. The study explores gendered patterns in early adolescents' use of the four REAL strategies, and the extent to which gender differences in use of strategies reflects differential exposure to substance offers and from different people in the adolescents' social networks. Past research with older adolescents in other regions of Mexico (Kulis et al., 2008; Kulis, Marsiglia et al., 2011) suggests that males will receive more substance offers and use the REAL strategies more frequently than females, and that these gender differences will be wider for direct strategies like *refuse* than for passive strategies like *avoid*. Research in Mexico is limited on the degree to which different resistance strategies are evoked for substance offers from different sources—whether offered by family members or non-family, adults or peers, and close or more distant acquaintances. Without empirical guideposts, and considering the rapidly changing nature of gender socialization in Mexico, this study approached the relationship between source of the substance offer and the choice of a resistance strategy as an exploratory inquiry.

Methods

Setting

The data for this analysis come from a pilot study in two public middle schools in Guadalajara, located in the central Mexican state of Jalisco. The study was a collaboration between Mexican and U.S. researchers to pilot test the applicability for Mexico of the *keepin' it REAL* universal substance use prevention curriculum originally developed in the United States. Guadalajara was chosen for the pilot test because it is a major metropolitan area and population center, the second largest city in Mexico. Youth in the region report rates of substance use close to the national average (Instituto Nacional de Salud Pública, 2008). The two schools had similar student demographics and achievement levels and were located only a few miles apart. Students were enrolled in the second year of their “secundaria” school, which is equivalent to 8th grade in U.S. middle schools. Data for the current analysis were collected through student questionnaires administered prior to delivery of the prevention program.

Survey Administration

Ten classrooms participated in the pilot study, five per school. The pretest surveys were collected in the students' classrooms in Fall 2010 by project researchers. Study protocols were reviewed and approved by the Institutional Review Boards at both participating universities to ensure human subjects' protections. Prior to data collection, the students' parents were notified that their children would be participating in a research study. If they had any questions or did not want their student to participate they were invited to contact their child's school or the research team. At the beginning of the survey administration, students were told the purpose of the study, that their participation in the survey was voluntary, and then instructed to provide written assent if they chose to complete the questionnaire.

The questionnaires collected information on sociodemographic characteristics, substance use behaviors, substance use norms and attitudes, exposure to offers of alcohol, cigarettes and marijuana, and the use of drug resistance skills. The Mexican-based research team entered the data and provided the U.S.-based research team with a data set that excluded personally identifying information. A total of 431 students completed the pretest questionnaire, with 206 students in one school and 225 in the other. Because there were relatively few questionnaire items with missing data the N for multivariate analyses varies between 420 and 428.

Measures

All measures in the analysis were self-reported by students. Dependent variables were the frequency of use of various drug resistance strategies. Key independent variables were gender, exposure to offers of substances, and the sources of the offers. Several demographic variables were considered as control variables but were dropped from further analysis if they did not significantly predict use of the resistance strategies, did not influence the estimates of the effects of the key independent variables, and did not vary by gender.

Resistance Strategies—Students reported how often within the last 12 months they used different strategies to deal with offers of alcohol, cigarettes, and marijuana. There were separate reports on the use of four different strategies for each of these three substances. The strategies were those that have been found to be common among adolescents in the United States: refuse (simply saying “no”), explain (declining with an explanation), avoid (staying away from people or situations where substances are offered), and leave (exiting situations or places where substances are offered). The frequency of use of these “REAL” strategies was reported separately for alcohol, cigarette, and marijuana offers. Response options were Likert-scaled: never (coded 0), once (coded 1), 2–3 times (coded 2), 4–5 times (coded 3), 6 or more times (coded 4). These measures were developed, validated, and tested in the original randomized trial of *keepin’ it REAL* (see Hecht et al., 2003).

In addition to the use of drug-resistance strategies, students reported how often they received offers of three different types of substances: “In the last 12 months, how many times has someone offered you ... alcohol? ... cigarettes? ... marijuana?” Response options were: never (coded 0), once (coded 1), 2–3 times (coded 2), 4–6 offers (coded 3), 7–10 offers (coded 4), and more than 10 offers (coded 5). These measures were included in multivariate analyses to control for variation in how often the adolescents had occasion to use drug resistance strategies. Another bank of five questions with the same response options asked students about the source of these offers according to their relationship to the person offering. They reported the total number of offers of alcohol, cigarettes or marijuana they had received from: (1) adults in the family, (2) other adults, (3) siblings or cousins, (4) friends, and (5) other peers.

Demographic variables in the analyses included gender, age, family type, and parental education as a proxy for socioeconomic status. The participants marked their gender as female or male and reported their age in whole years. Family type was measured as a dummy variable indicating whether or not the student lived with both parents. Parental

education was measured as the highest level of attainment of either the student's father or mother and was coded from 1 to 8: no education, some primary school, primary school completion, some secondary school, secondary completion, some pre-college (*preparatoria*), pre-college completion, and more advanced education.

Analysis Strategy

All analyses for this project were conducted in SAS 9.3. First, descriptive statistics were examined for all the measures of drug resistance strategies and their predictors, by gender. Statistically significant gender differences in these variables were identified using t-tests and chi-square tests. Next, OLS regressions predicting the frequency of use of drug resistance strategies were estimated, first entering gender as a predictor while controlling for the number of offers received, and then testing gender interactions to determine if exposure to more offers predicted greater use of the drug resistance strategies among males or among females. In a final set of OLS regressions, use of the drug resistance strategies was predicted using measures of how often substance offers were received from different people, including tests of gender interactions in these effects. All continuous variables used in interactions were mean centered.

Results

Descriptive statistics for variables used in analysis are presented in Table 1, separated by gender. Demographic variables indicated that the average student was 13 years old. About three-fourths lived with both parents, who were pre-college (*preparatoria*) educated on average. There were no statistically significant gender differences in these demographic characteristics. In later multivariate tests, student age, family type and parental education were not significant predictors of any outcomes, and thus were dropped from all the final models presented.

Frequency of use of each of the REAL (*refuse, explain, avoid, leave*) strategies in the prior 12 months varied in consistent patterns depending on the substance offered. The *refuse, explain* and *leave* strategies were used most often for alcohol offers, next most often for cigarette offers, and least often for marijuana offers. This pattern was mirrored in the number of offers received, which were most numerous for alcohol and rarest for marijuana. Although the differences by substance were smaller, the prevalence of the *avoid* strategy appeared in a reverse order, used most often for marijuana offers and least for alcohol offers. Friends were the most frequent source of substance offers, followed by other peers; offers from family members and other adults were considerably less common.

Although few were statistically significant, gender differences in the distributions for the dependent and independent variables formed some interesting patterns. Except for the use of *refuse* and *explain* for marijuana offers, and *avoid* for alcohol offers, females reported higher means for use of the REAL strategies. In the case of the use of *refuse* and *explain* for alcohol offers, females used these strategies significantly more often than males. Females also received more offers of alcohol, cigarettes and marijuana than males did, although these differences were statistically significant only for cigarette offers. The sources of offers also showed a pattern of gender differences, with females reporting significantly more offers than

males from siblings or cousins, friends, and other peers. Females reported more offers than males from adult family members but less from other adults, although these differences were not statistically significant.

Use of the REAL strategies in various combinations also showed a pattern of gender differences. Figure 1 displays the separate distributions for males and females of how many of the different REAL strategies they had used in the last 12 months, regardless of frequency, and further divides those using none of the strategies into two groups—those never offered a substance in that time, and those who were offered but did not employ a REAL strategy. Combining the first two sets of columns, about one fourth of females and one third of males did not employ any strategy, and very large majorities of these simply did not receive substance offers. Of those who used only one of the four REAL strategies, use of *avoid* was by far the most common. Very substantial proportions of males (38%) and females (43%) used three or four of the REAL strategies. The statistically significant gender differences in the distributions in Figure 1 can be attributed to two tendencies: females were more likely than males to use all four REAL strategies or to use only one of three strategies—*refuse*, *explain*, or *leave*; and males were more likely than females to receive no offers or to use only the *avoid* strategy. Females were more likely to be exposed to substance offers than males were and appear to have had a more diverse repertoire of resistance strategies for responding to those offers.

Regression analyses in Table 2 investigate gender differences in the use of REAL strategies after controlling for the number of offers received of each particular substance. For each outcome a second model tests for gender differences in the effect of exposure to offers. Offer frequency was a salient and often very strong predictor of greater use of the REAL strategies. Although more numerous offers of alcohol, cigarettes, and marijuana predicted significantly more frequent use of all four REAL strategies, females continued to report more frequent use of the *refuse* strategies for alcohol offers. The gender interactions in the second models indicated that greater exposure to substance offers was a stronger predictor of females' than of males' use of the *refuse* strategy for alcohol, and the *explain* strategy for cigarettes and marijuana. However, the reverse occurred with the influence of more numerous marijuana offers on use of the *refuse* strategy, which was stronger for males than for females.

The source of offers was also differentially salient for males and females in predicting their use of three of the REAL strategies (Table 3). These models include main effects and gender interactions for exposure to substance offers from family and non-family offerors. The most consistent pattern in the main effects is that offers from two groups of the same generation—siblings/cousins and non-friend other peers—predicted more use of the *refuse* and *leave* strategies regardless of the type of substance offered, and more use of the *explain* strategy for alcohol offers. Offers from adults in the family predicted less use of *refuse* and *leave* for marijuana offers, but more use of *explain* for alcohol offers. The tests of gender interactions demonstrate one set of strong gender differences in the effects of different types of people offering the substance, and several more scattered effects. Among those who received many offers from adult family members, females were significantly more likely than males to use *refuse* and *leave* for alcohol offers, and to use *refuse* and *explain* for cigarette offers. A large

number of offers from non-family adults, however, predicted more use by males than by females of *refuse* for marijuana offers and *leave* for alcohol offers. When exposed to many offers from friends, males also used *leave* for alcohol offers more often than females. Only offers from siblings or cousins predicted greater use of strategies by females than by males, in two instances: when using *refuse* and *leave* for marijuana offers.

Discussion

Contrary to previous research in Mexico that has focused on older adolescents and young adult samples, females in this sample of early adolescents were more likely than their male counterparts to use all four REAL strategies (Marsiglia et al., 2009; Kulis et al., 2011) and receive more substance offers (Medina-Mora et al., 2003). When only one strategy was used, females were also more likely than males to use active strategies, such as *refuse*, *explain* and *leave*, and less likely than males to use more passive strategies like *avoid*. If changes in traditional gender norms in Mexico are taken into account, the observed gender differences in resistance strategies can be interpreted in light of the claims of communication competence theory that communication patterns are influenced by culture (Hecht & Ribeau, 1984; Bussey & Bandura, 1999; Clark & Delia, 1977). Females' greater use of the *refuse* and *explain* strategy for alcohol offers contradicts stereotypes that women's socialization into *marionismo* in Mexico might undermine their ability to use direct and assertive communication strategies. Because this reversal in gender expectations is confined to alcohol offers, it may still reflect cultural norms that continue to disapprove of alcohol use by females. A combination of the traditional expectation that women do not drink to excess and shifting gender roles that encourage young women to actively and directly participate in decision-making may facilitate their choice of direct and assertive resistance strategies.

The wider repertoire of REAL strategies that females employed, compared to males, may reflect a developmental difference in early adolescence, with adolescent girls engaging more frequently in social conversation and pro-social behaviors than their male counterparts (Rose & Rudolph, 2006). But it also may be a function of necessity. Females reported more substance use offers than their male counterparts from their age peers—siblings or cousins, friends and other acquaintances. Previous research suggests that Mexican females are also exposed to more offers when having been in romantic relationships (Booth et al., 2014), but this study collected no information on substance offers received from boyfriends specifically. What is clear is that these patterns of females' greater exposure to offers among early adolescents are not consistent with historical patterns (Medina-Mora et al., 2003) and warrant further investigation.

Communication competence theory argues that more exposure to offers necessitates a variety to strategies to successfully resist substance use (Hecht & Ribeau, 1984). Consistent with the theory, the findings clearly showed that use of the REAL strategies is conditioned by exposure to substance offers, with more offers consistently predicting more frequent use of all strategies, but especially *refuse*, *explain* and *leave*. However, the gender differences in use of the strategies was not due entirely to differential exposure to offers. Females continued to use the *refuse* strategy for alcohol more frequently than males even after controlling for offers. Moreover, greater exposure to offers predicted use of certain strategies

more strongly for females than for males, increasing the likelihood that females would report using *refuse* for alcohol and *explain* for cigarettes and marijuana. However the volume of offers predicted the use of *refuse* for marijuana offers in the opposite direction, more strongly for males than for females. Especially for the substances used most commonly by Mexican adolescents— alcohol and cigarettes— these findings might be interpreted in line with gender socialization arguments. When pressured to use licit substances, cultural norms discouraging substance use by females may permit or even encourage them—more readily than males—to use direct resistance strategies like *refuse* and *explain*. The opposite finding with regard to the greater use of the *refuse* strategy by males in response to escalating marijuana offers, may be a reflection of the continuing taboo and relative rarity of illicit drug use for both genders. More research is needed to unravel how early adolescents in Mexico respond to marijuana and other illicit drug offers, including the circumstances under which the offer is accepted. Although the study did not have data indicating whether the students accepted particular substance offers, females may not be as likely as males to accept the substances offered to them, as previous research has suggested (Wagner et al., 2003; Benjet et al., 2007).

Lastly, communication competence theory posits that communication differs based on the contexts of the communication, in this case substance use offers. Reflecting this dynamic, one of the strongest and most consistent predictors of choosing *refuse* and *leave* as a resistance strategy was receiving a larger number of offers from siblings or cousins, and from other peers not considered friends. The youths' increased likelihood of using these resistance strategies with offers from the same generation may reflect cultural norms around communication with individuals in different contexts based on the nature of the relationship. This is further illustrated in the distinction that seems to be made among substance offers from generational peers who are friends versus family members (siblings/cousins) or other peers who are not friends. Escalating offers from family peers and non-friend peers were both associated with more use of the *refuse* and *leave* strategies, while the volume of offers from friends was not. Offers from generational peers with a permanent (siblings/cousins) or very transitory (non-friend acquaintances) relationship may be declined abruptly (*refuse* without explanation or just *leave*) without threatening the termination of an important relationship. Resisting offers from siblings and cousins in cursory fashion might lead to disagreements but do not threaten to sever family bonds; when the offers come from non-friend peers there is little investment in the relationship or concern over its discontinuation. In contrast, responses to insistent offers from friends may evoke greater concern about consequences for preserving the relationship. This pattern of findings supports the arguments made in communication competence theory that matching the resistance strategy to the context will increase the youth's willingness to employ those strategies.

Gender differences in apparent responsiveness to the pressure of more frequent substance offers from different offerors suggested a few possible dynamics. Females' use of *refuse*, *explain* and *leave* for licit substances (alcohol, cigarettes) was more strongly predicted by receiving many offers from family adults than it was for males. This may reflect gender norms around substance use making males feel more pressure to consent to use when offered licit substance by their family elders. Pressure to comply with traditional male norms of manhood, expressed through use of alcohol and cigarettes, may have strong roots in the

family and make it far more difficult to resist offers from relatives. In contrast, traditional gender norms communicated in the family may also allow girls to feel more comfortable resisting substance use offers in this familial domain. Refusal strategies may even be praised and supported for females in the family context but condemned and shamed for males. Gender differences that appeared in another category of offerors—siblings or cousins—are also consistent with explanations rooted in differential family gender role norms. A larger volume of offers from siblings and cousins predicted females' choice of resistance strategy more strongly than for males, increasing their use of *refuse* and *leave*. Interestingly, males' use of the same abrupt strategies—*refuse* and *leave*—increased more than it did for females when they were exposed to more offers from adults *outside* the family, again potentially reflecting gender norms and issues of power. In the context of adult relationships outside of the family, males may feel more power than females to resist the offers.

The patterns of gender differences in how use of different REAL strategies was conditioned by receipt of offers from different sources provides evidence that prevention approaches for adolescents may need to be tailored to the gendered nature of substance use in Mexico. These may appear in distinctive typical substance offer scenarios for adolescent males and females, the salience of gender role norms surrounding substance use, and different preferred means of resisting the offer. Substance abuse prevention interventions that address not only the context of offers but also the normative gender response in a given context are more likely to impact adolescent behavior in desired directions. Providing communication strategies that are natural given the social and cultural context may be important ways that culture needs to be considered when implementing substance use prevention programs globally.

Limitations

Additional research is needed to verify the gender differences that emerged in this study and investigate their sources. Because the nature of the relationships to offerors when particular strategies were actually used was not specified in this study, how these dynamics may unfold differently by gender is unclear. For example, early adolescent males and females may receive offers from different sources, such as from fathers versus aunts, or older sisters versus male cousins when they emerge within the family, and from adult neighbors versus parents' friends from outside the family. More detailed research into the context of the offer is called for, including specifying the precise relationship of offeror to offered, the gender of both parties, the type of substance, and the situational environment of the offer (e.g., family party versus school, park or street encounter). More detailed descriptions of the social context of drug offers, with examples applying to each gender, may be useful in designing more effective substance use prevention approaches for Mexico's youth.

The results of this study should be interpreted in light of certain methodological limitations. The data in this study were cross sectional, limiting the ability to assess causality. Gender norms were not explicitly measured, limiting our ability to make inferences about the role of cultural norms in the observed gender differences. The study's measures of resistance strategies were limited in scope, restricted to frequency counts, and unlikely to capture all nuances of cultural influences. Measurement constraints further complicate causal inference

because adolescents were asked about their use of real strategies for specific substances within the past 12 months while no timeframe was specified for the offers they reported from a particular source. The limited generalizability of the study should be noted. Although the sample was sizable, it reflects two schools from one quadrant of a central Mexican major metropolitan area and may not be generalizable to the rest of the country.

Conclusion

Despite the limitations, this research lends support to the importance of investigations of gender norms and context in the use of drug resistance strategies, a typical prevention tool, in Mexico. It suggests important areas of consideration for researchers who are adapting interventions created in the United States in the Mexican context. Because youth are more likely to use particular strategies in different contexts, addressing the cultural values that shape these dynamics and teaching strategies that allow the youth to successfully resist substance use offers while maintaining relationships may be crucial to successfully preventing and reversing the increasing rates of problematic substance use in Mexico.

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Figure 1.
Combinations of REAL Strategies Used in Last 12 Months, by Gender

Table 1
Descriptive Statistics for Study Variables, by Gender, and T-test of Gender Differences in Means

Variable	Female			Male			t-test
	Mean	S.D.	N	Mean	S.D.	N	
Refuse for Alcohol Offer	0.92	1.29	229	0.57	1.03	191	3.09**
Refuse for Cigarette Offer	0.70	1.26	228	0.56	1.09	194	1.27
Refuse for Marijuana Offer	0.30	0.93	227	0.33	0.94	193	-0.30
Explain for Alcohol Offer	0.82	1.25	228	0.59	1.09	190	1.93*
Explain for Cigarette Offer	0.66	1.21	229	0.54	1.09	192	1.01
Explain for Marijuana Offer	0.26	0.82	228	0.29	0.88	190	-0.43
Avoid for Alcohol Offer	1.12	1.49	230	1.15	1.46	191	-0.17
Avoid for Cigarette Offer	1.19	1.58	231	1.16	1.52	188	0.23
Avoid for Marijuana Offer	1.29	1.72	230	1.16	1.65	187	0.80
Leave for Alcohol Offer	0.81	1.30	229	0.69	1.17	190	0.98
Leave for Cigarette Offer	0.70	1.28	230	0.55	1.09	192	1.32
Leave for Marijuana Offer	0.34	0.97	231	0.29	0.83	189	0.53
Offers-Alcohol	1.75	2.96	234	1.36	2.59	194	1.48
Offers-Cigarettes	1.31	2.81	233	0.90	2.13	191	1.72 [†]
Offers-Marijuana	0.42	1.72	234	0.25	1.30	190	1.17
Offers-Family Adult	0.42	1.36	230	0.26	0.99	193	1.38
Offers-Non-family Adults	0.29	0.82	230	0.36	1.36	192	-0.53
Offers-Siblings or Cousins	0.55	1.52	231	0.33	1.06	193	1.77 [†]
Offers-Friends	1.29	2.66	232	0.88	2.13	193	1.76 [†]
Offers-Other Peers	1.18	2.75	232	0.53	1.62	192	2.86**
Age	12.99	0.39	236	13.04	0.49	195	-1.15
Two Parent Home (Y=1, N=0)	0.77	0.42	230	0.78	0.42	189	-0.30
Parent Education	6.34	1.68	235	6.38	1.71	194	-0.19

[†] p < .10

* p < .05

** p < .01

Hierarchical Multiple Regression Analyses Predicting Frequency of Use of REAL Drug Resistance Strategies From Gender and Exposure to Offers, by Type of Substance Offered

Table 2

Resistance strategies used for alcohol:									
	Refuse	Refuse	Explain	Explain	Avoid	Avoid	Leave	Leave	Leave
	b	b	b	b	b	b	b	b	b
Male v. Female	-0.289**	-0.294**	-0.170	-0.172	0.057	0.056	-0.068	-0.065	-0.065
Offers-Alcohol	0.140***	0.168***	0.122***	0.137***	0.068†	0.082*	0.118***	0.101***	0.101***
Offers X Male		-0.074†		-0.037		-0.034		0.042	0.042
Intercept	0.895***	0.890***	0.796***	0.793***	1.108***	1.106***	0.789***	0.792***	0.792***
R squared	0.129	0.136	0.090	0.092	0.017	0.018	0.071	0.073	0.073
N	419	419	417	417	420	420	418	418	418
Resistance strategies used for cigarettes:									
	Refuse	Refuse	Explain	Explain	Avoid	Avoid	Leave	Leave	Leave
	b	b	b	b	b	b	b	b	b
Male v. Female	-0.088	-0.090	-0.082	-0.090	-0.006	-0.012	-0.123	-0.127	-0.127
Offers-Cigarettes	0.179***	0.199***	0.149***	0.175***	0.052†	0.072*	0.159***	0.173***	0.173***
Offers X Male		-0.062		-0.077†		-0.063		-0.043	-0.043
Intercept	0.669***	0.666***	0.636***	0.632***	1.190***	1.186***	0.684***	0.682***	0.682***
R squared	0.153	0.157	0.109	0.115	0.007	0.001	0.117	0.119	0.119
N	417	417	416	416	416	416	417	417	417
Resistance strategies used for marijuana:									
	Refuse	Refuse	Explain	Explain	Avoid	Avoid	Leave	Leave	Leave
	b	b	b	b	b	b	b	b	b
Male v. Female	0.043	0.050	0.016	0.004	-0.101	-0.098	-0.032	-0.033	-0.033
Offers-Marijuana	0.261***	0.212***	0.175***	0.265***	0.139**	0.019†	0.239***	0.252***	0.252***
Offers X Male		0.139*		-0.253***		0.063		-0.040	-0.040
Intercept	0.294***	0.296**	0.253***	0.249**	1.278***	1.279***	0.318**	0.317**	0.317**
R squared	0.185	0.185	0.101	0.149	0.018	0.018	0.176	0.177	0.177

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Resistance strategies used for alcohol:							
	Refuse	Refuse	Explain	Explain	Avoid	Avoid	Leave
N	b	b	b	b	b	b	b
	415	415	414	414	413	413	416

[†] p < .10
* p < .05
** p < .01

Note: Offers of alcohol, cigarettes, and marijuana were mean centered prior to constructing gender interactions.

Hierarchical Multiple Regression Analyses Predicting Frequency of Use of REAL Drug Resistance Strategies from Gender and Substance Offers From Different Sources

Table 3

	Refuse Alcohol Offers		Refuse Cigarette Offers		Refuse Marijuana Offers		Explain Alcohol Offers		Explain Cigarette Offers		Explain Marijuana Offers		Leave Alcohol Offers		Leave Cigarette Offers		Leave Marijuana Offers	
	b		b		b		b		b		b		b		b		b	
Male v. Female	−0.267 [‡]		−0.074		0.041		−0.142		−0.113		0.061		−0.058		−0.133		−0.041	
Offers: Family Adult	−0.001		−0.024		−0.094 [*]		0.100 [‡]		0.068		−0.064		0.038		−0.043		−0.070 [‡]	
Offers: Other Adult	−0.018		0.086		0.067		0.017		0.165		−0.014		−0.092		0.004		0.162 [*]	
Offers: Sibling-Cousin	0.196 ^{***}		0.187 ^{***}		0.090 [*]		0.178 ^{***}		0.097		0.048		0.154 [*]		0.143 [*]		0.101 [*]	
Offers: Friends	0.001		0.038		−0.040		0.017		0.065		0.030		−0.028		−0.017		−0.042	
Offers: Other Peer	0.112 ^{**}		0.089 [*]		0.116 ^{***}		0.070 [‡]		0.047		0.085 ^{***}		0.085 [*]		0.122 ^{**}		0.111 ^{***}	
Offers: Family Adult X Male	−0.395 [*]		−0.371 [*]		0.132		−0.140		−0.375 [*]		0.125		−0.346 [*]		−0.180		0.056	
Offers: Other Adult X Male	0.176		0.026		0.208 [*]		0.002		−0.084		−0.004		0.281 [‡]		0.157		0.005	
Offers: Sibling-Cousin X Male	0.215		0.100		−0.175 [‡]		−0.104		0.147		−0.134		0.089		0.014		−0.196 [‡]	
Offers: Friends X Male	−0.041		−0.003		−0.005		0.043		0.024		−0.061		0.171 [*]		0.042		0.065	
Offers: Other Peer X Male	−0.037		−0.033		−0.029		−0.064		−0.119		−0.029		−0.133		−0.103		−0.080	
Intercept	0.859 ^{***}		0.639 ^{***}		0.270 ^{***}		0.760 ^{***}		0.624 ^{***}		0.219 ^{***}		0.764 ^{***}		0.660 ^{***}		0.298 ^{***}	
R-square	0.152		0.157		0.193		0.099		0.114		0.087		0.085		0.097		0.158	
N	415		415		413		413		414		412		412		414		412	

[‡] p < .10
* p < .05
** p < .01

Note: All measures of offers were mean centered prior to constructing gender interaction.