

## Culturally Specific Youth Substance Abuse Resistance Skills: Applicability across the U.S.-Mexico Border

Flavio F. Marsiglia, Professor  
School of Social Work, ASU  
Stephen Kulis, Professor  
Sociology Program, ASU  
Gregorio Martinez Rodriguez, Professor  
College of Nursing, Universidad Autonoma de  
Nuevo Leon

David Becerra, Graduate student  
School of Social Work, ASU  
Jason Castillo, Ph.D. candidate  
School of Social Work, ASU

Southwest Interdisciplinary Research Center (SIRC) School of Social Work – College of Public Programs Arizona State University

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### ABSTRACT

This study tests the applicability among adolescents in Mexico of the *keepin' it REAL* (refuse, explain, avoid, and leave) strategies that are common and effective ways that U.S. youth resist substance use. Following a social learning, communication competence and ecological theory integrated approach, the study draws on self-reported questionnaire data from a non-probability sample of 327 adolescents attending two public high schools in Monterrey, Nuevo León. Multivariate regressions were used to test whether the respondents' use of the REAL strategies by the participants could be predicted by key demographic variables. Separate models were estimated for the frequency of use of each strategy and for different substances. Findings indicate that most adolescents in this sample utilized each of the REAL strategies as well as other strategies to respond to offers of alcohol, cigarettes, or marijuana. Mexican and U.S. youth residing close to the US border appear to use similar drug resistance strategies. Use of the strategies varied considerably by the level of exposure to offers, but only minimally by gender and age. There were no notable differences by socioeconomic status or academic performance. Implications for prevention science, social work practice and social work research are discussed in the context of the bi-national border region and the applicability and prospect for dissemination of U.S. evidence based youth substance use prevention interventions.

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Despite many shared characteristics there are important differences between the substance use attitudes and behaviors of youth in the United States and Mexico. For example, youth in Mexico have consistently reported lower rates of consumption of illicit drugs than youth in the U.S., but over time this gap has narrowed, raising concerns in Mexico and in the United States (Felix-Ortiz, Villatoro Velasquez, Medina-Mora, & Newcomb, 2001; Tapia-Conyer, Kuri-Morales & Hoy-Gutierrez, 2001; Villatoro, Medina-Mora, Rojas, Carreno & Berenzon, 1998). Rates of drug use among youth living in northern

Mexican states are already very similar to those in the United States (Felix-Ortiz, Villatoro Velasquez, Medina-Mora, & Newcomb, 2001). Generally, illicit drug use rates in Mexico are highest in border cities such as Tijuana, Ciudad Juarez, and Nuevo Laredo, in industrial cities close to the border such as Monterrey, and in other large industrial cities such as Guadalajara (Medina-Mora, Cravioto, Villatoro, Fleiz, Galvan-Castillo, & Tapia-Conyer, 2003). More detailed information regarding drug use rates in Mexico will be provided in the next section.

There is growing evidence that the specific substances used by youth, their patterns of consumption, and the associated health and social problems follow the same patterns in Mexico as in the U.S. and other countries (Medina-Mora, Cravioto, Ortíz, Kuri, Villatoro, 2003). Despite the upward trends in drug use among Mexican youth, and unlike the U.S., there is little research on the drug resistance strategies used by adolescents in Mexico. More knowledge is needed about the behavior of the majority of Mexican youth who do not use alcohol, tobacco and other drugs, including information about the similarities and differences in the drug refusal strategies used by adolescents in Mexico and the United States.

This article reports on the drug resistance strategies used by youth in Mexico, guided by the hypothesis that resistance strategies identified and used effectively by Southwest U.S. youth to avoid drug use are applicable to youth in northern Mexico. The study examines the drug resistance strategies reported by a group of high school students from Monterrey, a large industrial city in the northern Mexican state of Nuevo León, which borders Texas. Previous cross cultural comparisons between adolescent drug use in Monterrey and the U.S. have been conducted (Wellisch & Hayes, 1974), but the current analysis is the first to detail these youths' drug resistance strategies. This type of research is important among other reasons to determine if proven substance abuse prevention programs in the United States can be disseminated and apply with adolescents in Mexico. Since the majority of youth in Mexico—as in the United States—do not use drugs, there is a need to identify how they refuse drug offers in order to intervene effectively and strengthen their existing skills before the onset of drug use. Bi-national, effective refusal strategies can be integrated as part of culturally appropriate prevention interventions in the social, economic and culturally connected U.S.-Mexico borderland region.

### **Adolescent Substance Use in Mexico: National and Regional Trends**

Although drug use in Mexico varies by region, the number of first time illicit drug users throughout the country has increased dramatically in the last two decades (Felix-Ortiz et al., 2001; Medina-Mora et al., 2003; Tapia-Conyer et al., 2001). Drug use among youth has increasingly become a shared Mexican-U.S. public health concern as the historically lower drug use rates of Mexican youth have steadily increased over the past two decades (Medina-Mora, Cravioto, Villatoro, Fleiz, Galvan-Castillo, & Tapia Conyer, 2003).

Overall rates of alcohol consumption are higher among Mexican adolescents than among U.S. adolescents (Felix-Ortiz et al., 2001). Alcohol remains the most commonly used substance in Mexico, with the majority of males and females reporting having used alcohol prior to turning 18 years old, the legal drinking age in the country (Herrera-Vazquez, Wagner, Velasco-Mondragon, Borges, & Lazcano-Ponce, 2004; Latimer et al, 2004; National Survey on Addictions, 1998; Villatoro, Medina-Mora, Juarez, Rojas, Carreno, & Berenzon, 1998; Felix-Ortiz, Velazquez, Medina-Mora, & Newcomb, 2001). Approximately 74% of high school students residing in the northern region of Mexico reported lifetime use of alcohol and more than 15% reported using alcohol in the last month (Latimer, et al., 2004). Alcohol consumption by adolescents in Mexico has traditionally been a socially accepted practice, but there is growing concern about increasing rates of binge drinking among both male and female adolescents (Latimer et al, 2004; Medina-Mora, Natera, Borges, Cravioto, Fleiz, & Tapia-Conyer, 2001). Other indicators of problem drinking are on the rise as well. In Mexico City, for example, rates of alcohol dependence increased from 11.3% to 19.5% among males and from .7% to 1.2% among females (Caraveo-Anduaga et al., 1999). In a study of hospital emergency rooms in Mexico City, 17 percent overall of patients overall, and 25 percent of male patients had consumed alcohol in the immediate hours before their injuries (Borges, Cherpital, Mondragón, Poznyak, Peden, & Gutierrez, 2004)

There are 13 million smokers throughout Mexico, comprising approximately 20% of the adult population, and over 61% of them began smoking before the age of 18 (Tapia-Conyer, Kuri-Morales, & Hoy-Gutierrez, 2001). Smoking rates for adolescents have increased over the last decade, with 52.3% of adolescent females and 58.7% of males identifying themselves as smokers (Santillan et al., 2002). Smoking among adolescents is a major concern not only because of the serious negative health consequences associated with tobacco, but also because smoking cigarettes is associated with greater risk of using other drugs. According to a study conducted by the Mexican General Directorship of Epidemiology, cigarettes are easily obtained by under-age Mexican adolescents due to the fact that 79% of stores sell cigarettes to adolescents (Tapia-Conyer et al., 2001). The overwhelming majority of Mexican youth who use illicit drugs (94 %) and drink alcohol (87%) report that they began experimenting with those substances after they began smoking tobacco (Medina-Mora, Peña-Corona, Cravioto, Villatoro, & Kuri, 2002). In addition, the use of

multiple substances is a major concern as 97.2% of smokers use other drugs, alcohol in particular, and 83% consume a third drug, usually marijuana (Tapia-Conyer et al., 2001)

While the prevalence of alcohol use among youth in Mexico exceeds that of U.S. youth to some degree, the use rates of marijuana and other illicit drugs is much lower among Mexican youth (Latimer et al., 2004; Felix-Ortiz et al., 2001). Illicit drug use in Mexico has also increased, with 25% of males and 5.5% of females 18-29 years old reporting using at least one illicit drug in their lifetime (Medina-Mora, Borges, Fleiz, Benjet, Rojas, Zambrano, Villatoro, & Aguilar-Gaxiola, 2006). While alcohol and cigarettes are the most commonly used legal substances, marijuana is the most common illicit drug used by Mexican adolescents (Caraveo-Anduaga, Colmenares-Bermudez, Saldivar-Hernandez, 1999). Lifetime prevalence of marijuana use is approximately five percent among the general Mexican population, 2.5% among adolescent males, and .5% among adolescent females, but children use inhalants more frequently (Medina-Mora, Cravioto, Villatoro, Fleiz, Galvan-Castillo, & Tapia-Conyer, 2003).

Another concern emerging from recent drug use trends in Mexican national surveys is the age when experimentation begins. Not only have rates of alcohol, cigarette, and marijuana use among Mexican youth been increasing since 2000, but the typical age of initiation of substance use has decreased from 15 to 8 years of age (Villareal, Medina-Mora, Amador, Bermudez, Hernandez, Fleiz, Gutierrez, & Ramos, 2004).

There are some important gender differences to consider. Consumption of alcohol and other drugs among women has increased over time but women continue to consume significantly less alcohol, tobacco and other drugs than men (Caraveo-Anduaga, Colmenares-Bermudez, Saldivar-Hernandez, 1999; Medina-Mora, Cravioto, Ortiz, Kuri, & Villatoro, 2003; Medina-Mora & Rojas Guiot, 2003). Cultural norms, endorsed by both men and women, allow Mexican men, but not women to consume quantities of alcohol large enough to become intoxicated (Caetano & Medina-Mora, 1988; Villatoro et al., 1998). For example, 66% of men who drink consume 5-6 drinks of alcohol at a time and only 16% of women who drink alcohol at those levels. In addition, over 20% of both men and women who drink alcohol agree that it is acceptable for a 30 year old man to drink to inebriation, but only 6% of both males and females say that it is acceptable for a 30 year old woman to become inebriated (Medina-

Mora & Rojas Guiot, 2003). Cultural factors will be addressed in more detail in the next section as they seem to have some explanatory power regarding drug use rates.

Geography appears to be another important factor to consider, as increases in the rate of drug use have been most dramatic in the northern states where Mexico shares a common border with the U.S. Youth residing in border cities appear to be particularly vulnerable to drug use (Sanchez-Huesca, Avellanez-Hernandez, Perez-Islas, & Rodriguez-Kurt, 2006). Border towns are magnets for internal migration and have become sending and returning destinations for migrants to and from the U.S. They constitute strategic sites for conducting epidemiological, etiological, and prevention intervention research for better understanding of transnational drug use trends and the natural ways in which youth resist the pressures to use drugs. The border region is in need of culturally-specific and efficacious youth drug prevention interventions which could benefit youth moving across the border between the two countries.

#### **Social and Cultural Protective and Risk Factors**

There are numerous social and cultural protective and risk factors that affect substance use in Mexico. *Familismo* (to be family-centered) is often identified as a key cultural value which operates as a protective factor against drug use within Mexican culture. *Familismo* is the strong emotional commitment to the family which places high value on family identification and attachment to the immediate and extended family (Romero, Robinson, Haydel, Medoza, & Killen, 2004). *Familismo* has been consistently identified as a factor that protects Mexican adolescents against substance use (Medina-Mora et al., 2001; Frauenglass, Routh, Pantin, & Mason, 1997) but other traditional values have been identified as possible risk factors. For example, traditional gender-based norms and their corresponding ascribed gender roles and expectations appear to put young Mexican females and males at different levels of risk for drug use. The traditional expected role for men can be summarized as being the provider for the family while maintaining his independence, strength, and success. These roles have been traditionally supported by the ascribed archetype of *machismo*, a product and a legacy of Spanish colonialism. The expected roles for women on the other hand include taking care of the children, the household, and their mate as well as being submissive, selfless, and dependent (Rocha-Sanchez & Diaz-Loving, 2005) and this traditional role has been referred as *marianismo*. Although many individuals deviate from the expected traditional

norms, these gender roles and expectations continue to be promoted in Mexican culture (Reyes Luna, Garrido Garduno, & Torres Velasquez, 2004).

Globalization, consumerism, migration, and economic hardships have all had a transformative effect on familismo, and have presented challenges to the traditional gender roles of machismo and marianismo. These changes in family structure and traditional gender roles may influence substance use attitudes and behaviors in Mexico. Women are entering the workforce in unparalleled numbers, continuing their education beyond the primary level much more often, and obtaining professional degrees. These educational and occupational advances have helped to equalize gender role expectations. In 1940, women composed only 8% of the labor force in Mexico but by 1995 they represented 35% of the workforce. Although the majority of Mexican families, 73.7%, are traditional nuclear families with strong connections to the extended family, the percent of single parent families doubled in two decades from 6.8% in 1976 to 13.5% in 1995 (Medina-Mora et al., 2001). These changes in the family structure require an ongoing examination of familismo as a dynamic phenomenon producing ever changing protective as well as risk effects on the substance use attitudes and behaviors of Mexican female and male adolescents.

As Mexican families change, traditional gender roles also change. Younger cohorts and those with higher education are less likely to hold traditional and more polarized gender expectations than older or less well educated individuals. The younger and better educated are more open to females having roles outside of the home, which include education and professional careers. Despite gains by women in Mexico many individuals of both genders continue to follow strict gender role expectations which continue to deprive some women of opportunities for social advancement (Ariza & Oliveira, 2001; Jelin, 2005; Rocha-Sanchez & Diaz-Loving, 2005). Younger Mexican and Mexican American men and women are at the same time exposed to media-based portraits of more flexible gender roles and may need to reconcile contradictory messages they receive at home and from the media and their peers which may include expectations that encourage substance use (Marsiglia & Holleran, 1999).

Research conducted in the United States with largely Mexican born and Mexican American samples indicates that gender and ethnicity have a significant effect on drug offers and that gender is associated with the type of resistance strategies used (Marsiglia, Kulis, Wagstaff, Elek, Dran, 2005; Moon,

Hecht, Jackson, & Spellers, 1999). Males tend to receive offers in public that appeal to their social standing or self image, while females tend to receive simple offers in private that minimize the effects of the drugs offered. Studies on communication styles by gender have shown that males and females interpret communication differently which may explain why males use drug resistance strategies differently than females (Tannen, 1990). Although drug resistance has not been studied extensively in Mexico, gender role differences there appear to affect the amount of drug offers male and females receive. Adolescent males in Mexico are more than twice as likely to receive drug offers as adolescent females (Medina-Mora & Rojas Guiot, 2003) but little is known about the way in which youth of both genders who do not use refuse those offers. Establishing clear baselines about the drug resistance strategies used in the culture of origin—in this case Mexico—will help to clarify the mediating effects of gender and ethnicity in the drug use and drug use resistance behaviors of youth on both sides of the border. Identifying the cultural processes that protect individuals and the processes that make populations more vulnerable to drug use is a necessary step prior to designing and testing effective prevention interventions.

There are other factors that affect adolescent drug use in Mexico: age, educational status of the adolescent and his or her parents, perceived social tolerance, types of offers, location of offers, and perceived availability of drugs all impact drug use among adolescents. Older adolescents tend to report higher rates of illicit drug use, especially for marijuana (Villatoro et al., 1998; Medina-Mora et al., 2003). Educational status of adolescents has also shown to have an impact on illicit drug use in Mexico; male and female adolescents who remain in school are less likely to use drugs but unfortunately, 54% of all students in Mexico drop out of school after the 6<sup>th</sup> grade (Medina-Mora & Rojas Guiot, 2003; Villatoro et al., 1998). Six percent of adolescents who do not attend school report having used illicit drugs while only 2.2% of students who attend school report having used drugs (Medina-Mora, Cravioto, Villatoro, Fleiz, Galvan-Castillo, & Tapia-Conyer, 2003). For those that remain in school, academic performance is also related to substance use: 84% males and 69% females who reported using drugs also reported low academic success in school (Medina-Mora et al., 2003).

The consumption of alcohol in Mexico has been linked with higher socioeconomic status (SES); half of the alcohol consumed in the country is consumed by the 30% of the population with the highest SES

(Medina-Mora & Guiot, 2003). Higher SES, which often is associated with higher parental levels of education, also appears to have an effect on adolescent substance use. Higher levels of education of the head of the household in Mexico is correlated with higher adolescent substance use, especially for alcohol and tobacco (Felix-Ortiz, Villatoro Velasquez, Medina-Mora, & Newcomb, 2001; Medina-Mora & Rojas Guiot, 2003; Medina-Mora et al., 1998; Villatoro et al., 1998). Since higher levels of education are often associated with higher socioeconomic status, increased levels of alcohol, tobacco and marijuana use by adolescents may therefore be associated with easier access to the money needed to purchase those substances (Felix-Ortiz et al., 2001) and possibly with weaker anti-drug norms present among higher SES families.

### **Drug Offers and Resistance Strategies in Mexico**

Studies on Mexican adolescent drug use have identified a set of common factors in relationship to whom and where drugs offers are made. They can be summarized as follows: 1) drugs are most often offered by a friend or acquaintance, 2) offers are made at parties or other places where adolescents may gather such as a park or a night club, and less commonly 3) drugs are given to the adolescent for free by a drug dealer for consumption or sale (Medina-Mora et al., 2001; Gutierrez & Palacios, 2004; Tapia-Conyer, Cravioto, de la Rosa, Galvan, & Medina-Mora, 2003; Wagner, Gonzalez-Forteza, Aguilera, Ramos-Lira, Medina-Mora, & Anthony, 2003). Friends, however, greatly outnumber strangers as the source of drug offers. More than 60% of adolescents received their first drug offer from a friend and only 4% did so from a dealer or a stranger (Medina-Mora et al., 2001).

The location of the offers and in some cases drug consumption differences are found based depending on the legal status of the drug. Nearly half of marijuana users (47%) report that purchase the drug at parks, followed by 25% who obtain the drug at parties (Medina-Mora et al., 2003). Adolescents appear to have access to alcohol mostly at supervised and family settings. A study of adolescents and young adults in Mexico City found that 81% of those surveyed consumed alcohol primarily at restaurants, 74.6% at family gatherings, and 52% at parties (Mora-Rios & Natera, 2001).

Easy access to drugs is also positively correlated with substance use among male and female adolescents (Felix-Ortiz, 2001). One third of adolescents in Mexico reported that it was easy for them to obtain drugs while 67% of male and 57% of female adolescent drug users reported that they first

obtained the drugs from a friend (Medina-Mora et al., 2003). Perceptions on the social tolerance for drugs and the availability of drugs have also been shown to have an effect on drug use among male and female adolescent in Mexico (Medina-Mora & Rojas Guiot, 2003).

Although social tolerance for illicit drug use is lower in Mexico than in the United States, perceived social tolerance of substance use in Mexico is also positively correlated with adolescent substance use (Medina-Mora & Rojas Guiot, 2003). National figures indicate that 38% of adolescents thought that their peers saw alcohol and drug use as something positive or were indifferent to it (Medina-Mora et al., 2003). A comparative study between adolescents in Los Angeles, California and adolescents from the Mexican state of Baja California Norte showed that despite low levels of social tolerance for illicit drug use, Mexican students had higher rates of alcohol use compared to their peers in Los Angeles, California (Felix-Ortiz et al., 2001). This may be the result of alcohol being more acceptable in Mexican culture than other substances (Villatoro et al., 1998).

As in many countries, increased drug use in Mexico has led to an increase in intervention research on substance use prevention programs targeting children and youth. In an effort to modify behavior, early prevention programs focused on providing education about various drugs and their effects. Unfortunately, many of these programs have been found to be ineffective at changing drug use behavior (Botvin & Griffin, 2003; Lynam, Milich, Zimmerman, Novak, Logan, Martin, Leukefeld, & Clayton, 1999; Vega & Gill, 1998). Some of these interventions were not theory-based and often their effectiveness had not been evaluated through randomized trials. *Keepin'it REAL* is a theory based intervention that was evaluated using a randomized longitudinal design (Hecht, Marsiglia, Elek, Wagstaff, Kulis, Dustman, & Miller-Day, 2003). The different studies conducted on *keepin'it REAL* have taken place in the U.S. There is a need to test the applicability of the core components of the intervention in other countries. Mexico is a natural location as the majority of the students in the initial randomized trial in Arizona were of Mexican ancestry.

### **Theoretical Framework**

This study is guided by the *keepin'it REAL* integrated social learning, communication competency, and ecological theoretical framework. Social learning theory argues that observations of others' behavior are the key to learning and that personal behavior is a function of these observations

over time (Bandura, 1977). Therefore, adolescents who have observed drug use in friends, parents, siblings, and peers are more likely to also use drugs (Collins & Ellickson, 2004). According to communication competence theory, individuals communicate competently when they possess the knowledge of various forms of communication and master the ability to assess the situation and choose the appropriate form of communication (Bandura, 2001; Griffin, Botvin, Scheier, Epstein, & Doyle, 2002). Ecological theory (Bogenschneider, 1996) allows for an integration of the social and contextual factors unique to the population of youth in Northern Mexico and explains youth outcomes in terms of adolescents' personal attributes and the dynamic environments in which youth live. It accounts for protective factors that may offset risks in adolescents' lives such as collectivism and familismo.

Adolescents with high levels of social and personal competence tend to have the skills necessary to successfully overcome the challenges of adolescence through the use of positive or effective decision making (Griffin et al., 2002). Conversely, adolescents with low levels of social and personal competence may be unable to successfully cope with the challenges of adolescence which may lead to poor and ineffective decision making including drug use (Griffin et al., 2002).

Since teens are confronted with new situations and relationships as they progress through adolescence, specialized communication skills may be needed to effectively apply to various situations such as drug offers (Hecht & Driscoll, 1994; Crick & Dodge, 1994). Often adolescents need to have the ability to consider multiple strategies for a given situation (i.e., divergent thinking). Those who use more divergent thinking are able to replace ineffective responses or strategies with another more affective strategy. The most successful divergent thinkers will continue to use different strategies until an effective strategy or response is found (Wright, Nichols, Graber, Brook-Gunn, & Botvin, 2004).

There is some indication that culture may play a role in the development of specific sets or repertoires of strategies. The *keepin' it REAL* program (Marsiglia & Hecht, 2005) is a model program on the SAMHSA/CSAP National Registry of Effective Prevention Programs. The program is based on an integrated theoretical model that aims at strengthening adolescent drug resistance skills by integrating the assets coming from culture of origin within a specific and dynamic socio-cultural context as a resource to develop effective resistance strategies. The REAL strategies are an acronym that

captures the most common skills that students reported using in the Southwest U.S. to stay drug free: refuse, explain, avoid, and leave. *Refuse* is a simple no. *Explain* is a refusal with a story or a reason why the person wishes to say no. *Avoid* is a means to stay away from a situation or place where drugs will or might be used. Finally, *Leave* is an exit strategy used when the person is already in a situation or place and drugs are offered. The purpose of the present study is to advance knowledge on the impact of culture on drug resistance strategies by examining the drug resistance strategies used by adolescents in Mexico and the possibility of international adaptations of proven drug prevention programs from the United States. The overall research questions guiding the study is that drug resistance strategies identified as being commonly used among youth of Mexican ancestry in the U.S. are applicable to Mexican youth residing in Mexico.

## Methods

### Sample

This study utilizes data from a non-probability sample of 327 adolescents enrolled in two public secondary schools (*preparatorias*) in Monterrey, Nuevo León. These schools had been selected for a field trial of a youth substance use prevention program that was developed for multicultural populations in the U.S., and later adapted for use with Mexican youth (for details see Rodriguez and Luis, 2004; Gosin, Marsiglia & Hecht, 2003). Data for the present study, however, were drawn exclusively from the baseline (pre-test) survey, before the prevention program was implemented in order to depict the types of drug resistance strategies that these youth typically used before they participated in the trial.

Institutional review board approval was received through the Universidad Autónoma de Nuevo León and a nondisclosure statement was signed through Arizona State University. Parent consent and participant assent were obtained. Participants were informed by teachers that their participation in the study was strictly voluntary and that their confidentiality would be guaranteed. No personal identifying information was collected. Students with signed parental consents were invited to sign an assent form and to complete a pre-test survey in their regular classrooms in Spring of 2003. All students with parental consents and present on the day the survey was administered chose to participate in the study.

The sample was comprised of first- or second-year students, generally youth in the middle of adolescence. The majority of the participants, 87%,

were 15 or 16 years old (mean=15.7). The gender distribution was somewhat skewed: 56% males and 44% females. Most respondents were from intact nuclear families that could be characterized as middle class in Mexico. Seventy six percent of the participants reported that they lived in two-parent households and the majority, 58%, reported that at least one parent had a white collar occupation.

### Measures

Drug resistance behavior was measured by the participants' self reported use within the last 30 days of the resistance strategies that have been found to be common among adolescents the United States side of the border: *refuse* (saying no), *explain* (declining with an explanation), *avoid* (staying away from people or situations where drugs are offered), and *leave* (exiting situations or places where drugs are being offered). Students also indicated whether they used some other strategy to resist substance use offers. Responses to questions about the use of each resistance strategy were Likert-scale items and ranged from 1 = "Never" to 4 = "3 or More Times." These items were developed, validated, and tested in the original randomized trial of keepin it REAL that was conducted in Arizona (see Hecht et al. 2003).

The participants identified their gender as female or male and their age was self-reported in years. Students reported the occupational status of both their mother and father, with responses arranged in ordered categories from 1 to 9 according to the hierarchy of occupational prestige used in the Mexican census; higher values indicated higher prestige of occupation. For example, the category *Specialized Worker* and *Unemployed* were used to indicate lower socioeconomic status and *Independent Professional Worker* and *Professional Not Independent Worker* were used to indicate higher socioeconomic status. School achievement was measured by self reported average grades. Responses ranged from 1 (90-100%) to 4 (0-69%) and were recoded so that higher values would indicate better grade scores. Seventy-eight percent of the participants reported their average grades to be between 70 and 89 (equivalent to C's and B's). The recoded scale approximated a grade point average (GPA) on a 1-4 scale. Control variables for the number of substance offers were measured by reports of the frequency that someone had offered to sell or give the respondent specific substances in their lifetime. There were separate questions for alcohol, cigarette, and marijuana offers. Responses ranged from 0 = "Never", 1="Once", 2="2-3", 3="4-10", 4="11-25", 5="26-50", 6="51-100", to 7 = "Over 100" times.

### Analysis Strategy

The main purpose of this explanatory study was to examine the extent to which the REAL drug resistance strategies—refuse, explain, avoid and leave—and other strategies were utilized by a sample of adolescents in Monterrey. After presenting descriptive statistics on the use of the REAL strategies and other strategies for the total sample and for each gender, multivariate regressions are used to test whether the use of the drug resistance strategies could be predicted by demographic (gender, age, socioeconomic status) and academic achievement (average grades or GPA, ) variables. Separate models were estimated for the frequency of use of each of the resistance strategies and in connection with offers of three different substances: alcohol, cigarettes, and marijuana. The models control for the number of offers of the substance that the respondent received in the last 30 days. Although the data come from a non-probability sample and the results cannot be used to generalize to a specific population through the use of inferential statistics, we report conventional statistical significance (Type I error) as a means of identifying the more robust associations in the data.

### Results

Descriptive statistics showed that most of the study participants had recently used the REAL strategies, as well as some other strategy, to resist offers of alcohol, cigarettes and marijuana. Table 1 presents both the percentage of respondents who had used each strategy at least once during the prior 30 days, as well as the average number of times each strategy was used in that time. Although each of the four REAL strategies was used by majorities or near majorities, some variations occurred depending on the specific substance involved. As a means of resisting offers of alcohol and especially to resist offers of cigarettes, respondents were more likely to use the *refuse* and *explain* strategies, and used them more frequently, than the *avoid*, *leave*, or *other* strategies. In contrast, to deal with offers of marijuana, respondents relied more often and more frequently on *avoid* and *leave* than on any of the other strategies. The strategies used by the largest proportion of respondents—about two-thirds—were *refusing* cigarette and *avoiding* marijuana offers.

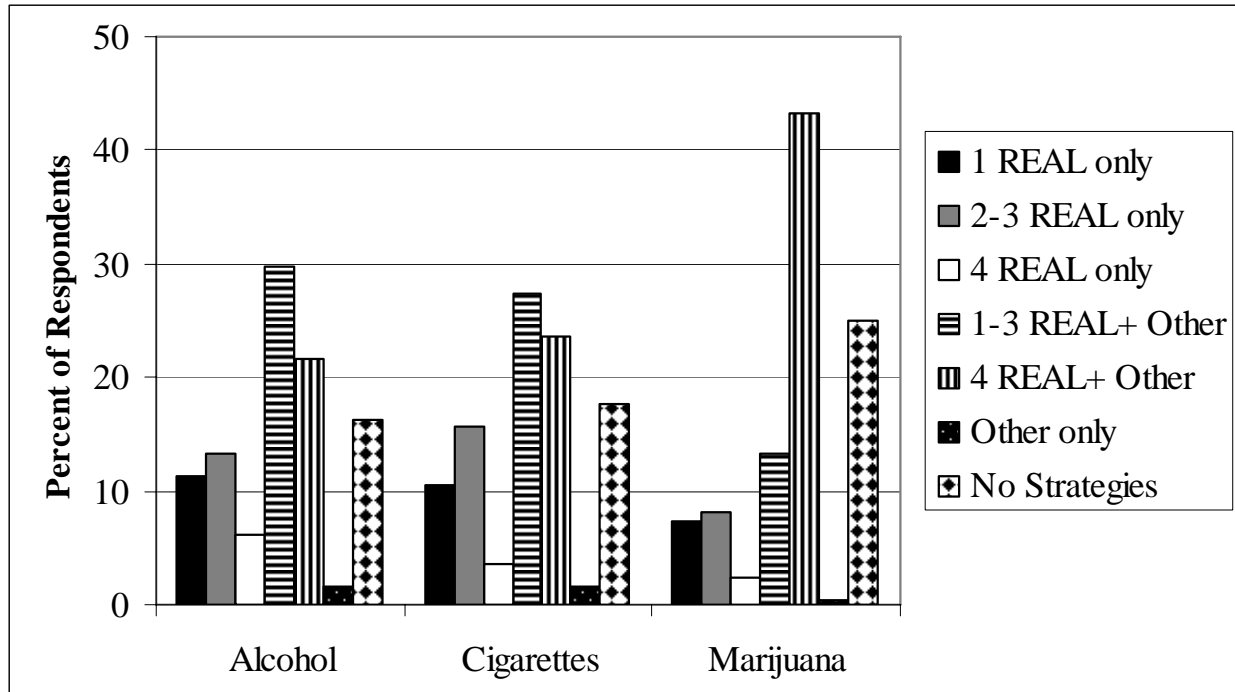
Table 1 also presents mean frequency of use of each strategy by gender. Although males tended to report somewhat higher mean frequency of use of the strategies, these gender differences were statistically significant only for two of the strategies dealing with alcohol offers. For that substance boys used *refuse* and *avoid* more often than did females.

Table 1  
Prevalence and Frequency of Use of REAL and Other Strategies in the Last 30 Days,  
for Total Sample, Males, and Females

Strategy		<u>Total Sample</u>			<u>Males only</u>		<u>Females Only</u>	
		Percent Using Strategy	Mean Frequency Used Strategy	Std. Dev.	Mean Frequency Used Strategy	Std. Dev.	Mean Frequency Used Strategy	Std. Dev.
Alcohol	Refuse	57.9%	1.24	1.25	1.39**	1.32	1.05	1.13
	Explain	57.9%	1.20	1.23	1.29	1.28	1.08	1.17
	Avoid	52.1%	1.12	1.25	1.20*	1.29	1.01	1.20
	Leave	51.1%	1.05	1.21	1.09	1.27	1.01	1.13
	Other	53.1%	1.12	1.24	1.19	1.27	1.02	1.19
	N	309	309		176		133	
Cigarettes	Refuse	67.6%	1.50	1.28	1.52	1.31	1.48	1.24
	Explain	62.4%	1.39	1.28	1.39	1.30	1.40	1.25
	Avoid	43.5%	0.92	1.20	1.00	1.24	0.82	1.14
	Leave	40.8%	0.87	1.18	0.95	1.22	0.76	1.14
	Other	52.6%	1.12	1.24	1.16	1.28	1.07	1.20
	N	306	306		175		131	
Marijuana	Refuse	58.1%	1.40	1.37	1.46	1.40	1.31	1.34
	Explain	56.7%	1.39	1.37	1.41	1.38	1.37	1.38
	Avoid	66.5%	1.65	1.35	1.61	1.37	1.71	1.34
	Leave	61.3%	1.51	1.37	1.50	1.39	1.53	1.35
	Other	57.0%	1.40	1.38	1.49	1.38	1.29	1.37
	N	284	284		265		119	

Significant gender differences at \* $p < .05$  or \*\* $p < .01$

Figure 1  
Combinations of REAL and Other Drug Resistance Strategies Used in Last 30 Days



A more complex picture of the drug resistance skills repertoire of the respondents is examined in Figure 1, presenting the percentages of respondents who used REAL and other strategies in various combinations to deal with exposure to particular substances. About a third of the respondents relied exclusively on the REAL strategies to deal with alcohol, cigarettes, and marijuana, most commonly by employing 2 or 3 different REAL strategies or just one of them, rather than by employing all four. A much more typical pattern, characterizing over half of the respondents' strategies for all three substances, was to use the REAL strategies in combination with some other strategy. For alcohol and cigarettes, respondents combined a subset of the REAL strategies with another strategy more often than using all four REAL strategies plus another strategy. For marijuana, however, the most typical combination—reported by a remarkable 43 percent of the respondents—was to use all four REAL strategies and another strategy. Two considerations make this figure especially notable. First, this group used these five different types of strategies all within the last 30 days. Second, a large portion of the remaining respondents—25 percent of the total—reported using no strategies for marijuana, and the reason for this was overwhelmingly because they had never received a marijuana offer (i.e., 92 percent of the “No

strategies” for marijuana group had never been offered marijuana). Thus, of those with opportunities to use marijuana, more than half were recently using all the REAL strategies plus other strategies as well. Another notable pattern across all substances was that respondents rarely (i.e., less than 2 percent) used a strategy other than REAL exclusively.

Multivariate regression models (Table 2-4) examined the frequency of use of the REAL strategies in the last 30 days using gender, age, socioeconomic status, and GPA as predictors, and controlling for the frequency of offers of each substance (alcohol, cigarettes, and marijuana). Gender was a significant predictor of the use of the *avoid* strategy, indicating that males used *avoid* more frequently than females (Table 2). A marginally significant effect in the same direction appeared for the *refuse* strategy. There were no differences by age in the use of any strategy for dealing with alcohol, and only one marginally significant effect of socioeconomic status that suggested that youth from higher SES families used the *explain* strategy less often than lower SES youth did. The use of the REAL strategies for alcohol did not vary by level of academic achievement (GPA), but students with higher GPAs did report using strategies other than REAL less often than students with lower GPAs. The

most important predictor of use of resistance strategies in these models was frequency of exposure to alcohol offers, but the direction of its relationship varied across strategies. Those receiving more alcohol offers used the *refuse* strategy significantly

more frequently, but used *avoid* and *leave* less often. The only model explaining more than 5 percent of the variation in the use of the strategy was the one for *avoid*, where both gender and the number of offers were significant predictors.

Table 2  
Regression Analysis of Frequency of Use of REAL and Other Drug Resistance Strategies to Resist Alcohol Use in the Last 30 Days

	<i>Refuse</i>	<i>Explain</i>	<i>Avoid</i>	<i>Leave</i>	<i>Other</i>
<b>Gender:</b> Male=1 Female=0	.277+ (.151)	.149 (.150)	.321* (.148)	.171 (.146)	.096 (.149)
<b>Age</b>	-.043 (.083)	-.027 (.083)	-.090 (.0812)	-.025 (.080)	-.039 (.082)
<b>SES</b>	-.046 (.035)	-.066+ (.035)	-.048 (.034)	-.028 (.034)	-.041 (.035)
<b>GPA</b>	-.037 (.105)	-.143 (.104)	.066 (.103)	.062 (.101)	-.265* (.104)
<b>Alcohol Offers</b>	.076* (.034)	.005 (.034)	-.127*** (.034)	-.101*** (.033)	-.046 (.034)
<b>Intercept</b>	1.709 (.486)	1.497 (.482)	2.609 (.474)	1.927 (.469)	1.157 (.481)
<b>N</b>	304	304	304	304	304
<b>Adjusted R<sup>2</sup></b>	.021	.005	.064	.028	.015

Unstandardized Coefficients

+ p < .10 \* p < .05 \*\* p < .01 \*\*\* p < .001

In the models predicting use of resistance strategies for cigarettes, *avoid* and *leave* were used more frequently by males than by females (Table 3). Age, SES and GPA were not appreciable factors except for a marginally significant relationship between higher GPA and more frequent use of the *leave* strategy. As with the alcohol strategies models, those who received more cigarette offers used *avoid* and *leave* less often, and there was a similar marginally significant effect for use of a non-REAL strategy. Two models—for *avoid* and *leave*—explained more than 5 percent of the variance, and as was the case for alcohol, both gender and the number of offers were significant predictors in these models.

The models predicting use of the REAL strategies for marijuana were different than for alcohol and cigarettes (Table 4). There were no

gender differences, and no effects of GPA. However, unlike prior models, age was a salient factor in the use of all of the REAL strategies in dealing with marijuana, as well as the use of strategies other than REAL. Older adolescents were less likely to use each of these strategies than their younger counterparts. Also unlike the models for alcohol and cigarettes, youth receiving more offers of marijuana reported using each one of the strategies—both REAL and non-REAL—more often. One marginally significant effect reappeared: higher SES predicted less use of the explain strategy, just as it did for alcohol. For marijuana there were two models explaining more than 5 percent of the variance, for *refuse* and *explain*, another departure from the alcohol and cigarette models.

Table 3  
Regression Analysis of Frequency of Use of REAL and Other Drug Resistance Strategies to Resist Cigarette Use in the Last 30 Days

	<i>Refuse</i>	<i>Explain</i>	<i>Avoid</i>	<i>Leave</i>	<i>Other</i>
<b>Gender</b> Male=1 Female=0	-.024 (.158)	.059 (.157)	.308* (.144)	.315* (.142)	.115 (.153)
<b>Age</b>	-.027 (.084)	-.091 (.084)	-.002 (.076)	-.014 (.076)	-.034 (.081)
<b>SES</b>	-.053 (.037)	-.015 (.037)	-.003 (.033)	-.026 (.033)	-.028 (.036)
<b>GPA</b>	-.069 (.109)	.139 (.109)	.109 (.099)	.178+ (.098)	-.013 (.106)
<b>Cigarette Offers</b>	.018 (.034)	.002 (.034)	-.135*** (.031)	-.108*** (.031)	-.059+ (.033)
<b>Intercept</b>	1.60 (.509)	2.173 (.506)	2.072 (.462)	2.241 (.457)	1.723 (.492)
<b>N</b>	301	301	301	301	
<b>Adjusted R<sup>2</sup></b>	.011	.005	.061	.055	.004

Unstandardized Coefficients

+ p < .10 \* p < .05 \*\* p < .01 \*\*\* p < .001  
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Table 4  
Regression Analysis of Frequency of Use of REAL and Other Drug Resistance Strategies to Resist Marijuana Use in the Last 30 Days

	<i>Refuse</i>	<i>Explain</i>	<i>Avoid</i>	<i>Leave</i>	<i>Other</i>
<b>Gender</b> Male=1 Female=0	.062 (.171)	-.004 (.171)	-.166 (.172)	-.105 (.174)	.146 (.173)
<b>Age</b>	-.204* (.090)	-.267** (.090)	-.200* (.090)	-.201* (.091)	-.234* (.091)
<b>SES</b>	-.042 (.039)	-.066+ (.039)	-.020 (.039)	-.017 (.040)	-.047 (.039)
<b>GPA</b>	.039 (.118)	.033 (.119)	-.129 (.119)	-.082 (.121)	.022 (.120)
<b>Marijuana Offers</b>	.279*** (.061)	.233*** (.061)	.135* (.061)	.143* (.062)	.212*** (.062)
<b>Intercept</b>	2.042 (.545)	2.340 (.548)	1.747 (.549)	1.781 (.557)	2.38 (.551)
<b>N</b>	279	279	279	279	279
<b>Adjusted R<sup>2</sup></b>	.069	.061	.023	.019	.047

Unstandardized Coefficients

+ p < .10 \* p < .05 \*\* p < .01 \*\*\* p < .001  
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The overall hypothesis of the study was confirmed as patterns of drug resistance among this non-probability sample of Mexican adolescents reveal important parallels to youth in the United States. Most of the respondents indicated that they used each of the REAL strategies in the last month, to

deal with offers of alcohol and marijuana, and the same proportions were using two of those strategies (*refuse* and *explain*) to resist cigarette use. Even larger proportions of the youth used REAL strategies in combination with some other strategy, and very few used strategies other than REAL exclusively.

Based on this sample it appears that the REAL strategies are a salient way that youth in Mexico respond to drug offers, much as they are employed by U.S. youth, but in combination with “other” strategies which may reflect the unique context of Northern Mexico (Marsiglia, et al., 2005; Moon et al., 1999).

Some differences were found in the specific strategy that respondents use to resist different drugs. The highest prevalence and most frequent use of the REAL strategies were found for cigarettes and marijuana. Over 60 percent of the youth used *refuse* and *explain* as a strategy to resist cigarette use, and used *avoid* and *leave* to resist marijuana use. The somewhat lower rates of use of the REAL strategies for alcohol compared to cigarettes and marijuana may be the result of the level of social acceptance of alcohol use in Mexico (Villatoro, Medina-Mora, Juarez, Rojas, Carreno, & Berenzon, 1998). These findings appear to support the idea that alcohol consumption in Mexico follows more of a Mediterranean approach to alcohol consumption which is not necessarily seen as part of problem or deviant adolescent behaviors (Felix-Ortiz et al., 2001).

The somewhat more frequent use of the REAL strategies for marijuana than for other substances is consistent with the lower social tolerance for marijuana compared to alcohol and cigarettes in Mexico. The low social tolerance for marijuana and other illicit drugs should be considered a cultural strength and a protective factor against drug use. Prevention programs that are developed by and for adolescents in Mexico will benefit from an explicit incorporation of these family-centered cultural values into the program.

Another potential cultural influence emerging from the results concerns the higher rates with which adolescents employed *avoid* and *leave* rather than *refuse* or *explain* for marijuana. This may suggest that Mexican adolescents do not feel comfortable adopting more active or assertive resistance strategies, and prefer to rely on more indirect or passive techniques in an effort to avoid confrontations or negative reactions from friends when they are offered substances. Previous research has documented how it is much more difficult for some youth to resist a drug offer from friends (Alberts, et al., 1991) or from relatives (Okamoto, LeCroy, Dustman, Hohmann-Marriott, & Kulis, 2004) than it is to actively decline an offer from a stranger. This avoidance appears also to be more feasible for illicit drugs, as licit drugs are ever present in the environment of the youth.

Large proportions of males and females reported that they used each of the REAL strategies. Although the proportions and males and females using each strategy were quite similar overall, there were some gender differences. Males typically used the strategies somewhat more frequently than did females, but this difference was statistically significant only in two instances, the use of *refuse* and *avoid* in dealing with opportunities to use alcohol. These findings may again reflect cultural norms creating higher social tolerance for substance use by males than for females, especially use of alcohol, and males’ more frequent exposure to substance use offers (Medina-More & Rojas Guiot, 2003). Males may *refuse* more often in response to more alcohol offers, and they may have more extensive access to and awareness of substance use opportunities, prompting more use of the *avoid* strategy. Although for females these differences can be interpreted as a cultural strength, they also may reflect deeper and more complex vulnerabilities in need of further research. For example, females’ lower rate of use of the more proactive strategies such as *refuse* may signal a lack of choice to resist substance use offers directly or in an assertive manner. Some of the female adolescents may be receiving offers from male romantic partners or relatives, which also makes it more difficult to *avoid* those situations. Fewer opportunities for social interaction and risk taking could limit the ability of some young women to develop and rehearse certain resistance strategies, and once confronted with a substance offer; they may not have the repertoire of skills to resist effectively. Adaptation of prevention programs for Mexico will benefit from a balanced integration of protective and risk processes associated with specific gender differences, strengths, and needs.

The strongest predictor of use of the REAL strategies was a measure of opportunity—the number of substance offers. However, the results show how use of different strategies may be both a consequence of and influence on such opportunities. Students who used *avoid* and *leave* more often for licit substances—alcohol and cigarettes—tended to receive fewer offers of these substances. Students receiving more offers of alcohol used the *refuse* strategy more frequently, and those receiving more marijuana offers used all four REAL strategies more frequently. The latter results suggest that adolescents navigate exposure to illicit substances like marijuana through different pathways than for legal substances. The comparably higher overall rate of the use of strategies for marijuana also indicates that these youth are highly exposed to and conscious of marijuana use opportunities, and have developed

multiple ways to resist its use. As illicit drug use in Mexico continues to increase, adolescents would benefit from interventions that teach them how to effectively resist offers of different types of substances by different types of people and in different social contexts.

Although there were no general patterns of differences in the use of REAL strategies according to age, socioeconomic, or academic achievement, some substance specific findings emerged. Older students' less frequent use of all the strategies—REAL and other—for marijuana is an important finding calling for further research. The rapid succession of developmental changes during adolescence is implicated in a complex interplay between skill development and exposure to risk through expanding peer social networks. As they progress through adolescence, youth encounter different situations that have an effect on their development and use of drug resistance skills. More developed skills may emerge but so do more plentiful opportunities to use substances. Although as adolescents mature they generally develop more effective drug resistance strategies (Clark et al., 1986; Hecht & Driscoll, 1994), these findings document that they also encounter more offers of a wider variety of substances which require a broader repertoire of refusal strategies. Effective drug resistance skills training may be needed for older youth in Mexico to successfully use their developing skills as their substance use opportunities expand, particularly regarding marijuana use. The findings may also signal large differences in attitudes toward marijuana use between secondary students in Mexico who are age typical for their grade level, and somewhat older students in the same classrooms.

Socioeconomic status did not appear to explain any of the differences in the use of the strategies. The sample was not very diverse in terms of SES. This lack of diversity may explain the contradiction with previous research about SES (Felix=Ortiz, et al, 2001). The high drop out rate in Mexico, especially in public high schools like the ones in this study, results in a “natural selection” through which students using drugs tend to dropout first or attend school less regularly. This is a serious limitation for all school based research on Mexican adolescents. To make the findings more representative, future research should make an attempt to reach out to students not present the day of the survey administration and those not enrolled in school.

Academic achievement was also unrelated to use of the REAL strategies. Students with higher GPA used non-REAL strategies more often for alcohol, but

there was no evidence that higher academic achievers generally had different repertoires of drug resistance skills.

The overall results of this study on the use of drug resistance strategies by secondary school youth in Monterrey found that adolescents in northern Mexico tend to use the same drug resistance strategies as adolescents in the southwest United States. This knowledge, paired with the knowledge of Mexican cultural norms and values, expands the existing foundation for prevention program adaptation that can be used to encourage the implementation and evaluation of evidence based drug prevention programs in Mexico. Prevention intervention programs adapted by and for Mexican youth will probably be more efficacious by directly addressing normative differences with the U.S. and not just transplant interventions modeled on zero tolerance for youth substance use.

#### **Limitations, Recommendations and Social Work Implications**

This explanatory study was conducted in a northern Mexican state with adolescents living in a large metropolitan area, one known to have higher rates of drug use than other states in Mexico. Therefore, the results of this study may not represent adolescent behaviors in other regions in Mexico. This is a relatively small sample from two public high schools and did not include adolescents not enrolled in school or those enrolled in private high schools. The study also did not take into account where the drug offers were made and by whom, and had no information on family and peer substance use and their possible impact on the use of drug resistance strategies.

Although students in the sample made frequent use of the REAL strategies, and seldom used “other” strategies exclusively, they often combined REAL and “other” strategies in their repertoires for dealing with alcohol, cigarettes, and especially marijuana. Respondents were not asked to specify the nature of these “other” strategies. The use of “other” resistance strategies by substantial proportions of the participants in this study suggests that future studies should further explore what other strategies are used and whether they have special cultural relevance. Future studies could also expand the size and scope of the sample to make it more clearly representative of a definable population, and to document the role of the strategies in successfully resisting substance use. Further research could help determine how proven drug prevention programs in the U.S. need to be adapted and utilized with international populations.

Social work faces the challenge of documenting the rising drug use trends in the border region and at the same time offer evidence based interventions, following its professional code of ethics and values. Social work researchers have a strategic opportunity to be engaged in the development of culturally specific models of drug prevention based on participatory action research methods that could greatly benefit youth on both sides of the border.

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