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DISSERTATION

FAMILY AND PEER INFLUENCES ON MEXICAN AMERICAN ADOLESCENT ALCOHOL USE: MODERATING EFFECTS OF SCHOOL ADJUSTMENT

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Summer 2002

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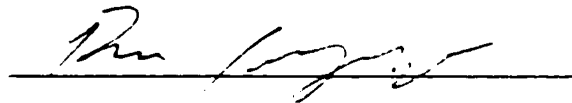
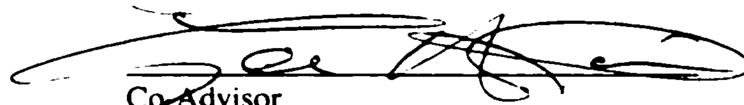
WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY MARIA CARLA CHIARELLA ENTITLED FAMILY AND PEER INFLUENCES IN MEXICAN AMERICAN ADOLESCENT ALCOHOL USE: MODERATING EFFECTS OF SCHOOL ADJUSTMENT BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work





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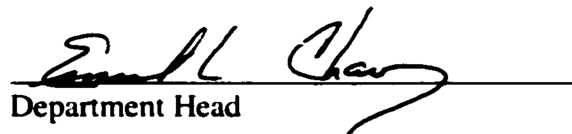

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ABSTRACT OF DISSERTATION

FAMILY AND PEER INFLUENCES ON MEXICAN AMERICAN ADOLESCENT ALCOHOL USE: MODERATING EFFECTS OF SCHOOL ADJUSTMENT

The goal of this investigation was to test a theoretical substance use model on a sample of Mexican American adolescents. The model evaluated the influence of family, peers, and school adjustment on alcohol consumption.

Data for this study was obtained from waves one and two of an NIAAA funded, three-year longitudinal study of 9th through 12th grade students. Students were from a sampling frame of communities within the Southwestern states of Texas, New Mexico, Arizona, Colorado, and California that have at least a 10% Mexican American population. The sample of communities was stratified into three population levels: 1) 2,500 - 10,000; 2) 10,001 - 50, 000; and 3) 50,001+. Twenty-one high schools were surveyed in both waves one and two of data collection. Thirty-five percent of all enrolled students completed the survey at Time 1. Those with complete data at both Time 1 and Time 2 were included in the final sample. Five hundred and fifty-four Mexican American students comprised the final sample; 217 were male and 337 were female.

A structural equation model was evaluated using EQS. The moderating effects of school adjustment on the socialization effects of parents and peers on alcohol use were assessed by comparing models by gender and by level of school adjustment. Findings

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demonstrated that Mexican American youth with high versus low school adjustment had less alcohol involvement. Among males and females, family sanctions against alcohol use had both direct and indirect influence on alcohol involvement. Moreover, peer influence remained constant across level of school adjustment and gender. Examining data across time revealed alcohol involvement at Time 1 significantly influenced peer alcohol associations, but not family sanctions, at Time 2. Finally, model differences were apparent by gender. These results are discussed with respect to future directions, both research recommendations and clinical implications.

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Literature Review

Introduction

Adolescence is a time of increasing exploration and experimentation. During adolescence many youth initiate behaviors that can negatively affect their development and their future physical and mental health. Detrimental behaviors, such as alcohol use and abuse may result in substantial morbidity, mortality, disability, and social problems (Vega & Gil, 1998). Alcohol-related problems continue to be a critical public health issue in the United States. Alcohol and other drug use by children of all ages are at epidemic levels (Johnston, O'Malley, & Bachman, 1997). Most troublesome is the high consumption of alcohol by adolescents.

Despite increased research of alcohol prevalence in adolescents, there is scarce information of alcohol use and alcohol-related problems among youth of racial/ethnic minority groups and subgroups. Currently, the accelerating social and demographic changes occurring in the United States, particularly the influx of Hispanics, is requiring researchers to examine cultural variables when conducting psychological research (Betancourt & Lopez, 1993). Traditional alcohol research has treated Hispanics as a single group overlooking differences based on countries of origin (Chavez & Swaim, 1992). Furthermore, investigations typically have focused on adult male drinking patterns (Vega & Gil, 1998). This exclusive approach has thus omitted important information regarding females and youth. Recent conceptual and methodological

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advances in ethnicity-focused alcohol studies reveal the great heterogeneity that exists within each ethnic group (Vega & Gil, 1998). Clearly, the drinking patterns of Hispanics deserve careful evaluation and analysis.

Hispanics in the United States, numbering 33 million and comprising nearly 15% of the population, are one of the fastest growing ethnic groups (U.S. Bureau of the Census, 2000). Approximately 63 percent of all Hispanics in the United States are of Mexican origin (U.S. Bureau of the Census, 2000). Among Hispanics, Mexican Americans are the youngest (median age = 23.7), the poorest (median income = 24,119), and have one of the highest birth rates (107 births per 1,000 women) (U.S. Bureau of the Census, 1995). While the size of the Mexican American population demands attention, its high proportion of youth is equally important. Considering the youthfulness of the population, there is even greater urgency to prevent alcohol use among Mexican American adolescents. Consequently, adequate knowledge of the etiology and social context of alcohol use among Mexican American youth must be acquired.

Models of Adolescent Substance Use

Only recently has research regarding adolescent alcohol use begun to include the social and cultural influences present in American society. Thus many questions remain unresolved not only about the epidemiology of alcohol use among ethnic minorities, but also about its social contexts and causal processes. Various models incorporating the major domains identified as critical to adolescent substance use have been investigated. None of the theoretical models utilized are entirely unique; all share common elements and concepts. Throughout much of this research prosocial bonds to family, peers, schools, and community are theorized to prevent/minimize substance use. Prominent

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models include Problem Behavior Theory (Jessor & Jessor, 1977), Social Learning Theory (Bandura, 1977), stage theories (Kandel, 1980, 1985) the Social Development Model (Hawkins & Weis, 1985), biopsychosocial models (Kumpfer, 1987), Peer Cluster Theory (Oetting & Beauvais, 1987), stress/coping models (Kumpfer & DeMarsh, 1986), the Social Ecological Model (Kumpfer & Turner, 1990-1991), and Primary Socialization Theory (Oetting & Donnermeyer, 1998; Oetting, Donnermeyer, & Deffenbacher, 1998).

Models of Hispanic Adolescent Substance Use

Several recent studies have examined numerous factors influencing Hispanic adolescent alcohol use. For example, Epstein, Botvin, Baker, and Diaz (1999) claimed the etiology of alcohol use for inner-city minority adolescents remains understudied. Consequently, these authors chose to examine the impact of social influences and problem behavior (Jessor & Jessor, 1977) on Hispanic and black adolescent alcohol consumption. The measures used in their study included demographic characteristics (gender, family structure, age, ethnicity, and socioeconomic status), social influences to drink (peer norms, adult norms, their friends' use, their mother's use, their father's use, their siblings' use, and perceived availability of alcohol), and problem behaviors (smoking cigarettes, smoking marijuana, and getting into trouble). Similar to previous studies, alcohol use by peers and family (father, mother, and siblings) significantly influenced the student's own drinking behavior. In addition, peer norms, but not adult norms, for drinking as well as availability of alcohol were related to adolescent alcohol use. Three problem behaviors were most influential on student alcohol consumption. These included getting into trouble, cigarette smoking, and marijuana use. Of the factors listed above, peer alcohol use was the most powerful predictor of adolescent drinking.

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In another study, Frauenglass, Routh, Pantin, and Mason (1997) applied an ecosystemic model of adolescent substance use to a predominantly Hispanic sample of eighth-grade students. Findings demonstrated adolescents' whose peers used cigarettes, alcohol, and marijuana significantly increased the chance that the adolescents would use the same substance. Furthermore, as levels of deviant peer behavior increased so did levels of self-reported substance use. In contrast, as the level of perceived family support increased, self-reported adolescent alcohol use decreased.

Attempting to understand the role of nativity in alcohol involvement among Hispanic adolescents, Gil and Vega (2000) implemented a longitudinal investigation comparing immigrant and U.S.-born males. Findings indicate that the U.S.-born group, rather than the immigrant group, engaged in greater alcohol consumption. Results based on structural equation modeling clarified that acculturation is linked to alcohol use through acculturation stress and the deterioration of familism and parental respect. These authors speculated, that while immigrants may face more acculturative stressors than individuals born in the U.S., a greater risk is posed to U.S.-born Hispanics whose traditional Latino value of familism is eroded, in turn increasing the likelihood of a deviant disposition.

In California, Elder et al. (2000) surveyed 660 migrant Hispanic students between the ages of 11 and 16 years. Demographic characteristics, attitudes, acculturation, communication with parents, amount of social support, and satisfaction with social support were all assessed regarding their impact on adolescent alcohol consumption. Results showed the best predictors of adolescent alcohol use were age, attitudes toward

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drinking, satisfaction with social support, and level of parent-child communication, as well as peer and family use of alcohol.

Four substance use studies were found to investigate Mexican American adolescents in particular. Bray, Getz, and Baer (2000) used a developmental psychosocial model to explain adolescent alcohol use in a sample of 1,200 Black, White non-Hispanic, and Mexican American junior high students in Houston, Texas. A structural equation model evaluated the influence of two measures of individuation (separation and intergenerational individuation), family conflict, communication with mother, stress, and peer use of alcohol on adolescent alcohol consumption. Results showed family factors, individuation, and peer alcohol use were each predictive of adolescent alcohol use across the three ethnic groups. Furthermore, the authors emphasized this common pattern is consistent with previous research indicating similarity across diverse populations in predicting adolescent alcohol use.

In a similar study, Murguia, Chen, and Kaplan (1998) compared causal factors in substance use among Mexican American and White non-Hispanic adolescents. These authors reported that among Mexican American students, family warmth, but not positive school experience, deterred the association with substance-using peers. The opposite was true for White non-Hispanic adolescents. All students indicated a positive school experience reduced adolescent alcohol use.

Zapata, Katims, and Yin (1998) conducted longitudinal research focusing solely on Mexican American youth. Researchers used a risk-factor model including such indices as demographic information, deviant behavior, family conflict, susceptibility to peer influence, peer use of substances, substances offered, dysphoria, stressors, and

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school satisfaction to assess minor and major substance use. Initiation of minor substance use was attributed to grade of the student in year one of the study, deviant behavior, and low self-esteem. Predictors of major substance use were gender (being male), grade of the student in year one of the study, deviant behavior, and use of minor substances.

Lastly, Félix-Ortiz, Villatoro Velázquez, and Newcomb (2001) surveyed adolescents in Los Angeles, California and Baja California Norte, Mexico. Data was collected regarding demographic (sex, age, absences from school, grades, employment, and parents' education), environmental (social intolerance of cigarette use, social intolerance of alcohol use, social intolerance of drug use, availability of drugs, and peer drug use), and individual (sadness, perceived harmfulness of cigarette use, perceived harmfulness of alcohol use, perceived harmfulness of drug use, positive history of sexual abuse, and number of delinquent behaviors) influences on substance use. Study highlights showed more Mexican, rather than Mexican American, students had used alcohol. Moreover, Mexican adolescents perceived alcohol and other drugs to be less harmful than the students from California. These findings were attributed to fewer substance use prevention programs in Mexico compared to the United States. When groups were examined according to nationality, higher parents' education was the significant demographic predictor of alcohol use among Mexican students. Among U.S. students, particularly females, a higher number of absences from school predicted alcohol use. Furthermore, peer drug use was a strong predictor of most types of drug use among Mexican American students, but for the Mexican students peers were only predictive of illicit drug use. A final comparison of gender revealed female drug use was most

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influenced by environmental and demographic variables, whereas individual characteristics were most predictive of male substance use.

Proposed Model of Mexican American Adolescent Alcohol Use

The present study attempts to address some of the gaps in the substance use literature regarding ethnic minority youth. The goal of this investigation is to test a theoretical substance abuse model on a sample of Mexican American adolescents. The model will evaluate the influence of family, peers, and school adjustment on alcohol use. This model is predicated on assumptions drawn from a large body of research demonstrating that socialization influences have been demonstrated to be effective and powerful predictors of adolescent substance use across ethnicities (Oetting & Beauvais, 1987; Swaim, Oetting, & Casas, 1996; Swaim, Oetting, Thurman, Beauvais, & Edwards, 1993). During adolescence, parents, peers, and schools are primary social influences (Oetting & Donnermeyer, 1998). Substance use attitudes and behaviors of parents and peers can serve as risk or protective factors that either promote or discourage the emergence of substance use. Additionally, individual problems in school adjustment, including poor grades, dislike of school, and disciplinary problems have been related to substance use (Oetting & Donnermeyer, 1998). Within the U.S., the links between school problems and drug use occur across cultures. A study by Swaim et al. (1993) suggests that the effects of school adjustment on the effects of parents and peers have on adolescent alcohol use may differ by ethnicity. Before the model for this study can be explained, we must first understand how these basic assumptions are described in the research on the epidemiology of alcohol usage, first in Mexico, and then among Mexican Americans.

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Epidemiology of Drinking Patterns for Mexicans and Mexican Americans

Mexicans.

Alcohol use patterns vary greatly among different countries and among different ethnic groups within one country. Variations in drinking patterns include the types of beverages consumed, occasions during which consumption typically occurs, drinking levels that are considered normal, and population subgroups for whom drinking is acceptable. Medina-Mora (1998) describes Mexico as a "good example of a dry culture where the rate of abstainers is high, the dominant pattern of heavy drinking is rarely very heavy and binge drinking is common. Although it is integrated in everyday life, alcohol is at the same time seen as dangerous and harmful" (p. 279). A recent cross-cultural investigation of alcohol consumption conducted by Bennett, Campillo, Chandrashekar, and Gureje (1998) presents information on Mexican drinking practices obtained from the capital of Mexico City and its environs as well as the state of Chiapas. Beer appears to be the Mexican drink of choice accounting for 89 percent of all alcoholic beverages consumed in Mexico in 1989 (Natera Rey, 1995). Nevertheless, compared with other countries, Mexico has a relatively low per capita consumption of alcoholic beverages. According to the National Survey of Addiction conducted in 1988 among people ages 18 to 65 living in urban areas of Mexico, 46.5 percent of the people in that age group abstained from alcohol consumption (i.e., drank an alcoholic beverage only once per year or less) (Natera Rey, 1995). Abstinence rate differed substantially between men and women (26.6 percent versus 63.3 percent, respectively). The majority of regular drinkers are men, whereas women who consume alcohol are generally infrequent drinkers. Overall, men drink more often and consume greater amounts of alcohol than do women.

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In fact, only a small proportion of the Mexican population is responsible for most of the alcohol consumption: 75 percent of the available alcohol was consumed by only 25 percent of the drinkers (Natera Rey, 1995). Among both Mexican men and women, the prevalence of drinking increases with increasing income but decreases with increasing age (Medina-Mora, Rascon, Otero, & Gutierrez, 1988). Mexican men also have a high proportion of problems associated with drinking (Rosovsky & Romero, 1996). During the 1970s and 1980s, Mexico had one of the highest mortality rates from liver cirrhosis in Latin America (i.e., 20 to 23 deaths among 100,000 people). Differences in drinking patterns between rural and urban areas also have received considerable attention. According to some studies, alcohol consumption is substantially higher in certain rural versus urban communities (Natera Rey, 1987). Researchers explain that in certain parts of Mexico greater amounts of drinking coincide with the celebration of numerous festivals (Natera Rey, 1995). Other studies suggest that as Mexicans migrate from rural communities to urban areas, males drink less and females drink more (Natera Rey, 1987). In 1982 the Mexican Ministry of Health assumed responsibility for the nation's health policies. Beginning in 1983, the National Council Against Addictions initiated measures to prevent alcohol abuse and related problems. Since then, the Council has encouraged "more emphasis needs to be placed on local problems, along with the development of specific subprograms" (Medina-Mora, 1998, p. 281).

Mexican Americans.

Among Mexican Americans alcohol consumption is highly influenced by birthplace (nativity), generation status, length of residence in the United States, acculturation, marital status, socioeconomic level, and gender (Vega, Alderete, Kolody,

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& Aguilar-Gaxiola, 2000). Mexican American immigrants tend to maintain the norms of Mexican society regarding gender-specific proscriptions regarding alcohol consumption and the social contexts for its use. Thus, heavy drinking and drunkenness is primarily a male activity, whereas abstention and infrequent light drinking is the common pattern for women (Canino, 1994). Nonetheless, acculturation and nativity appear to have complex effects that increase vulnerability to alcohol problems among Mexican Americans. Although Mexican immigrants have very low rates of substance abuse problems when they enter the United States, they have a rapidly accelerating risk curve for substance abuse problems, especially among those who immigrate at an early age (Vega & Gil, 1998). Vega et al. (2000) report that immigrants with 13 years or more of residence in the United States were 3.4 times more likely than immigrants with fewer than 13 years to meet criteria for an alcohol abuse or dependence diagnosis. Interestingly, acculturation seems to have less of an effect on men than on women (Randolph, Stroup-Benham, Black, & Markides, 1998). Among young adult Mexican American women higher rates of light to moderate drinking are associated with being U.S. born, single, and employed (Black & Markides, 1993). In a study of Mexican American women living on the Texas border, Holck, Warren, Smith, and Rochat (1984) reported increasing levels of education signaled decreased rates of abstention from 64.1% to 28.4%. Black and Markides (1993) also showed that Mexican American women consumed a higher volume of alcohol and more often reported heavy drinking than did other Hispanic women. In turn, Mexican American males appear to drink less frequently but in greater quantities than White non-Hispanic men (Randolph et al., 1998). Caetano (1988) indicated that although Mexican American men had higher rates of abstention than other Hispanic men, they also had the

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highest rate of frequent heavy drinking (defined as consuming five or more drinks in one sitting at least once per week). Other studies have observed Mexican American men drink heavily and become frequently intoxicated (Gilbert & Cervantes, 1986). Data from the 1982-1984 Hispanic Health and Nutrition Examination Survey (HHANES) found that Mexican American men were more likely than other Hispanic males to report that they had experienced a time in their lives during which they considered themselves to be heavy drinkers. The survey also showed that men who had been heavy drinkers in the past were more likely to continue heavy drinking (Lee, Markides, & Ray, 1997). In a 1993 study, Black and Markides examined life-course drinking patterns among Mexican American men ages 25 to 74. The authors found that 84.6 percent of males ages 25 to 34 could be classified as current drinkers, while abstinence was highest in the groups ranging from ages 45 to 74. Lastly, Vega et al. (2000) stresses for Mexican Americans early drinking is implicated in lifelong personal consequences, "especially increased risk of substance abuse problems and the associated loss of socioeconomic productivity, and health, criminal justice, and dependency problems" (p. 263).

Similar drinking patterns have resulted for Mexican American adolescents (Harrison & Kennedy, 1994). Acculturation is positively related to girls' but not to boys' use of alcohol (Vega & Gil, 1999). In girls, the change in consumption is attributed to females adapting to the U.S. culture, which is more permissive toward female drinking than the Mexican culture. In contrast, acculturation effects on boys' alcohol consumption changes more the pattern of drinking than the total amount. This may be due to U.S. and Mexican cultural views not to sanction male drinking.

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Cultural Reasons for Alcohol Use

Researchers argue that each culture has its own expectations of alcohol's effects, its own reasons for drinking, and its own norms and sanctions for controlling the behavior of those who drink. The different drinking patterns in Mexico and the United States presumably stem from each culture's expectations, reasons, and sanctions. The most common view of Mexican American drinking patterns is that these include elements of the patterns peculiar to Mexico and the United States, and that as Mexican Americans acculturate, their drinking patterns will more nearly resemble those of the majority culture (Vega & Gil, 1999).

In Mexico, ethnographic studies suggest that heavy drinking traditionally arose from social rather than escapist reasons. With the passage of time, urbanization influenced economic conditions without necessarily changing alcohol consumption levels. Modernization, however, introduced escapist motives for alcohol use to the culture, thereby increasing problem drinking (Golding, Burnam, Benjamin, & Wells, 1992). Researchers speculate similar changes are likely to occur within Mexican immigrants to the United States.

In 1987, Neff, Hoppe, and Perea surveyed reasons for drinking among Mexican American and White non-Hispanic men. In this study, Mexican American men rated as "very important" more reasons involving alleviation of undesirable psychological states than did White non-Hispanics. When individual reasons were examined, Mexican Americans were more likely to rate three reasons as very important: "helps me forget problems," "helps me feel more satisfied," and "helps reduce boredom." Neff et al. also examined differences in level of acculturation and reasons for drinking. Interestingly, the

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likelihood of drinking to help forget problems decreased as acculturation increased. Caetano and Medina-Mora (1990) revealed similar results. Acculturation was associated with decreases in all reasons for drinking, but the greatest acculturation differences were in reasons such as liking to get drunk, drinking to forget worries or problems, drinking to increase self-confidence, and drinking when feeling anxious. Other researchers found that among men all reasons for drinking tended to be associated with heavy drinking and alcohol abuse or dependence and, to a lesser extent, with daily drinking (Golding et al., 1992).

Only one study was found regarding alcohol-related expectations among Mexican American women (Gilbert, Mora, & Ferguson, 1994). This study focused on women of Mexican heritage in the Los Angeles area. Results showed that Mexican American women generally have the same expectations about the benefits of alcohol use as women from the majority population. Specifically, professional status and level of acculturation were linked to higher expectations of benefit from the use of alcohol. Benefits were associated with aspects of interpersonal interaction such as social pleasure, sexual enhancement, arousal, aggression/power, and social assertiveness. Thus, the authors surmise that more highly acculturated and professional women may think of and use alcohol as a "social lubricant."

Among adolescents, males tend to use alcohol and drugs more for social and recreational purposes related to enhancing self-importance (Newcomb, Chou, Bentler, & Huba, 1988), sensation-seeking, or expectations of social and physical pleasure (Novacek, Raskin, & Hogan, 1991). Females, however, use alcohol more for the purposes related to self-medication such as reducing negative affect (Newcomb et al.,

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1988), minimizing tension (Mooney, Fromme, Kivlahan, & Marlatt, 1987), and coping with various personal problems (Novacek et al., 1991). In a recent study conducted in the Houston Independent School District with a large Mexican American sample, female students indicated initiating alcohol use because of personal problems such as having a serious argument with a significant other, feeling angry at someone or something, or having unbearable troubles (Liu & Kaplan, 1996). In contrast, male students typically initiated alcohol use to gain peer approval, to test their manhood, and to enhance their sense of power. In the case of binge drinking, both male and female Mexican American students reported drinking out of boredom and feeling ashamed while drinking but less ashamed after having consumed the alcohol.

A summary of research into the epidemiology and of cultural reasons given for alcohol use among Mexican Americans supports the probability that, like Mexicans who move from rural to urban settings, Mexican Americans modify both their alcohol usage behavior and the reason they give for it. Both men and women move from drinking at social (i.e. celebratory or festive) occasions to drinking at will for escapist reasons. Furthermore, women more than men take advantage of acculturation, moving away from the traditional cultural sanctions. However, the alcohol usage behavior of Mexican American adolescents can still be understood within the context of influence from peers and family.

Peers

Volumes of research clearly indicate peer influence is the most reliable and powerful predictor of adolescent alcohol use (Alva, 1995; Bruno & Dosher, 1979; Coombs, Paulson, & Richardson, 1991; Frauenglass et al., 1997; Newcomb & Bentler,

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1986; Wright & Watts, 1988). In 1986, Oetting and Beauvais developed a powerful conceptual approach, Peer Cluster Theory, to investigate adolescent alcohol and drug use. Peer Cluster Theory utilizes variables from the social and the perceived environments as well as personality factors to explain conditions that may increase or decrease the likelihood of adolescent substance use.

This theory postulates that adolescent substance use occurs almost solely within the context of peer clusters. The authors describe peer clusters as "smaller subsets of peer groups – tight cohesive groupings – in which clearly defined attitudes and shared behaviors mark membership" (Oetting & Beauvais, 1986, p. 19). Each peer cluster member is active and participates in shaping norms and behaviors of that cluster. Specifically, peer influence is manifested not only in the shaping of attitudes and sharing of ideas and beliefs, but also by providing alcohol and the social context for its consumption.

It is important to note that this model when first tested consisted mostly (97%) of White non-Hispanic adolescents (Swaim et al., 1993). For the initial sample of White non-Hispanic adolescents, peer drug associations accounted for the majority of the variance in substance use while family sanctions did not directly affect drug use (Oetting & Beauvais, 1987). Subsequent studies have applied Peer Cluster Theory to diverse adolescent populations with varying results. Swaim et al. (1993) found American Indian youth are more responsive to family influences and less responsive to peer influences in their decisions regarding alcohol and other drug use. Among Mexican American adolescents, Chiarella (unpublished master's thesis) reported that peer alcohol associations were more strongly associated with adolescent alcohol involvement than

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were family sanctions against drinking regardless of the level of ethnic identification. Furthermore, family sanctions of alcohol were directly associated with adolescent alcohol use and peer alcohol associations among Mexican American Identified females, but not males.

Most studies on adolescent alcohol use find that peer influence operates through modeling and norms. Newcomb and Bentler (1986) reported Hispanics had significantly higher correlations between perceived-peer versus perceived-adult consumption of alcohol and self-use. The authors further speculated that Hispanics appear to show a vulnerability to influences stemming from their interpersonal relationships. Similarly, Coombs et al. (1991) explained that Hispanic substance users, compared to abstainers, were more strongly influenced by peers than parents. Adolescents who used alcohol described feeling better understood by their friends, were more influenced by them, respect friends' ideas more, particularly in difficult situations, and would ignore parental objection to certain friends. Examining gender differences, Alva (1995) established that more Hispanic adolescent males than females reported having friends who drink. In a California sample, Hispanics were found more likely to use alcohol when they perceived it to be readily available and easily acquired from friends (Maddahian, Newcomb, & Bentler, 1986). Among Mexican American high school students in Texas, friends' use of alcohol, along with early use, accounted for most of the variance in prevalence rates (Wright & Watts, 1988). Only one study was found regarding attitudes and alcohol-related norms among Mexican American adolescents (Bruno & Dosher, 1979). In this study, students indicated that heavy but not ordinary drug use might cause academic

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problems in school. However, students did not believe that alcohol or other drug use was associated with negative social consequences.

Family

"Familismo" has been proposed by Moore (1970) as one of the most important culture-specific values of Mexican Americans. A careful look at familismo suggests that relationships between family members differ in kind, not degree, within Mexican American and White non-Hispanic families. Mexican American families want their mature children to remain close, to continue to share family life, and demonstrate interdependence not independence (Marin & Marin, 1991). Thus, Mexican American families emphasize socialization within the extended family. The larger the extended family, the easier it is for individuals to find others within the family network as preferred close friends. In adolescence, Mexican American children may seek the companionship of peers, but do not thereby necessarily challenge or come into conflict with their parents.

Sabogal, Marin, Otero-Sabogal, Marin, and Perez-Stable (1987) enumerate the values that create a close family network: familial obligations, perceived support from the family, and the family as referents. These values produce feelings of loyalty, solidarity, and reciprocity, and lead to specific behaviors markedly different from those of the dominant U.S. culture. The Sabogal et al. study, like the work by Keefe and Padilla (1987), shows that acculturation changes in language proficiency, the passing of generations, and the rise of education, income and status, does not change the essence of familismo. In fact, the research reveals that with time the Mexican American family network grows in size and strength.

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Familismo has received considerable attention in the Hispanic alcohol use literature (Catalano et al., 1992; Coombs et al., 1991; Vega, 1990; Vega, Zimmerman, Warheit, Apospori-Zografos, & Gil, 1992). Researchers speculate that familismo may so significantly strengthen the influence of the family as to change the relative balance between peer and family influence found within the White non-Hispanic culture. Certain family qualities have been shown to be associated with such influence. The significant categories include: caring, communication, attitudes, and modeling.

Coombs and Landsverk (1988) developed a family profile for Mexican American adolescent abstainers, in which parents set clear behavioral limits, reinforce them with praise and encouragement, and maintain a warm, caring relationship so that their children desire to please and emulate them. The authors also acknowledged that dependence on parental advice and "guidance with decisions" significantly diminishes adolescent alcohol use. Gil, Vega, and Biafora (1998) emphasized this position citing poor communication, family disagreements, and unclear expectations from parents, as contributing to Hispanic adolescent alcohol use.

Little is known about attitudes toward teen drinking held by Hispanic adults. Alcocer (1979) explains that Mexican American adults varied significantly by gender, with males being more accepting of adolescent alcohol use than females. Gilbert (1985) reports that interviews with Mexican Americans in California showed that age norms for first alcohol use among males frequently are based on situational criteria such as full-time job responsibilities rather than chronological age. There is also some evidence that parental fears about use of illicit drugs tends to distract attention from adolescent alcohol use.

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Lastly, Newcomb and Bentler (1986) proposed Hispanic youth are particularly susceptible to modeling their behavior after that of adults. Research conducted by Gilbert (1985; 1989a; 1989b) and Estrada, Rabow, and Watts (1982) observed that sibling and parental drinking greatly affects Mexican American adolescent alcohol consumption, particularly among males. Furthermore, in a study of Mexican American adolescents in Texas, Guinn (1978) found that use of alcohol was significantly related to alcohol use by the father, but not the mother.

Despite increased research, the relationship between familismo and the drinking patterns of Mexican American adolescents remains ambiguous. On one hand, familismo reinforces caring and communication. On the other hand, familismo may offer inconsistent cues in attitudes and modeling.

School Adjustment

In regard to peers and family, it appears possible for acculturating Mexican American adolescents to develop new behaviors and new norms without sacrificing underlying attitudes and values. That may be more difficult when it comes to school. The unusually high school drop out rate for Mexican American adolescents has been variously explained (Mc Millen, Kaufman, & Whitener,1994; Rumberger, 1991), but the facts are difficult to ignore.

If, as it appears, Mexican American adolescents have a much harder time than their White non-Hispanic peers in persisting through their school experience and achieving graduation, that difficulty has implications for risky drinking patterns. Those Mexican American adolescents who do poorly in school also drink more, and more often, than those who do well (Chavez, Deffenbacher, & Wayman, 1996). Mexican American

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adolescents who drop out along the way drink even more and more often (Chavez et al., 1996; Swaim, Beauvais, Chavez, & Oetting, 1997). The school seems, indeed, to be the proving ground for Mexican American acculturation. As much as the family (Delgado-Gaitan, 1990; Hernandez & Descamps, 1986), and the Mexican culture of origin (Buriel & Cardoza, 1988), may value education, substantial barriers make it difficult for Mexican American adolescents to adjust to school in their new, host culture and to make use of its resources.

Previous Research.

Traditional models of school achievement have identified socio-economic, cultural, parental, and personal variables that affect the educational experience of Mexican Americans. More specifically, some researchers have posited a "cultural deficit" model that blames the genetic, cultural, and behavioral characteristics of minority groups (i.e., Hispanics and Blacks) for their lower IQ and scholastic achievement scores, poorer academic grades, and consequent limited upward mobility in socioeconomic status (Anderson & Evans, 1976; Heller, 1966).

This deficit tradition assumes that minority students approach school from an impoverished cultural context that is in opposition to academic achievement. From this perspective, minority parents are seen as not valuing education, ineffective in their teaching strategies, and unsupportive of their children's academic pursuits (Hess & Shipman, 1965; Mc Gowan & Johnson, 1984; Walker, 1987).

Other researchers have provided evidence that directly challenges a cultural deficit model for explaining the school achievement of Mexican American youths (Alva & Padilla, 1987; Cummins, 1986; D'Andrade, 1984; Ogbu & Matute-Bianchi, 1986;

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Rumberger, 1987; Suarez-Orozco, 1986). Alva and Padilla (1987) propose a more progressive "contextual interaction model," which examines individual behaviors in terms of the sociocultural contexts in which the student functions. Moreover, this model suggests that academic outcomes are influenced by the student's perceptions of contextual factors. Lastly, this model extends previous research by identifying protective factors, such as personal (i.e. motivation and interpersonal skills) and environmental (parental support and extra academic aid) resources.

Definitions.

Numerous studies on education have developed different definitions and measures of academic adjustment. A common theme underlying all of these definitions is the value and importance given to education. Most of the investigations that use academic indexes define school adjustment from the perspective of the student rather than from the perspective of the school administrators or teachers. These studies seek to measure the degree of student satisfaction rather than look at student evaluations conducted by the school. The following are examples of definitions found throughout the literature.

The majority of studies that incorporate a measure of school adjustment frequently use terms such as academic achievement, school performance, school engagement, and school involvement. Factors used to assess adjustment to school include school grades (Velez, 1989), grade point average (Gillock & Reyes, 1999), reading, mathematics, and vocabulary skills (Buriel & Cardoza, 1988), scores on standardized tests (Alva, 1991), absenteeism (Rumberger & Larson, 1998), grade retention (Walker, 1987), involvement in extracurricular activities (Catterall, 1998), and educational aspirations (Paulson, Coombs, & Richardson, 1990).

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In a study by Brooks, Stuewig, and LeCroy (1998) school adjustment is used to assess a sense of school belonging and involvement. Three scales comprised the authors' school adjustment domain, these included school attachment (i.e., students' feeling accepted by school personnel and other students), school involvement (i.e., frequency of participation in various school activities), and school achievement (i.e., grades received in school). School behavior and motivation to succeed are the focus of a study conducted by Flannery, Vazsonyi, Torquati, and Fridrich (1994). Delgado-Gaitan (1988) offers a broader definition of academic achievement compared to most studies using the same terminology. In this study, the author discusses academic achievement as comprised of knowledge acquisition, classroom participation, academic performance (i.e., grades), and student mentorship. Bernal, Saenz, and Knight (1991) define adaptation as behavioral or attitudinal changes in response to cultural, social, and interpersonal demands. These authors add that while in school settings, students may choose to comply with school rules, interact with peers, or engage in extracurricular activities. Focusing on more successful students, Alva (1991) describes academically resilient students as those who maintain high achievement, motivation, and performance, despite facing difficult circumstances that place them at risk academically and increase the probability that they will drop out of school. Similarly, Catterall (1998) defines school resilience as a recovery from low academic performance and alienation from school.

In contrast, a number of researchers have examined poor school adjustment (De Vos, 1978; Matute-Bianchi,1985; Ogbu, 1977). Sinclair and Ghory (1987) describe marginal learners as students who fail to achieve full and satisfying involvement in school-life. Lastly, Ogbu (1977) claims that among Mexican American students, school

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failure may be understood as an adaptation to the barriers established by the majority population in order to maintain the inequality of the status quo.

For the purposes of this investigation, school adjustment will be defined in terms of students' satisfaction with general and specific aspects of their school environment. Students were asked to rate their attitude toward school (i.e., "School is fun"), their attitude toward teachers (i.e. "I like my teachers"), and their school performance (i.e., "I get good grades").

Socioeconomic Status.

Among the variables that have been linked to school adjustment, socioeconomic status has received the most attention (Reyes & Jason, 1993). Steinberg, Blinde, and Chan (1984) point out that most investigations that have addressed socioeconomic status in examining school-leaving behavior indicate that youth of lower financial means are more likely to drop out of school than their more economically advantaged peers. Research shows 41% of Hispanic children live in poverty (Hechinger, 1992). Gonzalez & Padilla (1997) describe students of low socioeconomic status as tending to live in neighborhoods where there are poor housing conditions, inadequate public and social services, as well as schools lacking funds to provide a quality education. These authors claim that any one of these factors, alone or in combination, may place low socioeconomic students at risk for academic failure. Velez (1989) explains that students from more privileged families may experience richer cognitive environments and may receive greater help from their parents. Moreover, more affluent parents are more likely to communicate with school staff, and thus better monitor their children's academic progress. In a study conducted by Valencia, Henderson, and Rankin (1985) the best

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predictor of general cognitive performance for Mexican American students was their score on the Henderson Environmental Learning Process Scale (HELP), which measures the intellectual environment of the home. Similarly, Manaster, Chan, and Safady (1992) report that academically unsuccessful Mexican American migrant students can be characterized as coming from large, poor, rural families.

Acculturation.

The migration of much of the Hispanic population in the southwest of the United States brings youth to schools with vastly different socialization and acculturation backgrounds (Ponterotto & Casas, 1991). Some of the cultural characteristics that would be expected to change with the level of acculturation within the Hispanic population would be strength of family ties (Keefe, Padilla, & Carlos, 1979) values and norms between home and school environments (Harrison, Wilson, Pine, Chan, & Buriel, 1990), and respect for the school as a institution (Ramirez & Casteneda, 1974). Previous research suggests acculturation is an important construct for investigating Mexican American migrant students' success or failure in school (Franco, 1983; Gonzalez & Roll, 1985) and for predicting intellectual performance of Mexican American youth (Valencia et al., 1985). The acculturation process is particularly difficult for individuals who immigrate to the United States after the age of twelve (Gonzalez & Padilla, 1997). Older Mexican American immigrants experience greater acculturative stress in comparison to younger immigrants (Mena, Padilla, & Maldonado, 1987). Migrant Mexican American students who undergo continual disruption in their school experience, are likely to have increased number of stressors, weaker social ties with peers, and a decreased sense of belonging to the community, school, and classroom (Cranston-Gingras & Anderson,

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1990; Gil, Vega, & Dimas, 1994; Salend, 1990). Gonzalez and Roll (1985) report that the more acculturated Mexican American students were to the dominant society, the better their verbal skills. Similarly, Kagan (1981) explains that as migrant Mexican American youth become acculturated to urban majority population norms, they have been found to have a more competitive social orientation, which is positively correlated with IQ and academic achievement. In contrast, Gonzalez and Padilla (1997) emphasized that among Mexican American high school students, cultural pride and awareness was a significant predictor of grade point average. Furthermore, these authors suggest that certain cultural influences contribute to positive academic results. Positive educational outcomes were also corroborated by Bernal et al. (1991). Bernal et al. indicate that rejection of the host culture does not necessarily mean rejection of educational values. In instances when academic success is a value of a minority student's ethnic identity, behavior that promotes success is likely, even if cultural differences exist between home and school environments. Support for this position is evident in studies that show school achievement of immigrant Mexican American minorities is better than that of nonimmigrant Mexican American minorities (Buriel & Cardoza, 1988). In a similar study, Matute-Bianchi (1989) describes a group of Mexican American students who label themselves "Mexicanos" and retain the values of their culture of origin. Among these values, there is a desire to achieve in school.

Parents and Education.

Socialization in the home environment has long been considered the central determinant of school achievement (Coleman et al., 1966; Coleman, Hoffer, & Kilgore, 1982). Higher levels of parental supervision, intact families, and siblings who complete

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school were all associated with successful Hispanic students (Delgado-Gaitan, 1988). In addition, Delgado-Gaitan report academically low-risk Hispanic students could identify family expectations or rules, but not all academically high-risk students could do the same; in turn, those that did, did not appear to value or follow them. Students from Hispanic families have been found to be more academically resilient if they come from homes where family support for education is evident, such as parents checking homework and discussing school courses with their children (Catterall, 1998; Gonzalez & Padilla, 1997). Similarly, Reyes and Jason (1993) propose that better educated Hispanic parents may spend more time with their children participating in educational activities, therefore likely encouraging children's ability and interest in education. Researchers believe that better educated parents may influence their children's educational motivations, in turn leading youth to attain higher educational levels (Fernandez & Paulsen, 1989). Trueba and Delgado-Gaitan (1988) comment that Hispanic students whose parents did not know how the school system functions and could not teach their children to operate effectively at school experienced more conflict in the school setting. In her study of the Portillo community, Delgado-Gaitan (1990) notes that "Mexican parents cared about their children's education but often lacked the necessary skills to participate in the school as required" (p. 161). Rumberger (1987) claims that many working class Mexican American families with limited English proficiency lack access to the school system, often resulting in student underachievement. Despite these potential difficulties, Mexican American parents and students have been found to value education as much as other ethnic groups regardless of their degree of acculturation or the student's level of achievement in school (Delgado-Gaitan, 1990). Hernandez and Descamps

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(1986) also found that Mexican Americans show a high regard for schooling and see education as a means of attaining success. Buriel and Cardoza (1988) explain that particularly Mexican American immigrant families, who are seeking a better life for themselves and their children in the United States, know the importance of education in achieving their goals and look to the public schools to help make their dreams come true.

Attitude Toward School.

Although not heavily researched, students' attitude toward school is another important variable in measuring school adjustment. In 1992, Goodenow assessed the impact of a sense of school membership (i.e., whether students felt personally accepted, respected, and supported by others in the school environment) on academic achievement. Findings showed that a sense of school membership was able to predict educational success. The author attributes these results to the importance most Hispanics place on interdependence. Goodenow proposes that a student's sense of belonging reinforces positive academic behaviors. Therefore, students who feel a sense of belonging to their school environment may become more engaged and display greater effort on academic tasks. Similarly, results of a study conducted by Reyes and Jason (1993) of Hispanic high school students reveal that academically low-risk students reported more satisfaction with their school than high-risk students. In another investigation, Mexican American students who indicated school was fun and easy, not boring, as well as Mexican American youth who felt their grades were good were more likely to stay in school (Tan, 1999). Gonzalez and Padilla (1997) conducted a study of a predominantly Mexican American (95%) border high school. In this study, Mexican American students who experienced a sense of belonging to their school exhibited academic resilience. The

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authors elaborate that the ethnic composition of the school was also reflective of the community's population; therefore, it is possible that living in a highly ethnic community helps create a socially supportive climate at school. Furthermore, the findings showed that subjective student evaluations of the school environment as supportive predicted interest in school.

Previous research has also identified a number of attributes of effective schools: a school climate promoting positive student outcomes; competent leadership, the belief that all children can learn and achieve given a good education; high expectations and standards for all students and educational programs; strong demands for academic performance; parent involvement and support; recognition of students' academic achievement; district support; collaborative planning; and a sense of community (Carter & Chatfield, 1986). More specifically, common attributes of effective schools for minority and low socioeconomic status students include: positive leadership; high expectations and an emphasis on academic achievement; a positive attitude toward the students; a willingness to consider unconventional approaches; denial of the cultural deprivation theory and stereotypes that support it; a highly committed teaching staff; good staff morale; and support for and promotion of linguistic and ethnic diversity (Lucas, Henze, & Donato, 1990; Mehan, Okamoto, Lintz, & Wills, 1995; Mehan, Villanueva, Hubbard, & Lintz, 1996).

Attitude Toward Teachers.

The influence of students' attitudes toward their teachers as a component of academic adjustment has not been extensively researched. Nonetheless, the following literature emphasizes the importance of students' perceptions of teachers. Reyes and

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Jason (1993) surveyed Hispanic high school students living in the Chicago area. These authors reveal that the academically high-risk students complained more about their teachers, the school principal, and unfair treatment by these authority figures. These students cited teachers' put-downs of them and the students' abilities as sources of embarrassment and dissatisfaction. Although academically low-risk students indicated more satisfaction with their school, they also mentioned complaints on behalf of their high-risk classmates. Specifically, low-risk students criticized teachers' for their put-downs of other students who experience more difficulty in school. Similarly, Gillock and Reyes (1999) report that both male and female Mexican American students perceived less support from teachers under circumstances of high chronic school stress. In turn, such high levels of school stress were found to be associated with lower academic achievement. These researchers posit chronic school stress may be exacerbated, rather than improved, by relationships with teachers. Despite students' overall favorable perceptions of teacher support, many students reported general difficulties with their teachers, including being out of favor with, and feeling ignored by them. Delgado-Gaitan (1988) highlights that teachers should be responsible for creating less stressful classroom interactions, thereby encouraging Mexican American students to engage in the type of learning that produces beneficial outcomes. In contrast, in an investigation of eighth and eleventh grade Mexican American students, Tan (1999, p. 10) emphasizes positive results:

> 1) "Students who felt that their teachers and other students respect them; they learn about their culture in school; their teachers use examples from their culture to help them learn; they get along with their teachers and other students; they feel good about how their culture is treated in school; teachers make an effort to involve their parents in school, also perceived school to be easy and fun; 2) students who felt that they were respected by their teachers

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and the other students also perceived that they received good grades and said they intended to stay in school; 3) students who felt good about how their culture was treated in the school, who got along with their teachers, and who said that they had friends at school, also felt that they got good grades."

Academic Performance.

Ekstrom, Goertz, Pollack, and Rock (1986) emphasize success in high school can be predicted by previous academic performance as represented by student grades. These authors add that academic performance reflects ability and measures effort. Furthermore, low grades can lead to academic failure or to a sense of inadequacy, resulting in less commitment to meeting graduation goals. Velez (1989) indicates students who have been delayed in their schooling or who are behind their age group generally experience greater withdrawal. These delays are often due to being retained because of language difficulties, learning disorders, or academic failure. Students in good academic standing are frequently enrolled in college preparatory classes. Placement in a particular curricular track is a predictor of students who will stay in school (Pallas, 1984). Students who are taking more rigorous academic courses are expected to be less likely to drop out of school than are those who are enrolled in other curricular tracks, since they are exposed to more challenging material and are given more attention from teachers (Oakes, 1985). Alva's (1991) study of a predominantly Hispanic high school in Los Angeles revealed that students' appraisal of their school's college preparatory system was the single best discriminator of academically invulnerable versus academically vulnerable students. The author suggests that a positive college preparatory system plays a critical role in encouraging students to succeed in high school. Several research studies indicate that a number of personal characteristics are typically evident among academically successful students (Gonzalez & Padilla, 1997; Reyes & Jason, 1993; Willig, Harnisch,

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Kennedy, & Maehr, 1983). Academically successful students show a positive self-evaluation of their academic status at school and a sense of control over their academic success and failure (Alva, 1991). Velez (1989) reports good academic performance as measured by grades led Mexican American students to stay in school. The Mexican Americans students who participated in the Velez study claimed good grades were "a boost" to their academic self-evaluation and made future learning easier.

School Adjustment and Alcohol Use

A review of the literature reveals numerous risk factors which researchers have identified in the effort to understand substance use among youth (Donovan & Jessor, 1985; Oetting & Beauvais, 1987; Oetting & Beauvais, 1990). Risk factors have included a lack of commitment to school, academic failure, peers who use substances, feelings of alienation, and parental influences (Hawkins & Weis, 1985). A number of investigations have focused on academic variables. Researchers have found a positive relationship between substance use and poor academic achievement using such measures as graduation from high school, self-reported grade point average, and educational aspirations (Beauvais, Chavez, Deffenbacher, & Cornell, 1996; Newcomb, Maddahian, Skager, & Bentler, 1987; Schulenberg, Bachman, O'Malley, & Johnston, 1994). Additional research has shown that poor academic achievement (Brunswick & Messeri, 1984), low academic aspirations (Engel, Nordlohne, Hurrelmann, & Hollder, 1987), rates of absenteeism, truancy, and poor school bonding have a significant influence on substance use (Hawkins, Lishner, Catalano, & Howard, 1985; Newcomb, Maddahian, & Bentler, 1986; Newcomb et al., 1987)

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In a study conducted by Paulson et al. (1990), which included a sample of White non-Hispanic and Hispanic nine through seventeen year-olds, non-substance users reported higher grades, fewer absences and cut classes, higher academic goals, more interest in school work, and stronger feelings of school importance. Flannery et al. (1994) note that among Hispanics, poor school adjustment was significantly related to increased substance use for both males and females. In fact, for Hispanic females school adjustment was the only significant predictor for risk of substance use. Another study by Flannery, Vazsonyi, & Rowe (1996) indicates that for Hispanic adolescents, personality and parenting influences on substance use were mediated by school adjustment. In other words, positive school adjustment impacts personality and parenting influences in a manner that reduces the risk for substance use. Brooks et al. (1998) examined the influence of family, peers, and school, perceived student substance use, family substance use, and acculturation on a sample of Mexican American adolescents. In both the male and female models the school/peer factor predicted perceived substance use. The less youth perceived student use to be the norm, the less students used substances. These data support the notion that non-substance using adolescents are responsible, achievement-oriented youth. Lastly, three studies comparing Mexican American dropouts, academically at risk students, and students in good academic standing, all show that academically successful students were less likely to engage in substance use than academically at risk students and dropouts (Arellano, Chavez, & Deffenbacher, 1998; Chavez et al., 1996; Chavez, Edwards, & Oetting, 1989).

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A Socialization Model of Mexican American Adolescent Alcohol Use

Previous research (Chiarella, unpublished master's thesis) examined the application of a socialization and alcohol use model, based on Peer Cluster Theory (Oetting & Beauvais, 1987), to a Mexican American adolescent population. Results reveal that this model is useful in understanding substance use within this population. In this study, the moderating effects of cultural identification on the socialization effects of parents and peers on alcohol use were assessed by comparing structural equation models by gender and level of cultural identification.

Consistent with Peer Cluster Theory, it was found that peer alcohol associations were more strongly associated with adolescent alcohol involvement than were family sanctions against drinking. Specifically, this finding held true across all four levels of cultural identification. Therefore, it appeared that regardless of the level of ethnic identification, Mexican American adolescents are significantly influenced to drink by their peers. Furthermore, family sanctions of alcohol were directly associated with adolescent alcohol use and peer alcohol associations among Mexican American Identified youth. However, this was confirmed among females, but not among males. Research shows that Mexican American females must contend with strong, traditional sanctions against women drinking (Gilbert & Cervantes, 1986). In contrast, Mexican American males are exposed to more permissive family attitudes toward men consuming alcohol (Gilbert & Cervantes, 1986). Thus, it is more likely that females, rather than males, will comply by not using alcohol.

Additional results showed that no significant differences appeared to exist in the degree of family or peer influences across levels of cultural identification for either

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gender. All of the youth in this study were Mexican American. Therefore it is possible that while adolescents may identify themselves by different cultural categories, their families continue to influence them in similar ways. Furthermore, there were no significant differences in family influence being stronger than peer influence in females versus males among youth who were Mexican American Identified. These results were explained based on the commonalities males and females experience in adolescence, in that for both, peers produce a greater influence on alcohol use than do parents.

Summary

Adolescent substance use continues to be a significant health concern (Flannery et al., 1996). Despite increased attention to alcohol prevalence among adolescents, there is scarce information on alcohol use among Hispanic youth. Attempts to understand the etiology of substance use emphasize the importance of socialization influences (Oetting & Donnermeyer, 1998). The present model identifies and examines specific domains of influence, family, peers, and school, in a population of Mexican American adolescents. This model is by no means a revolutionary approach to the conceptualization of alcohol use for youth; rather, it brings together much of the available literature and provides a structure for increased understanding.

The literature has been highly consistent in showing that youth with poor family relationships are more likely to be involved in substance use (Brooks et al., 1998). Strong family ties characterize the Hispanic culture. Thus, the role of the family may be even more crucial in the Hispanic population. Weak family transmission of prosocial norms has been linked to adolescent substance use (Oetting & Beauvais, 1987). Transmission of norms from the family involves parental modeling, expression of

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negative attitudes toward alcohol, communication regarding the dangers of alcohol use, and application of consequences for use (Andrews, Hops, Ary, Tildesley, & Harris, 1993). Additional studies have revealed parental monitoring and supervision reduce the chance of alcohol use (Brook, Brook, Gordon, Whiteman, & Cohen, 1990). Moreover, family involvement against alcohol use has been shown to decrease associations with alcohol using peers (Elder et al., 2000). Previous research with Mexican American youth has indicated that family sanctions against the use of alcohol were directly, and indirectly through peers, associated with adolescent alcohol use (Chiarella, unpublished master's thesis).

Much research has emphasized the role that peer influences have on the initiation and continuation of alcohol use among adolescents (Coombs et al., 1991; Cousineau, Savard, & Allard, 1993; Dielman, Butchart, Shope, & Miller, 1990-1991; Dinges & Oetting, 1993). These studies find that peer influence operates through modeling and norms. Oetting & Beauvais (1987) distinguish between various forms of peer influence and propose that the formation of norms occurs predominantly in peer clusters. Peer clusters are cohesive, small cohorts that form strong bonds, which transmit norms through discussion and shared experience, directly monitoring and reinforcing attitudes and behaviors of their members. Newcomb and Bentler (1986) speculate that Hispanics appear to show a vulnerability to influences stemming from their interpersonal relationships. Similarly, Coombs et al. (1991) explained that Hispanic alcohol users, compared to abstainers, were more strongly influenced by their peers than parents.

A number of recent studies have confirmed that problems in the school environment are linked to higher rates of adolescent substance use (Brook, Nomura, &

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Cohen, 1989; Elliott, Huizinga, & Menard, 1989; Kumpfer & Turner, 1990-1991). Conversely, Gottfredson and Gottfredson (1986) found lower substance use in schools where students felt involved, respected, heard, and where they were rewarded for achievement. Within the U.S., the links between school problems and substance use occur across cultures. Several studies have shown that problems in school adjustment are highly related to forming associations with substance using peers and that these links occur among White non-Hispanics and American Indians (James, Chavez, Beauvais, Edwards, & Oetting, 1995; Oetting & Beauvais, 1987; Swaim et al., 1993). Lastly, studies comparing Mexican American students show that academically successful students were less likely to engage in substance use than academically at risk students and dropouts (Arellano et al., 1998; Chavez et al., 1996).

The goal of the present study is to test a theoretical model on a sample of Mexican-American adolescents. The model will examine the influence of family, peer, and school on alcohol use. Although much research has been conducted regarding the individual effects of these factors, it is not clear the extent to which differing levels of school adjustment will alter the impact of family and peer influences. Thus in this investigation, school adjustment is hypothesized to be a moderating variable influencing the model through its effect on the family and peer factors. The family factor is hypothesized to influence alcohol consumption directly and indirectly through its relationship to peers. Peers are hypothesized to influence alcohol use directly. Results will be reported by gender and within and across two waves of data that were separated by a lag of two years. This study will examine much needed information regarding

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Mexican American adolescent alcohol consumption patterns, thereby contributing to existing theories, promoting future research, and assisting in program development.

Hypotheses

1) Mexican American youth with high school adjustment will have less alcohol involvement than Mexican American youth with low school adjustment.

   This hypothesis follows results from previous research (Arellano et al., 1998; Chavez et al., 1996; Chavez et al., 1989) that indicates that academically successful Mexican American students were less likely to engage in substance use than academically at risk students.

2) Family sanctions against consuming alcohol will be more strongly associated with adolescent alcohol involvement among Mexican American youth with high school adjustment.

   A previous study (Chiarella, unpublished master's thesis) reveals that among Mexican American youth family sanctions against the use of alcohol are directly associated with adolescent alcohol use. This finding, however, was confirmed for female, but not male, Mexican American youth. Mexican American parents demonstrate a high regard for schooling and see education as a means of attaining success (Hernandez & Descamps, 1986). Research shows academically low-risk Mexican American students can identify family expectations or rules, but not all academically high-risk Mexican American students can do the same (Delgado-Gaitan, 1988). Thus, it is likely Mexican American students with high school adjustment will be more influenced by their parents not to drink than Mexican American youth with low school adjustment.

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3) The negative relationship between family sanctions against consuming alcohol and peer alcohol associations will be stronger among Mexican American youth with high school adjustment.

Partial support for this hypothesis can be found in research conducted by Hawkins and Weis (1985), who assert that family influence precedes peer, school, and community interactions. Similarly, Brooks and colleagues (1998) report that among Hispanic males and females the family influences school/peer attachments. In a study of Hispanic high school students, Reyes and Jason (1993) note that both academically high and low risk students perceive similar perceptions of parental involvement and supervision. However, females perceive more involvement and supervision from their parents than males.

4) The influence of peer alcohol associations on alcohol involvement will be weaker among Mexican American youth with high school adjustment.

This hypothesis is consistent with Peer Cluster Theory (Oetting & Beauvais, 1987), which proposes that peers are the dominant influence on adolescents. Nonetheless, Mexican American youth with high school adjustment are predicted to have less alcohol involvement given the reasons stated in the previous three hypotheses.

5) The level of alcohol use at Time 1 will affect the level of family sanctions at Time 2. It is likely there will be a positive relationship between alcohol use and family sanctions, since the level of alcohol use may increase family sanctions.

This hypothesis is exploratory given that no previous research has examined the above mentioned variables in a longitudinal study.

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6) The level of alcohol use at Time 1 will affect the level of peer alcohol associations at Time 2. It is likely there will be a positive relationship between alcohol use and peer alcohol associations, since the level of alcohol use may increase peer alcohol associations.

   This hypothesis is exploratory given that no previous research has examined the above mentioned variables in a longitudinal study.

7) The above mentioned hypotheses will likely differ, not only by level of school adjustment, but by gender.

   This hypothesis is also exploratory. A similar study by Brooks et al. (1998) examines a family based model of Hispanic adolescent substance use. Results from this investigation reveal some differences in male and female models. The main difference between the two models is that for Hispanic males the family has direct and indirect influences on substance use, while for Hispanic females the family is only indirectly related to use. Thus, the primary influences on substance use were the family factor and school/peer attachments for Hispanic males and females, respectively.

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Method

Sampling Procedure

A stratified random sampling procedure was used to obtain a representative sample of Mexican American youth from grades 9 through 12 in the five southwestern states (Texas, New Mexico, Arizona, California, and Colorado). Based on information from the 1990 U.S. Census Bureau, sample communities with at least a 10 percent Mexican American population were selected and comprised the primary sampling frame. These communities were stratified into three population groups: (1) 2,500-10,000, (2) 10,001-50,000, and (3) 50,001 and over. Communities were chosen at random within these strata so that the sample represented rural, midsized, and urban populations. Whenever necessary, a replacement procedure was used to choose a new school in a community within the same geographic region and with a similar percentage of Mexican Americans. Twenty-one communities comprised the sample.

One high school was randomly selected and recruited in each community. Twenty-one high schools were surveyed in both waves one and two of data collection. The targeted schools were initially contacted through their district offices and solicited for their voluntary participation in a longitudinal study of youth substance use.

Research Participants

Students surveyed were 9th and 10th grade students at Time 1 for whom parental consent was obtained and those who agreed to take the questionnaire. At Time 2, these

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students were in the 11th and 12th grades. Thirty-five percent of all enrolled students completed the survey at Time 1. Those with complete data at both Time 1 and Time 2 were included in the final sample. Five hundred and fifty-four Mexican American students comprised the final sample; 217 were male and 337 were female.

Survey

Students completed a self-report survey of alcohol use and alcohol-related problems, adapted from the American Drug and Alcohol Survey (ADAS). The ADAS is a self-administered survey that measures current and lifetime use of alcohol and other drugs. It has been demonstrated to be highly reliable and valid for both minority and majority youth (Oetting & Beauvais, 1990). The 152 items included in this survey fall under three broad categories: alcohol involvement, socialization, and affect/emotion.

Measures

Alcohol involvement was assessed using three indicator variables. These variables have been used previously in an alcohol involvement scale and have been found to be reliabie across various ethnic minority groups (Oetting & Beauvais, 1990). One question asked how often in the last month had the youth drunk alcohol. The second item inquired the frequency of getting drunk in the last month. These items were measured using a 5-point scale ranging from *none* to *20 or more times*. The third question asked during the last 30 days on how many occasions did the youth have 5 or more drinks in a 3 to 5 hour period. This item was measured on a 10-point scale ranging from 0 to 10 or more.

Family sanctions against alcohol use was assessed using two indicator variables. Each was comprised of the summed value of two questions. For the first indicator, one

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question asked whether the family cared about the youth drinking, and the other about the youth getting drunk. For the second indicator, the two questions asked whether the family would stop the youth from drinking and getting drunk. Each of the individual items was measured on a 4-point Likert scale ranging from *a lot* to *not at all.* In addition, peer alcohol associations were assessed using four indicator variables. The first indicator asked the number of friends who get drunk once in a while. The second indicator queried the number of friends who get drunk almost every weekend. Both of these indicators were measured on a 4-point Likert scale ranging from *none* to *most of them.* The third indicator queried how much would friends try to stop youth from getting drunk. The fourth indicator asked how often friends asked youth to get drunk. Both of these indicators were measured on a 4-point scale ranging from *a lot* to *not at all.*

School adjustment was measured using the school adjustment scale. Each item was on a four point Likert-type scale. Items assessing students' attitudes toward school and teachers ranged in response from *a lot* to *not at all.* Questions regarding students' academic self-assessment ranged in response from *very good* to *poor*. The range of the entire scale was 5 to 20. Past studies using this measure have resulted in Cronbach's α reliabilities ranging from (0.77 to 0.80) (Swaim, Bates, & Chavez, 1998; Swaim et al., 1996; Swaim et al., 1993). Alpha reliabilities for the current sample were .78 for males and .79 for females.

In order to test moderating effects of school adjustment, cut scores based on a median split were used to capture low and high levels school adjustment. Nine points or less and 10 points or more represented low, and high, school adjustment, respectively.

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The low school adjustment sample included 95 males and 150 females, while the high school adjustment sample included 122 males and 187 females.

Model Evaluation

Models were evaluated in a stepwise manner using EQS with maximum likelihood estimation (Bentler, 1995). Measurement models were examined with confirmatory factor analyses (CFAs), followed by assessment of the structural models. Fit of models was determined with multiple indices. Chi-square and degrees of freedom are reported for each model. A nonsignificant chi-square indicates a good fit but is highly sensitive to number of participants and complexity of models (Bentler, 1980; Bentler & Bonett, 1980). Two measures of fit were used to supplement chi-square: the comparative fit index (CFI; Bentler, 1990) and root mean squared residual (RMSR). Models that met the criteria of a CFI of greater than .90 were deemed to be good fits. As noted by Newcomb (1990, 1994), these criteria are sufficiently stringent to reject poorly fitting models and are appropriate when considering research conducted under real-world conditions.

Cross-sectional relationships were evaluated based on covariances among latent variables within time. Prospective effects were determined based on cross-lagged relationships from Time 1 to Time 2. Four stepwise competing models were evaluated. Following each new model a chi- square difference test was conducted to determine if the new model was an improvement over the previous model. The four models evaluated were: a stability model that examined the autoregressive relationship among each of the three latent variables from Time 1 to Time 2; a within time covariances model that evaluated the relationships among the latent variables within Time 1 and within Time 2;

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the alcohol outcome model that measured the effect of family and peer influences at Time 1 on alcohol involvement at Time 2; and the family and peer outcome model that examined the influence of alcohol involvement at Time 1 on family sanctions against alcohol and peer alcohol associations at Time 2. Correlated errors for indicator variables from Time 1 to Time 2 were also included.

Additional analyses tested for model differences across levels of school adjustment and gender by using multigroup analyses. A baseline was first established for comparison purposes in which all parameters were estimated for both groups with no equality constraints imposed. In further evaluation, all standard paths were constrained to equality in order to assess for variability across groups, followed by a difference test. The difference test measured whether effects were equal across levels of school adjustment and by gender.

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Results

Assessment of Potential Sampling Bias

Use of written consent procedures can result in participation rates for school-based surveys of 50% or lower (Dent, Sussman, & Stacy, 1997). This can result in bias both for demographic characteristics of the sample and for estimates of outcome variables of interest (Anderman et al., 1995; Dent et al., 1997; Severson & Ary, 1983). However, Dent and colleagues found no significant bias in adolescent reports of substance use when a sample for whom written consent was obtained was compared to an augmented sample that included both written consented students and those for whom consent was obtained using follow-up telephone consent. For their outcome variable, negative affect, they found no bias for depression, and a small positive bias for stress. Their assessment of demographic characteristics indicated a negative bias for males (fewer males were surveyed in the written consent sample), but no significant bias for ethnicity.

To examine selection bias due to written consent procedures as well as due to attrition, various tests for selection bias were conducted. The first two examined whether the gender and ethnicity distributions obtained differed from the distributions of the total number of enrolled students in the 21 schools. Because data were included only for those students who had complete data at Times 1 and 2, these bias tests were conducted only on Time 1 data. Inclusion of Time 2 would add no further information. The gender distribution of enrolled students at Time 1 was 51% males and 49% females. The

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distribution by gender for students who completed the survey at Time 1 was 44% males and 56% females. Difference of proportion tests indicated that a significantly larger proportion of females and a significantly smaller portion of males participated at Time 1 compared to the total number of males and females who were eligible, (z's = 13.74 and – 13.74, p's. <.001). The percentage of enrolled Mexican Americans at Time 1 (58%) was significantly higher than the percentage of surveyed Mexican Americans (47%), (z = 22.23, p <.001). A third difference test examined differences in ages between the matched sample at Time 2 and those surveyed only at Time 1. Results showed that the matched sample at Time 2 was slightly younger (15.0 years old) than those surveyed only at Time 1 (15.10 years old), (t = -1.99, p < .046). Thus, these tests of the demographic composition of the sample indicated bias for age, gender and ethnicity, whereas Dent and others (1997) reported bias for gender but not for ethnicity.

Another test assessed comparability of the sample to a stratified nationally representative sample on the variable of alcohol use. Alcohol use was chosen because it was the most frequent variable common to both this study and the comparison sample. Specifically, the percentage of students using alcohol in the last 30 days was compared to data collected at a comparable time frame (i.e., 1996) in the Monitoring the Future Study (Johnston et al., 1997). The Monitoring the Future data were for 8th, 10th, and 12th graders, however, current alcohol use was compared only for 10th and 12th graders. Alcohol use in the last 30 days from the Monitoring the Future Study was 40.4% for 10th graders, and 50.8% for 12th graders. In the current sample, proportions of youths using alcohol were 39.1% for 10th graders and 46.4% for 12th graders. Tests for differences in proportions showed that rates for 10th graders were not significantly different (z = 0.34),

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but that the national rate for 12th graders was significantly higher than the rate obtained for this study ($z = 3.10$, $p < .01$). This is likely due to the sample being comprised of Mexican Americans compared to the Monitoring the Future Study which included students of all races/ethnicities. Dropouts have higher rates of substance use than students still in school, and Mexican American youths drop out at much higher rates than White non-Hispanic youths (Swaim et al., 1997). Lower levels of alcohol use among older students were to be expected because the current sample was more affected by dropout than the national sample.

Additional tests were conducted to determine whether the loss of participants from Time 1 to Time 2 resulted in bias for means in the three outcome variables alcohol involvement, family sanctions against alcohol, and peer alcohol associations. Mean levels at Time 1 on these variables were conducted on students surveyed only at Time 1 and those surveyed at both Time 1 and Time 2. Of the items comprising the variable alcohol involvement, the following were not significantly different "Have you ever had alcohol to drink," ($t = 0.36$, $p < .72$); "Have you ever gotten drunk," ($t = -1.38$, $p < .17$); "How often in the last month have you had alcohol to drink," ($t = 0.15$, $p < .88$); and "During the last 30 days on how many occasions did you have 5 or more drinks in a 3 to 5 hour period," ($t = -1.20$, $p < .23$). Only the item "How often in the last month have you gotten drunk," was significant ($t = -2.13$, $p < .03$), with students surveyed only at Time 1 reporting getting drunk more often than the matched sample surveyed at Time 2. Of the items comprising the family sanctions against alcohol variable, the following were not significantly different "How much would your family care if you drink alcohol," ($t = 0.43$, $p < .67$); "How much would your family care if you get drunk," ($t = 0.72$, $p < .47$);

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and "How much would your family try to stop you from drinking alcohol," (t = 1.55, p < .12). Only the item "How much would your family try to stop you from getting drunk," was significant (t = 2.13, p < .03), with the students in the matched sample at Time 2 reporting more family intervention than those surveyed only at Time 1. Similarly, none of the items comprising the variable peer alcohol associations were significantly different "How many of your friends get drunk once in a while," (t = -0.72, p < .47); "How many of your friends get drunk almost every weekend," (t = -1.86, p < .06); "How often have your friends asked you to get drunk," (t = 1.83, p < .07); and "How much would your friends try to stop you from getting drunk," (t = 0.58, p < .56). Of the three outcome variables, the matched sample surveyed at Time 2 and those surveyed only at Time 1 were very similar. Therefore, bias due to attrition was minimal.

In summary, informed consent and sampling procedures conducted for this study were similar to those used by many researchers using active parental consent with school age populations. Prior research (Dent et al., 1997) suggested that these procedures do not lead to significant bias for psychosocial variables. Although some evidence of over- or under-representation by age, gender, and ethnicity was found, there were minimal differences on alcohol involvement, family sanctions against alcohol, and peer alcohol associations suggesting that the sample was likely to be reasonably representative, especially with reference to variables such as those under investigation.

Mean Differences

The means and standard deviations at Time 1 and Time 2 for each of the variables comprising the three latent constructs are presented in Tables 1, 2, and 3. A series of 2 X

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2 MANOVAs (Gender by School Adjustment) were conducted on the three groups of indicator variables associated with the three latent variables in the model.

A 2 X 2 MANOVA for indicator variables contributing to alcohol involvement at Time 1 (consisting of "How often in the last month have you had alcohol to drink?" "How often in the last month have you gotten drunk?" "During the last 30 days on how many occasions did you have 5 or more drinks in a 3 to 5 hour period?") resulted in a significant multivariate interaction between gender and school adjustment (Wilks' λ = .98416, $F(3, 548.00) = 2.941$, $p = .033$). Females with low school adjustment reported higher consumption of alcohol than males with high school adjustment. This was accounted for on a univariate level by "How often in the last month have you had alcohol to drink?" $F(1,550) = 4.514$, $p = .034$, "How often in the last month have you gotten drunk?" $F(1,550) = 8.047$, $p = .005$, and "During the last 30 days on how many occasions did you have 5 or more drinks in a 3 to 5 hour period?" $F(1,550) = 5.513$, $p = .019$. A significant multivariate main effect was found for school adjustment (Wilks' λ = .97633, $F(3, 548.00) = 4.429$, $p = .004$), which was accounted for on a univariate level by "How often in the last month have you had alcohol to drink?" $F(1,550) = 4.777$, $p = .001$, and by "During the last 30 days on how many occasions did you have 5 or more drinks in a 3 to 5 hour period?" $F(1,550) = 9.643$, $p = .018$. Youth with low school adjustment reported more alcohol consumption than those with high school adjustment. A significant multivariate main effect was also found for gender (Wilks' λ = .98364, $F(3, 548.00) = 3.038$, $p = .029$). Females indicated greater alcohol use than males. The main effect was accounted for on a univariate level by "How often in the last month have you had alcohol to drink?" $F(1,550) = 3.645$, $p = .057$, which approaches significance. Time

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2 results were as follows. At Time 2, there was no significant multivariate interaction between gender and school adjustment (Wilks' λ = .99757, $F(3, 548.00) = 0.446$, p = .720). A significant multivariate main effect was found for school adjustment (Wilks' λ = .97854, $F(3, 548.00) = 4.006$, $p = .008$), which was accounted for on a univariate level by "How often in the last month have you had alcohol to drink?" $F(1,550) = 11.403$, p = .001, "How often in the last month have you gotten drunk?" $F(1,550) = 8.966$, $p = .003$, and "During the last 30 days on how many occasions did you have 5 or more drinks in a 3 to 5 hour period?" $F(1,550) = 6.680$, $p = .010$. Males and females with low school adjustment reported drinking alcohol more than those with high school adjustment. No significant multivariate main effect was found for gender at Time 2 (Wilks' λ = .99226, $F(3, 548.00) = 1.426$, $p = .234$).

A 2 X 2 MANOVA for indicator variables contributing to family sanctions against alcohol (consisting of "How much would your family care if you drank alcohol / got drunk?" and "How much would your family try to stop you from drinking alcohol / getting drunk?") did not result in a significant multivariate interaction between gender and school adjustment at Time 1 (Wilks' λ = .99884, $F(2, 549.00) = 0.319$, $p = .727$) or at Time 2 (Wilks' λ = .99002, $F(2, 549.00) = 2.767$, $p = .064$). Results showed a significant multivariate main effect for school adjustment at Time 1 (Wilks' λ = .98533, $F(2, 549.00)$ = 4.086, $p = .017$), which was accounted for on a univariate level by both the indicator variables, "How much would your family care if you drank alcohol / got drunk," $F(1,550) = 5.177$, $p = .023$ and "How much would your family try to stop you from drinking alcohol / getting drunk," $F(1,550) = 7.930$, $p = .005$, and at Time 2 (Wilks' λ = .97797, $F(2, 549.00) = 6.184$, $p = .002$), also accounted for by both indicator variables,

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"How much would your family care if you drank alcohol / got drunk," $\underline{F}$ (1,550) = 12.386, $\underline{p}$ = .000 and "How much would your family try to stop you from drinking alcohol / getting drunk," $\underline{F}$ (1,550) = 7.018, $\underline{p}$ = .008. At both Time 1 and Time 2, individuals with high school adjustment indicated more parental concern than those with low school adjustment. No significant main effects were found for gender at Time 1 (Wilks' λ = .99968, $\underline{F}$(2, 549.00) = 0.087, $\underline{p}$ = .916) or at Time 2 (Wilks' λ = .99368, $\underline{F}$(2, 549.00) = 1.746, $\underline{p}$ = .175) for this group of indicator variables.

A 2 X 2 MANOVA for indicator variables contributing to peer alcohol associations (consisting of "How many of your friends get drunk once in a while?" "How many of your friends get drunk almost every weekend?" "How much would your friends try to stop you from getting drunk?" "How often have your friends asked you to get drunk?") resulted in a significant multivariate interaction at Time 1 (Wilks' λ = .98239, $\underline{F}$(4, 547.00) = 2.452, $\underline{p}$ = .045), which was accounted for at the univariate level by "How many of your friends get drunk once in a while?" $\underline{F}$ (1,550) = 4.981, $\underline{p}$ = .026 and "How many of your friends get drunk almost every weekend?" $\underline{F}$ (1,550) = 4.529, $\underline{p}$ = .034. Females with low school adjustment reported more peer alcohol associations than males with high school adjustment. However, the same multivariate interaction was not significant at Time 2 (Wilks' λ = .99378, $\underline{F}$(4, 547.00) = 0.856, $\underline{p}$ = .490). Interestingly, both at Time 1 and at Time 2, there were significant main multivariate effects for school adjustment and gender. At Time 1, school adjustment (Wilks' λ = .95101, $\underline{F}$(4, 547.00) = 7.044, $\underline{p}$ = .000) was accounted for on a univariate level by all four indicator variables: "How many of your friends get drunk once in a while?" $\underline{F}$ (1,550) = 11.259, $\underline{p}$ = .001, "How many of your friends get drunk almost every weekend?" $\underline{F}$ (1,550) = 7.364, $\underline{p}$ =

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.007 "How much would your friends try to stop you from getting drunk?" F (1,550) = 13.739, p = .000, and "How often have your friends asked you to get drunk?" F (1,550) = 19.406, p = .000. Similarly At Time 2, school adjustment (Wilks' λ = .97238, F(4, 547.00) = 3.885, p = .004) was accounted for on a univariate level by three of the four indicator variables: "How many of your friends get drunk once in a while?" F (1,550) = 8.198, p = .004, "How many of your friends get drunk almost every weekend?" F (1,550) = 6.298, p = .012, and "How often have your friends asked you to get drunk?" F (1,550) = 14.392, p = .000. At both Time 1 and Time 2, youth with low school adjustment revealed more contact with peers who drank alcohol than youth with high school adjustment. At Time 1, gender (Wilks' λ = .98079, F(4, 547.00) = 2.678, p = .031) was accounted for on a univariate level by "How much would your friends try to stop you from getting drunk?" F (1,550) = 7.238, p = .007. At Time 2, gender (Wilks' λ = .94041, F(4, 547.00) = 8.665, p = .000) was accounted for on a univariate level by "How much would your friends try to stop you from getting drunk?" F (1,550) = 27.728, p = .000 and by "How often have your friends asked you to get drunk?" F (1,550) = 5.176, p = .023. At both Time 1 and Time 2, more males than females reported contact with peers who drank alcohol.

Model Evaluation

Table 6 summarizes tests of model fit for each level of school adjustment for both males and females. The confirmatory factor analysis (CFA) for all four groups indicated that the measurement model fit was quite good. Tables 4 and 5 give the factor loadings and residuals of each of the indicator variables for their respective latent constructs. All factor loadings were significant (p.<.001), and with the exception of

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"number of times gotten drunk (in the last 30 days)" for females with low school adjustment, as well as "how much peers stop you from getting drunk" for males and females with high school adjustment, all factor loadings were greater than .40. This shows that the indicator variables were good measures of the latent constructs. With the exception of females with high school adjustment, all CFI's were .90 or higher. The chi-square/df ratio for females with low school adjustment was greater than 2, but other indices for this group indicated adequate fit. Furthermore, Tables 9 through 11 reveal the factor intercorrelations of the latent variables at Times 1 and 2.

For Model 1, the latent variables were assessed for their stability across time. For both low and high school adjustment females each of the three latent variables were significantly stable across time. Coefficients were as follows: family sanctions against alcohol (.16 and .20), peer alcohol associations (.47 and .66), and alcohol involvement (.42 and .41). For both low and high school adjustment males only peer alcohol associations (.54 and .55) were significant across time. Therefore, for females all three latent variables at Time 1 were predictive of the same variables at Time 2. The same was true for males only for peer alcohol associations.

For Model 2, within time covariances were added to the stability effects and revealed several similarities and differences across the four groups at Times 1 and 2. At Time 1, peer alcohol associations and alcohol involvement was significantly related for each of the four groups, with coefficients ranging from .55 to .62. At Time 2, peers again were significantly related to alcohol use for all groups, with the exception of high school adjustment males. Coefficients at Time 2 ranged from .33 to.52, indicating that among youth, association with alcohol-using peers greatly increases the likelihood of alcohol

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use. At Time 1, the effects of family sanctions on alcohol involvement were significant for only two of the groups, males with high school adjustment and females with low school adjustment, with coefficients of -.38 and -.20, respectively. At Time 2, the effects of family sanctions on alcohol involvement were significant for males with low school adjustment (-.21). Family influences on peer alcohol associations were significant for high school adjustment females (-.30) and low school adjustment males (-.30). Thus, familial influence appears to be related to a decrease in the likelihood of alcohol involvement and a reduction in the likelihood of associations with alcohol-using peers.

Further exploration in Model 3 examined the effects of family sanctions against alcohol and peer alcohol associations on alcohol involvement across time. None of the four groups revealed significant coefficients for family influence on alcohol involvement. For this sample, family did not appear to influence alcohol involvement across time. In contrast, peer influence on alcohol involvement was significant for three of the four groups. Coefficients ranged from .28 for females with high school adjustment, .32 for males with low school adjustment, to .43 for males with high school adjustment. These results suggest that peers, for the most part, do exert influence on alcohol use across time.

Lastly, in Model 4, the effects of alcohol involvement at Time 1 on family sanctions against alcohol and peer alcohol associations at Time 2 were evaluated. A significant effect on peer alcohol associations was detected among high school adjustment males (-.37). However, there were no significant effects of alcohol involvement on family sanctions for any of the four groups. With minor exceptions, it

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does not appear that alcohol involvement influences family sanctions or peer associations across time.

Four stepwise competing models were evaluated. Following each new model a chi- square difference test was conducted to determine if the new model was an improvement over the previous model. Tables 7 and 8 summarize fit indices and difference tests for the competing structural models. The four models evaluated were: a stability model that examined the predictability of each of the three latent variables from Time 1 to Time 2; a within time covariances model that evaluated the relationships among the latent variables within Time 1 and within Time 2; the alcohol outcome model that measured family and peer influences at Time 1 on alcohol involvement at Time 2; and the family and peer outcome model that examined the influence of alcohol involvement at Time 1 on family sanctions against alcohol and peer alcohol associations at Time 2. Results of the difference tests conducted revealed significant improvement from Model 1 to Model 2 for males (High School Adjustment: χ^2 (6) = 53.19, $p < .001$; Low School Adjustment: χ^2 (6) = 71.24, $p < .001$) and females (High School Adjustment: χ^2 (6) = 47.60, $p < .001$; Low School Adjustment: χ^2 (6) = 76.51, $p < .001$), as well as significant improvement from Model 2 to Model 3 for males (High School Adjustment: χ^2 (2) = 6.73, $p = .03$; Low School Adjustment: χ^2 (2) = 6.23, $p = .04$). Difference tests indicated that there was no significant improvement in fit from Model 3 to Model 4.

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Multigroup Analyses

Figures 1-4 present the structural Model 4 for all groups. Standardized regression coefficients for each path are indicated for both males and females for both levels of school adjustment.

Multigroup analyses for the structural Model 4 were conducted by level of school adjustment and by gender. Baseline tests with no constraints applied resulted in good fits. Baseline tests with no constraints were followed by fixing all standard paths in the final model, Model 4, to equality. Difference tests indicated no significant differences among the four groups for the across time structural model $\chi^2(21) = 20.69$, $p = .48$. In contrast, significant differences were obtained between within time covariances $\chi^2(18) = 28.81$, $p = .05$. Results showed differences between low school adjustment females and high school adjustment males at Time 1 from family sanctions against alcohol to alcohol involvement $\chi^2(1) = 6.11$, $p = .01$ and at Time 2 from peer alcohol associations to alcohol involvement $\chi^2(3) = 15.90$, $p = .05$. In addition, the path from family sanctions against alcohol to peer alcohol associations at Time 2 revealed differences between high and low school adjustment females $\chi^2(2) = 11.99$, $p = .02$ and between low school adjustment females and males $\chi^2(4) = 20.01$, $p = .04$. Therefore, level of school adjustment and gender moderated family and peer influences on alcohol use within, but not across, Times 1 and 2.

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Discussion

The present study advances in several ways previous research examining alcohol consumption among Mexican American youth. First, by distinguishing Mexican Americans, males and females, adolescents, and level of school adjustment, the study reveals important etiological and epidemiological factors concerning alcohol use. Second, this study demonstrates the moderating effects of school adjustment on Mexican American adolescent alcohol use. Third, the application of longitudinal methodology strengthens conclusions about the relationships examined in this investigation. Finally, additional questions are raised for future research and clinical implications are discussed.

Mean Differences in Model Variables

This study found several significant differences in alcohol use by gender and by level of school adjustment. At Time 1 and Time 2, results showed a multivariate main effect for school adjustment. Similar to previous research (Arellano et al., 1998), findings from this study consistently show students with low school adjustment consuming alcohol in greater quantities than students with high school adjustment. Moreover, Flannery et al. (1994) noted that among Hispanics, poor school adjustment was significantly related to increased substance use for both males and females. Indeed, for Hispanic females school adjustment was the only significant predictor for risk of substance use.

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Also at Time 1, there was a multivariate main effect for gender as well as a multivariate interaction between gender and school adjustment. Surprisingly, females indicated greater alcohol use than males. Finally, females with low school adjustment revealed higher use of alcohol than did males with high school adjustment.

Until recently, it was believed that Mexican American women were unique in their abstinence from alcohol use (Mora & Gilbert, 1991). Strong Mexican and Mexican American cultural sanctions prohibiting females from consuming alcohol are well known. However, factors such as age, level of education, and degree of acculturation are all associated with increased use of alcohol among Mexican American females. Studies of teenage drinking show that Mexican American girls are beginning to experiment with alcohol at around age thirteen and are only slightly more likely to be abstainers than Mexican American boys (Mora & Gilbert, 1991). One study of Californian youth in the ninth grade showed that 76 percent of Chicanas compared to only 60 percent of Chicanos had been introduced to alcohol (Gilbert & Cervantes, 1986). Of these females, 41 percent reported that they had been drunk at least once (Gilbert & Cervantes, 1986). Other studies indicate the positive relationship between higher levels of education and increased alcohol use and misuse (Burnam, 1989). Holck and colleagues (1984) added that when educational level was held constant, the differences in alcohol consumption patterns between the Mexican American and White Non-Hispanic women disappeared. Researchers posit that increasing educational levels among Mexican American females are accompanied by increasing levels of acculturation, which in turn contributes to greater alcohol consumption (Canino, 1994).

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Family and peer influences on alcohol use were also examined. At Time 1 and Time 2, results showed a significant multivariate main effect for school adjustment. Individuals with high school adjustment indicated more parental concern than those with low school adjustment. Previous research claims higher levels of parental supervision have been associated with successful Hispanic students (Delgado-Gaitan, 1988). Delgado-Gaitan reported academically low-risk Hispanic students could identify family expectations or rules, but not all academically high-risk students could do the same; furthermore, those that did, did not appear to value or follow them. Hernandez and Descamps (1986) also found that Mexican Americans show a high regard for schooling and see education as a means of attaining success. Buriel and Cardoza (1988) explain that particularly Mexican American immigrant families know the importance of education in achieving goals and look to the public schools to help make their dreams for their children come true. Furthermore, Flannery et al. (1996) indicate that positive school adjustment impacts parenting influences in a manner that reduces the risk for substance use.

Patterns also emerged regarding the influence of peer alcohol associations. At Time 1, results showed a multivariate interaction between gender and school adjustment. Females with low school adjustment reported more peer alcohol associations than males with high school adjustment. Interestingly, both at Time 1 and at Time 2, there were significant multivariate main effects for gender and school adjustment. Males more than females, and students with low school adjustment more than students with high school adjustment, revealed greater contact with peers who drank alcohol.

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Peers are typically recognized in the literature to be the single most powerful predictor of adolescent alcohol use (Epstein et al., 1999). Brooks et al. (1998) examined the influence of peers, among other factors, on a sample of Mexican American adolescents. In both the male and female models the school/peer factor predicted perceived substance use. The more youth perceived student use to be the norm, the more students used substances. These data support the notion that substance-using adolescents are less responsible and achievement-oriented than youth who do not consume alcohol and other drugs. A similar study by Flannery et al. (1994) delineated increased substance use was positively related to perceptions of pressure from peers, having close friends who drink alcohol, and to poor school adjustment.

The gender differences found appear due to the types of questions asked. Females with low school adjustment at Time 1 endorsed items that dealt specifically with peer use. The questions included, "How many of your friends get drunk once in a while?" and "How many of your friends get drunk almost every weekend?" Males, on the other hand, endorsed variables such as, "How much would your friends try to stop you from getting drunk?" at Time 1 and Time 2; and "How often have your friends asked you to get drunk?" at Time 2. The items endorsed by the males seem to suggest peer influence while the items indicated by the females seem to suggest peer use.

Hypotheses

Level of School Adjustment and Alcohol Consumption – Hypothesis #1.

Consistent with hypothesis #1, results showed Mexican American youth with high school adjustment had less alcohol involvement than Mexican American youth with low school adjustment. Thus among students in this study, high school adjustment seemed to

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serve as a protective factor. Few studies have examined alcohol use among Mexican American students in good academic standing (Beauvais et al., 1996). Research shows that Mexican American students with high versus low school adjustment typically engage less in alcohol use (Arellano et al., 1998; Brooks et al., 1998; Flannery et al., 1996). Little attention has been directed at understanding the characteristics of Mexican American students who are successful in school (Reyes & Jason, 1993). This approach seems important since it would allow clinicians to identify skills that might be taught to low school adjustment students to facilitate their success, thereby reducing their risk for substance abuse. Alva (1991) describes academically resilient students as those that maintain high levels of performance in the face of stressful events. Gonzalez and Padilla (1997) indicate that Mexican American adolescents may be at risk for academic failure due to the stresses of minority status, discrimination, acculturation, low socioeconomic status, and lack of support from family and friends. Noted gender differences in the experience of stress may further explain minority students' challenges in achieving educational success. Whereas males report an excess of personal stressors, females report greater difficulties associated with a lack of resources and appear to be more sensitive to interpersonal stressors (Gillock & Reyes, 1999). Findings reveal that familial, peer, and school-based support (Gillock & Reyes, 1999), effective coping skills (Vega & Gil, 1998), and high self-esteem (Reyes & Jason, 1993) all contribute to Mexican American students' academic success. Subsequent studies may do well to examine and expand the number of factors linked to high school adjustment among Mexican American youth, particularly in relation to alcohol use.

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Family Variables – Hypotheses #2 and #3.

The hypothesis that family sanctions against use of alcohol will be more strongly associated with adolescent alcohol involvement among Mexican American youth with high school adjustment was only partially confirmed. The results showed this hypothesis to be true for males with high school adjustment and females with low school adjustment at Time 1, and among males with low school adjustment at Time 2.

In light of previous research these results initially appear surprising. Several studies support findings that education is highly valued and encouraged by most Mexican American parents (Buriel & Cardoza, 1988; Delgado-Gaitan, 1990; Hernandez & Descamps, 1986). Moreover, Mexican American parents and students have been found to value education as much as other ethnic groups regardless of their degree of acculturation or the student's level of achievement in school (Delgado-Gaitan, 1990). Research also shows students with high versus low school adjustment appear to have a better understanding of family expectations regarding socially acceptable behavior (Delgado-Gaitan, 1988).

With respect to Mexican American females, the literature is replete with references to strict sanctions against alcohol consumption (Canino, 1994; Gilbert & Cervantes, 1986; Mora & Gilbert, 1991; Vega & Gil, 1998). Various surveys of the Mexican American population indicate that drinking and becoming drunk is part of being male, while females are expected to abstain (Caetano & Medina-Mora, 1988; Gilbert & Cervantes, 1986; Rosovsky & Romero, 1996). Mexican American parental attitudes and practices relating the socialization of youth toward alcohol use have followed the prescribed cultural norms (Gilbert & Cervantes, 1986). Traditionally, adolescent

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behavior has supported this double standard, with females drinking less, in quantity and frequency, than males (Rosovsky & Romero, 1996).

Results of the current study may be explained by more carefully considering family communication and traditional gender roles. To begin with, it is likely that parents may underestimate adolescent alcohol consumption, especially among females. Given the strong cultural expectations for females not to drink, parents may feel that abstaining from alcohol use is an implicit standard for females that does not need addressing. Instead, parents may believe females know what is expected of them without frequent reminders. Consequently, parents who see their daughters achieving success at school may assume obedience regarding all familial rules. In turn, low school adjustment females are probably stirring more parental concern. These youth appear to be receiving repeated explicit messages to improve their behavior, including admonitions to not drink.

Traditional Latino culture sets the standard for both sexes early in childhood (Félix-Ortiz, Fernandez, & Newcomb, 1998). Attaining higher education and careers are seen as more common among males than females (Félix-Ortiz et al., 1998). Women are expected to find their major role and validation in their families and homes, as wives and especially as mothers (Félix-Ortiz et al., 1998). Thus, it is possible that as children enter high school more emphasis is placed on males' rather than females' academic achievement. Among boys, parental attention may be focused on high school adjustment males who seem more destined to succeed than males with low school adjustment. Parents may feel their duty is to encourage their sons by repeating what is expected of them. In particular, males are likely hearing lectures to excel academically and to

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conduct themselves appropriately. Explicit instructions may warn against alcohol use, as well as other deviant behaviors such as sexual promiscuity or gang involvement.

As the high school years draw to a close, parents may feel confident that sons with high school adjustment are on the path to successful adult life and no longer require frequent communication regarding behavior. Reassured of their sons' future prospects, these parents perhaps even demonstrate some leniency toward alcohol consumption. Austin and Gilbert (1989) refer to "earning the right to drink" as encompassed in the set of rights belonging to adult Latino males. Furthermore, interviews revealed Mexican Americans parents show acceptance for male alcohol use based on situational criteria associated with adulthood, such as having full-time job responsibilities, rather than with chronological age (Austin & Gilbert, 1989). Parents, therefore, may shift their concern to males with low school adjustment. These adolescents have not achieved academic success, and as students, do not have the status of a full-time job. Parents likely view these sons as immature and feel obligated to provide careful guidance. Looking ahead, parents may also worry that their sons will struggle finding employment and earning good pay. Thus, low school adjustment males may be receiving constant lectures telling them what they should and should not do.

During their later years of high school, females in this study did not report parental sanctions against drinking. For the reasons stated previously, females with high school adjustment appear to pass through adolescence without hearing explicit communication prohibiting alcohol use. In contrast, low school adjustment females seem to indicate a halt in parental warnings. Whereas, parents may see academic success as tied to future economic independence for males, with females, parents may believe

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scholastic achievement is irrelevant to a successful marriage in which the husband provides for his family. Parents are also likely to assume females will mature quickly as they approach the age for marriage and accept increasing responsibilities.

Without parental input, much of the above speculation is necessary to explain students' self-reports in the current investigation. Future studies should include information from parents to further distinguish actual versus perceived familial communication. Goodnow (1992) proposed a two-step model of intergeneration agreement to describe the process by which children come to accept or reject their parent's values. According to this model, children must first develop an understanding or perception of what their parents believe. Goodnow hypothesized the accuracy of children's perceptions is a function of features of the parental message, such as clarity, explicitness, and the repetitiveness of the message. Indirect, implicit, or covert communication is consonant with Mexican Americans' emphasis on family harmony (Zambrana, 1995). Conversely, assertiveness, open differences of opinion, and demands for clarification are seen as rude or insensitive to others' feelings. Thus, Mexican Americans sometimes are left guessing rather than asking about the other's intentions. Frequent use of allusions, proverbs, and parables to convey viewpoints may leave vague impressions. This pattern of familial communication may be especially problematic as families discuss behavioral norms and expectations. Intergeneration agreement may be further complicated among Latinos due to acculturation. Vega and Gil (1998) claim that acculturation occurs more rapidly among youth than for their parents. Varying rates of change in cultural orientation and commitments are responsible for many intergenerational conflicts. Differences in acculturation may result in adolescents

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struggling to comprehend and satisfy parental expectations. Implications for alcohol prevention and intervention clearly indicate the need to teach and encourage explicit communication regarding family sanctions.

Partial confirmation was also found for hypothesis #3. At Time 2, the negative relationship between family sanctions against consuming alcohol and peer alcohol associations was evident among Mexican American males with low school adjustment and females with high school adjustment. No statistically significant differences were noted at Time 1.

Families exert their greatest influence over children during early adolescence (Vega & Gil, 1998). At that time, if family sanctions against drinking are to be communicated, the message to youth is likely to be explicit and direct. As students begin their last years of high school, parents may come to expect adolescent alcohol experimentation and use. As discussed earlier, low school adjustment males appear to be parents' greatest concern at Time 2. These parents may be adamantly lecturing sons regarding acceptable social behavior. Males with low school adjustment report hearing the message, "Don't drink and don't spend time with peers that drink." On the other hand, parents may perceive females that continue to do well in school through the 11th and 12th grades as more acculturated (Caetano & Medina-Mora, 1990). It could be assumed that these well-adjusted girls interact with a large number of peers including White non-Hispanics. Aware of the more permissive attitudes toward female drinking in the majority culture, parents may be more likely to discuss alcohol use in the context of peer relationships. Without question, a better understanding of parent-child relationships,

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familial communication, and the effects of acculturation across generations is valuable and necessary information to reduce the risks of adolescent alcohol use.

Peer Variables – Hypothesis #4.

Contrary to hypothesis #4, the influence of peer alcohol associations on alcohol involvement was not weaker among Mexican American youth with high school adjustment. Instead, peers were equally influential across levels of school adjustment and gender. Consistent with Peer Cluster Theory (Oetting & Beauvais, 1987), it appears that Mexican American adolescents are significantly influenced to drink by their peers. Once established, peer relationships involving substance use are generally maintained and are often impervious to parental protests.

Previous literature (Frauenglass et al., 1997; Newcomb & Bentler, 1986; Wright & Watts, 1988), emphasizes the extent of peer influence on Mexican American youth. Newcomb and Bentler highlight that peer use of alcohol appears to be a particularly strong influence on Latino adolescents' decision to use alcohol. Similarly, Barnes and Welte (1986) found the proportion of friends who get drunk to be a significant factor in predicting alcohol use by Latino high school students.

Much research supports the notion of peer influence being the single most direct link to alcohol use for adolescents (Elder et al., 2000; Epstein et al., 1999; Felix-Ortiz et al., 2001). Youth are challenged to experiment in order to understand and fit into the social milieu. Peer Cluster Theory (Oetting & Beauvais, 1987) holds that peers involved with alcohol push others farther: shaping attitudes, providing social contexts, and encouraging rationales to promote drug use. However, the complex antecedent factors related to adolescents' susceptibility to peer influence need further exploration. In

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addition, gender differences appear throughout the results. Although both males and females reported peer influences, social and cultural gender roles may lead adolescents to experience peers differently. For example, better understanding of peer influences may explain the higher alcohol consumption reported by females versus males in the current study. Knowing the important role peers play in adolescent alcohol use, researchers and clinicians need to pay particular attention to this issue.

Longitudinal Variables – Hypotheses #5 and #6.

Both hypotheses #5 and #6 were exploratory. Contrary to hypothesis #5, the level of alcohol use at Time 1 did not affect the level of family sanctions at Time 2. Nationwide surveys have shown that there is uncertainty and misconceptions among parents regarding their children's exposure to and use of alcohol (Beck & Bargman, 1993). Many parents are aware that there is a problem with youthful use of alcohol, however they are unsure if their own children are doing so (Beck & Bargman, 1993). Hispanic parents appear to be at an even greater disadvantage as they are often less acculturated to the U.S. than their children. In an investigation of adolescent alcohol use, Beck & Bargman conducted focus group interviews with Hispanic teenagers. Discussion revealed that parents were seen as largely unaware of adolescent drinking. This seemed to be particularly true for parents who came from rural areas in their native country and were not very well acculturated. Adolescents confided that it was relatively easy to drink without their parent's knowledge. However, most parents were not thought to be completely unaware of their teens' activities. Many of the respondents admitted to having or attending parties at homes when parents were away. In contrast, the students

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also indicated strong desires not to drink in front of their parents or in their own parent's home because it would be a form of disrespect.

Based on the results of the current study, it is possible that the participants' parents did not accurately assess their children's level of alcohol consumption. Thus explaining, the lack of parental sanctions reported at Time 2. Parents must be made aware of the extent of teenage drinking and the related problems. Clearly, adults could benefit from programs that offer alcohol use information and teach the skills necessary for open parent-child communication.

Confirmation of hypothesis #6 was found only for high school adjustment males. Thus, for the other three groups the level of alcohol use at Time 1 did not affect the level of peer alcohol associations at Time 2. In the current study, high school adjustment males were among the students reporting the least amount of alcohol use at Time 1. By Time 2, however, all participants were reporting increased alcohol involvement and greater numbers of alcohol-using peers. If all adolescents acknowledged more peers consuming alcohol, why then was the hypothesis significant only among high school adjustment males? The explanation is likely to lie in perceived peer relationships. Perhaps, males with high school adjustment were the least discriminating group in identifying who they consider as friends. Alva (1995) concluded that more Hispanic adolescent males than females indicated having friends who drink. Moreover, Oetting and Donnermeyer (1998) proposed that youth may belong to several peer clusters, particularly during adolescence when peer clusters may include one or more groups of same gender friends or mixed gender friends as well as dating couples. Mexican American males in this study may also be associating with males of varying

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ethnicities/races, particularly White non-Hispanics. Additional inquiry is necessary in order to determine the role that alcohol use plays in the selection of peers.

Gender differences – Hypothesis #7.

Hypothesis #7 was also exploratory. Results from this investigation revealed several differences in the male and the female models according to the hypotheses listed above. Many studies focusing on adolescent substance use have reported gender differences among Mexican American adolescents (Gilbert & Cervantes, 1986). Generally, alcohol consumption data reveal that females are less likely to use or to have lower rates of use than males (Estrada et al., 1982). These lower rates of substance use appear due to negative sanctions against female alcohol use in the traditional Mexican culture (Gilbert & Cervantes, 1986). Recently, however, some researchers have noted that Mexican girls may be catching up with their male peers in age of onset and level of alcohol use (Chavez, Beauvais, & Oetting, 1986; Gfroerer & De La Rosa, 1993). Vega and Gil (1998) attribute different patterns of substance use to level of acculturation. Data from the American Drug and Alcohol Survey (Oetting & Beauvais, 1990) show that among youth of Mexican heritage females whose families had been in the U.S. for a shorter period of time had lower levels of alcohol use than males. On the other hand, girls and boys whose families had lived in the U.S. for several generations reported similar levels of alcohol consumption. Khoury and colleagues (1996) indicated similar findings. In the Khoury et al. study, female lifetime prevalence rates for alcohol use approximated and often exceeded the rates of males, particularly as the students entered the higher grades. Results from these studies lend support to the notion that the

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acculturation process may be more strongly associated with alcohol use among females than males (Alcocer, 1982; Amaro, Whitaker, Coffman, & Heeren, 1990).

Many researchers also regard variables measuring education as proxies for exposure to U.S. culture: the higher the educational level, the greater the assumed exposure to mainstream culture (Gilbert, 1989a). In a sophisticated analysis of a national sample, Caetano and Medina-Mora (1990) found that acculturation levels interacted with educational levels, with the more acculturated Mexican American women in each educational level being the most likely to drink and to drink more. The authors emphasize this does not suggest that education "socializes" young women into the use of alcohol. Rather, it is more probable that, as with all adolescents, Mexican American girls are subject to examples of peer alcohol use in a variety of U.S. youth cultural situations through social contacts made at school. The educational system offers the most pervasive and long-term contact between members of an ethnic group and of the dominant society. These issues suggest the importance of school-based prevention and intervention programs to reduce adolescent, and especially female, alcohol consumption.

The current investigation presents important epidemiological information on Mexican American adolescent alcohol consumption. In particular, females reported greater alcohol use and less parental sanctions than males. Thus, as previously noted in the literature, gender differences were apparent by the amounts of alcohol consumed and by the socialization factors influencing alcohol involvement. Clearly, additional research is necessary to expand the scope of this knowledge and to design and implement culture- and gender- specific interventions to prevent alcohol use among Mexican American youth.

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Limitations

The results of the present study are compelling and potentially useful; nevertheless, several limitations are acknowledged. A first possible limitation is that the present study gathered data through self-reports from adolescents. No corroborative measures of self or peer alcohol use, family sanctions against alcohol use, or school adjustment were gathered. Any time self-reports are gathered regarding sensitive topics, the question of validity and accuracy of responses may be raised. Nonetheless, Fowler (1993) and Oetting and Beauvais (1990) have investigated the validity of self-report substance use measures in large populations and have compiled considerable evidence to support the validity of such data. Measures taken to insure the validity of the data include discarding inconsistent surveys and administering surveys so as to maintain the students' confidentiality.

A second limitation is that the present study used a school-based sample that did not include dropouts. Among Hispanic youth, Mexican Americans have the highest school dropout rate, 57 percent (Chavez & Swaim, 1992). Substance use rates have been found to be generally higher for school dropouts than for youth who remain in school (Mensch & Kandel, 1988; Swaim et al., 1997). Therefore, school-based surveys are likely to underestimate the frequency and amount of Mexican American alcohol use. The lack of representation also raises an important question: Are Mexican American adolescents who drop out of school more likely to resemble White non-Hispanic or Mexican youth in terms of their use of alcohol and its predictors?

A third possible limitation is the use of participants in grades nine through twelve. Vega and Gil (1998) explain that the middle school years are critical for early

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experimentation with licit and illicit substances, and that etiological factors associated with substance use interact in the middle school setting. Prior to middle school, the family versus peers holds the most influence on children (Vega & Gil, 1998). Furthermore, middle school students begin to perceive that success or failure in the school arena predetermines future life and career goals. Lastly, it is in the middle school years that minority status is recognized and internalized by some youth (Vega & Gil, 1998). A study focusing on middle school-aged students may clarify the degree of predictability of the different socialization sources.

A fourth limitation of the present study is the omission of qualitative data. In the current discourse on methodologies, researchers agree that multiple methods of data collection and analyses are more informative than quantitative or qualitative methodologies alone (Newman & Benz, 1998). Qualitative data would provide more information about the meaning that the respondents ascribe to the constructs under investigation. An improvement to the research would be to include individual interviews with adolescent participants as well as with their parents, peers, and school staff. All should be asked their values, attitudes, and behaviors regarding alcohol consumption, and also asked to comment on the quality of their interactions. The object of such interviews should be to clarify participants' subjective experiences leading to alcohol use. Such qualitative procedures are all the more important in view of possible misunderstandings of terms used in questions and answers stemming from the participants' mastery of a second language and from cultural attitudes toward the topics and terminology of the questionnaire.

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Future Directions

Research.

The results and limitations of this study raised several empirical questions to be examined in future research efforts. First, in order to create a more accurate profile of Mexican American adolescent drinking patterns, future studies should incorporate a broader range of personal characteristics. Legge and Sherlock (1990-1991) emphasize most ethnic categories embrace more than one homogeneous group. Advances were made from previous research by considering level of school adjustment and gender, and by specifying grade level (9th -12th). However, differences in nativity, generational status, length of time in the host society, parents' educational attainment, and social class were not distinguished or taken into account. Vega and Gil (1999) report intraethnic variation in alcohol use by Mexican Americans has been found to vary depending on several of the factors listed above. In addition, researchers have demonstrated positive associations between acculturation and alcohol use (Epstein et al., 1999; Felix-Ortiz & Newcomb, 1995; Vega & Gil, 1998; Welte & Barnes, 1995; Zapata & Katims, 1994). Previous research (Chiarella, unpublished master's thesis) with Mexican American youth showed that no significant differences appeared to exist in the degree of family or peer influences across levels of cultural identification for either gender. Nevertheless, it may be important to refine the process of categorizing and measuring acculturation/cultural identification and continue to include these constructs in future studies.

This study focuses on a subset of the minority Mexican American culture, that is, adolescents. It seeks to measure the relative influence of family and of peers for a single behavior, use of alcohol. It then goes further and tries to determine how the level of

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school adjustment reported by Mexican American adolescents moderates these relative influences. Two underlying assumptions drive the study. First, the "family" holds the values, beliefs, customs, etc. of the minority Mexican American culture; therefore, their "influence" will push their children--most typically the females-- toward abstinence, the behavior approved by Mexican American minority culture. The second assumption is that the "peers," whether majority White non-Hispanics or minority Mexican Americans, favor experimenting with and using alcohol; their influence, therefore, will run counter to the Mexican American family. These two assumptions beg several questions, each of which may need added research.

First, the families of the adolescent, Mexican American participants may vary as widely as do their children. Families, as well as children, are challenged to succeed within the minority and the majority cultures. We should not expect more acculturated families to exercise the same degree and kind of influence on their children as, say, families with strong Mexican cultural traditions. Vega and Gil (1998) indicate that overall levels of acculturation of adolescents and their parents, rather than acculturation gaps between adolescents and parents, are the more important predictors of teen substance use. However, acculturation among U.S.-born Hispanics also erodes traditional values of familism and parental respect, increasing the likelihood of deviant behaviors. Thus, it becomes important to differentiate whether developmental and acculturation processes, or loose adherence to familismo influences Mexican American adolescent alcohol use.

Second, too little is known about the participants' "peers." Are they predominantly White non-Hispanics or Mexican Americans? Are they males or females?

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Perhaps most important, how do Mexican American participants regard the drinking behavior of their White non-Hispanic peers: is it a way to be successful in the White non-Hispanic majority culture, or is it the way to be successful in the more limited "youth" culture?

Finally, school is a context in which many children find motive and opportunity to use substances (Swaim et al., 1989). Oetting and Beauvais (1987) showed that for 11th- and 12th-grade students, school adjustment was one of the most significant socializing influences that determined peer drug associations and subsequent substance use. Various investigations (Brooks et al., 1998; Flannery et al., 1994; Flannery et al., 1996) have examined the mediating influences of school adjustment and revealed the significant predictability of the construct. Future studies should carefully examine which school experiences seem particularly influential. Which specific factors contribute to students' feelings of enjoyment and success in the school environment? What behaviors do the student typically manifest at school with peers, teachers, and staff? What behaviors and attitudes do school staff exhibit to the student? Clearly, continued research is necessary to answer these important questions.

Implications for Prevention and Intervention.

The results from this research have several implications for prevention and intervention efforts. The primary socialization model (Oetting & Donnermeyer, 1998; Oetting et al., 1998) suggests that treatment approaches should address substance use within the context of family and school, with a special emphasis on peer relations. The structural equation modeling results from the present study clearly indicate that addressing peer influences should be an essential component of alcohol use prevention.

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To a lesser extent, fostering positive relationships between parent and child and school and student may protect against alcohol use by discouraging interaction with alcohol-using peers.

In light of the finding that females consumed more alcohol than males, it is important to note that the effects of peers vary by gender (Oetting & Donnermeyer, 1998). Kaplan (1996) posits that attraction to deviant peers may be greater for troubled females than males. Additional research reveals women are more likely to become heavy drinkers when a heavy drinking partner is available (Wilsnack & Wilsnack, 1990), at least until their partner becomes a problem drinker, then drinking may decrease (Wilsnack, Wilsnack, & Klassen, 1987). Therefore, among female adolescents, peer-intervention programs may be especially effective.

Oetting & Donnermeyer (1998) propose assisting adolescents connect with prosocial groups and that teaching youth the skills needed to maintain those ties should be the aim of clinical work. Opportunities for positive peer interaction may include involvement in youth groups and training in communication, interpersonal, and social skills. Interventions focused on helping adolescents develop and maintain new peer groups must continue after formal alcohol treatment ends. When faced with challenges, youth are likely to return to deviant peer groups. Thus, the youths' needs that were previously met by alcohol-using peers must be identified and potentially replaced by participation in ongoing alcohol-free activities at school or in the community and involvement with family.

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Table 1
Family Variables: Means and Standard Deviations

	School Adjustment							
	High School Adjustment				Low School Adjustment			
	Males (N = 95)		Females (N = 150)		Males (N = 122)		Females (N = 187)	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Family Care Drink Alcohol / Get Drunk Range: (2.0 - 8.0)	7.64 (1.05)	7.62 (0.79)	7.59 (1.22)	7.54 (1.09)	7.29 (1.65)	7.06 (1.46)	7.42 (1.27)	7.40 (1.09)
Family Stop Drink Alcohol / Get Drunk Range: (2.0 - 8.0)	7.73 (0.92)	7.60 (1.04)	7.71 (1.00)	7.56 (1.07)	7.37 (1.52)	7.09 (1.60)	7.47 (1.25)	7.51 (1.02)

Note. Top numbers are means, bottom numbers are standard deviations

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Table 2
Peer Variables: Means and Standard Deviations

	School Adjustment							
	High School Adjustment				Low School Adjustment			
	Males (N = 95)		Females (N = 150)		Males (N = 122)		Females (N = 187)	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
# of Peers Get Drunk Once in a While	1.98	2.45	1.86	2.42	2.07	2.64	2.33	2.71
Range: (1.0 - 4.0)	(1.02)	(0.94)	(0.88)	(0.96)	(0.97)	(0.98)	(0.99)	(0.93)
# of Peers Get Drunk Almost Every Weekend	1.60	1.96	1.53	2.03	1.65	2.24	1.92	2.21
Range: (1.0 - 4.0)	(0.92)	(0.99)	(0.83)	(1.05)	(0.86)	(1.04)	(1.04)	(1.08)
How Much Peers Stop You Getting Drunk	2.20	2.62	2.05	2.19	2.71	2.82	2.31	2.28
Range: (1.0 - 4.0)	(1.20)	(1.09)	(1.15)	(1.12)	(1.21)	(1.08)	(1.17)	(0.97)
How Often Peers Ask You Get Drunk	1.57	1.93	1.45	1.80	1.80	2.34	1.95	2.06
Range: (1.0 - 4.0)	(0.90)	(0.94)	(0.77)	(0.98)	(0.97)	(1.15)	(1.05)	(1.05)

Note. Top numbers are means, bottom numbers are standard deviations

Table 3
Alcohol Involvement Variables: Means and Standard Deviations

	School Adjustment							
	High School Adjustment				Low School Adjustment			
	Males (N = 95)		Females (N = 150)		Males (N = 122)		Females (N = 187)	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
# of Times Drank Alcohol (in last 30 days) Range: (1.0 - 5.0)	1.25 (0.58)	1.44 (0.78)	1.24 (0.60)	1.50 (0.84)	1.32 (0.66)	1.71 (0.88)	1.56 (0.76)	1.73 (0.89)
# of Times Gotten Drunk (in last 30 days) Range: (1.0 - 5.0)	1.15 (0.55)	1.15 (0.46)	1.03 (0.16)	1.19 (0.62)	1.08 (0.33)	1.36 (0.71)	1.16 (0.48)	1.31 (0.66)
# of Times Drank 5 or 5+ Drinks Within 3 – 5 Hrs. (in last 30 days) Range: (1.0 - 11.0)	1.39 (1.41)	1.60 (1.49)	1.13 (0.51)	1.55 (1.54)	1.39 (1.33)	2.08 (2.12)	1.67 (1.63)	1.87 (1.72)

Note. Top numbers are means, bottom numbers are standard deviations

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Table 4
Confirmatory Factor Analysis Standardized Factor Loadings and Residuals at Time 1 for Males and Females

	School Adjustment							
	High School Adjustment				Low School Adjustment			
	Males (N = 95)		Females (N = 150)		Males (N = 122)		Females (N = 187)	
Indicator	Factor Loading	Residual	Factor Loading	Residual	Factor Loading	Residual	Factor Loading	Residual
Family Care Drink Alcohol / Get Drunk	0.79	0.61	0.95	0.31	1.00	0.00	1.00	0.00
Family Stop Drink Alcohol / Get Drunk	1.00	0.00	0.96	0.28	0.84	0.54	0.73	0.68
# of Peers Get Drunk Once in a While	0.63	0.78	0.77	0.63	0.74	0.67	0.80	0.60
# of Peers Get Drunk Almost Every Weekend	0.63	0.78	0.70	0.71	0.61	0.79	0.84	0.55
How Much Peers Stop You Getting Drunk	0.41	0.91	.48	0.88	0.32	0.95	0.29	0.96
How Often Peers Ask You Get Drunk	0.67	0.74	0.56	0.83	0.61	0.79	0.60	0.80
# of Times Drank Alcohol (in last 30 days)	0.84	0.54	0.88	0.47	0.77	0.64	0.82	0.60
# of Times Gotten Drunk (in last 30 days)	0.67	0.75	0.29	0.96	0.69	0.72	0.59	0.81
# of Times Drank 5 or 5+ Drinks Within 3 – 5 Hrs. (in last 30 days)	0.78	0.63	0.68	0.73	0.90	0.44	0.79	0.62

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Table 5
Confirmatory Factor Analysis Standardized Factor Loadings and Residuals at Time 2 for Males and Females

	School Adjustment							
	High School Adjustment				Low School Adjustment			
	Males (N = 95)		Females (N = 150)		Males (N = 122)		Females (N = 187)	
Indicator	Factor Loading	Residual	Factor Loading	Residual	Factor Loading	Residual	Factor Loading	Residual
Family Care Drink Alcohol / Get Drunk	1.00	0.00	0.78	0.63	0.83	0.55	0.96	0.29
Family Stop Drink Alcohol / Get Drunk	0.82	0.58	0.86	0.52	1.00	0.00	0.78	0.63
# of Peers Get Drunk Once in a While	0.90	0.44	0.61	0.79	0.74	0.68	0.77	0.64
# of Peers Get Drunk Almost Every Weekend	0.77	0.64	0.68	0.74	0.76	0.65	0.82	0.58
How Much Peers Stop You Getting Drunk	0.32	0.95	0.61	0.79	0.52	0.85	0.40	0.92
How Often Peers Ask You Get Drunk	0.41	0.91	0.66	0.75	0.70	0.72	0.64	0.77
# of Times Drank Alcohol (in last 30 days)	0.67	0.75	0.87	0.49	0.86	0.51	0.77	0.64
# of Times Gotten Drunk (in last 30 days)	0.77	0.64	0.78	0.63	0.81	0.58	0.76	0.65
# of Times Drank 5 or 5+ Drinks Within 3 – 5 Hrs. (in last 30 days)	1.00	0.00	0.87	0.49	0.95	0.33	0.28	0.96

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Table 6
Summary of Confirmatory Factor Analysis for Males and Females

Fit Indices	School Adjustment			
	High School Adjustment		Low School Adjustment	
	Males	Females	Males	Females
χ^2	171.78	258.63	157.41	145.31
df	120	120	120	120
χ^2 /df	1.43	2.16	1.31	1.21
RMSR	0.10	0.80	0.09	0.15
CFI	0.93	0.87	0.97	0.98

Note. RMSR = root mean square residual; CFI = comparative fit index

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Table 7

Summary of Fit Indices & Difference Tests for Competing Structural Models for Males with High and Low School Adjustment

Models		Fit Indices					
		χ^2	df	p.	χ^2 /df	RMSR	CFI
Stability	High School Adjustment	239.45	132		1.81	.20	.85
	Low School Adjustment	238.19	132		1.80	.16	.90
Within Time Covariance	High School Adjustment	186.26	126		1.48	.12	.91
	Low School Adjustment	166.95	126		1.32	.12	.96
Difference	High School Adjustment	53.19	6	p. < .001			
	Low School Adjustment	71.24	6	p. < .001			
Peer & Family Outcome	High School Adjustment	179.53	124		1.45	.11	.92
	Low School Adjustment	160.72	124		1.30	.10	.97
Difference	High School Adjustment	6.73	2	p. = .03			
	Low School Adjustment	6.23	2	p. = .04			
Alcohol Outcome	High School Adjustment	174.08	122		1.43	.10	.93
	Low School Adjustment	159.61	122		1.31	.10	.97
Difference	High School Adjustment	5.45	2	p. = .07			
	Low School Adjustment	1.11	2	p. = .57			

Note. RMSR = root mean square residual; CFI = comparative fit index

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Table 8

Summary of Fit Indices & Difference Tests for Competing Structural Models for Females with High and Low School Adjustment

Models	Fit Indices	χ^2	df	p.	χ^2/df	RMSR	CFI
Stability	High School Adjustment	320.90	132		2.43	.20	.82
	Low School Adjustment	225.86	132		1.71	.25	.91
Within Time Covariance	High School Adjustment	273.30	126		2.17	.11	.86
	Low School Adjustment	149.35	126		1.19	.16	.98
Difference	High School Adjustment	47.60	6	$p < .001$			
	Low School Adjustment	76.51	6	$p < .001$			
Peer & Family Outcome	High School Adjustment	268.49	124		2.17	.10	.86
	Low School Adjustment	148.27	124		1.20	.16	.98
Difference	High School Adjustment	4.81	2	$p = .09$			
	Low School Adjustment	1.08	2	$p = .58$			
Alcohol Outcome	High School Adjustment	264.68	122		2.17	.09	.86
	Low School Adjustment	146.64	122		1.20	.15	.98
Difference	High School Adjustment	3.81	2	$p = .15$			
	Low School Adjustment	1.63	2	$p = .44$			

Note. RMSR = root mean square residual; CFI = comparative fit index

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Table 9
Factor Intercorrelations of Latent Variables for Mexican American Males with High School Adjustment

		Family Sanctions Alcohol		Peer Alcohol Associations		Alcohol Involvement	
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Family Sanctions Alcohol	Time 1						
	Time 2	0.10					
Peer Alcohol Associations	Time 1	-0.14	-0.11				
	Time 2	-0.01	0.04	0.35			
Alcohol Involvement	Time 1	-0.39	-0.14	0.63	0.39		
	Time 2	-0.07	-0.23	0.52	0.31	0.38	

Table 10
Factor Intercorrelations of Latent Variables for Mexican American Males with Low School Adjustment

		Family Sanctions Alcohol		Peer Alcohol Associations		Alcohol Involvement	
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Family Sanctions Alcohol	Time 1						
	Time 2	0.15					
Peer Alcohol Associations	Time 1	-0.01	0.06				
	Time 2	0.07	-0.23	0.51			
Alcohol Involvement	Time 1	0.01	-0.10	0.57	0.31		
	Time 2	0.04	-0.19	0.41	0.62	0.39	

Table 11
Factor Intercorrelations of Latent Variables for Mexican American Females with High School Adjustment

		Family Sanctions Alcohol		Peer Alcohol Associations		Alcohol Involvement	
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Family Sanctions Alcohol	Time 1						
	Time 2	0.25					
Peer Alcohol Associations	Time 1	-0.06	-0.35				
	Time 2	-0.12	-0.42	0.68			
Alcohol Involvement	Time 1	-0.12	-0.18	0.53	0.31		
	Time 2	-0.06	-0.30	0.52	0.52	0.54	

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Table 12
Factor Intercorrelations of Latent Variables for Mexican American Females with Low School Adjustment

		Family Sanctions Alcohol		Peer Alcohol Associations		Alcohol Involvement	
		Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Family Sanctions Alcohol	Time 1						
	Time 2	0.16					
Peer Alcohol Associations	Time 1	-0.02	-0.05				
	Time 2	-0.11	-0.02	0.55			
Alcohol Involvement	Time 1	-0.20	-0.04	0.56	0.39		
	Time 2	-0.18	-0.16	0.28	0.52	0.45	

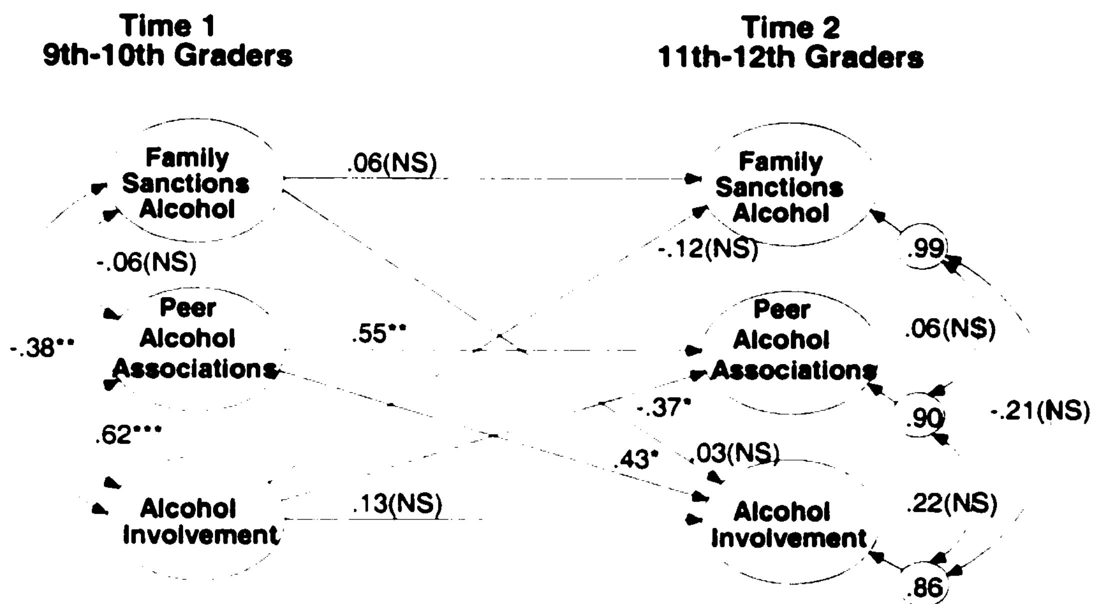

Figure 1. Structural equation model for Mexican American males (High School Adjustment).

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Mexican American Females (High School Adjustment)

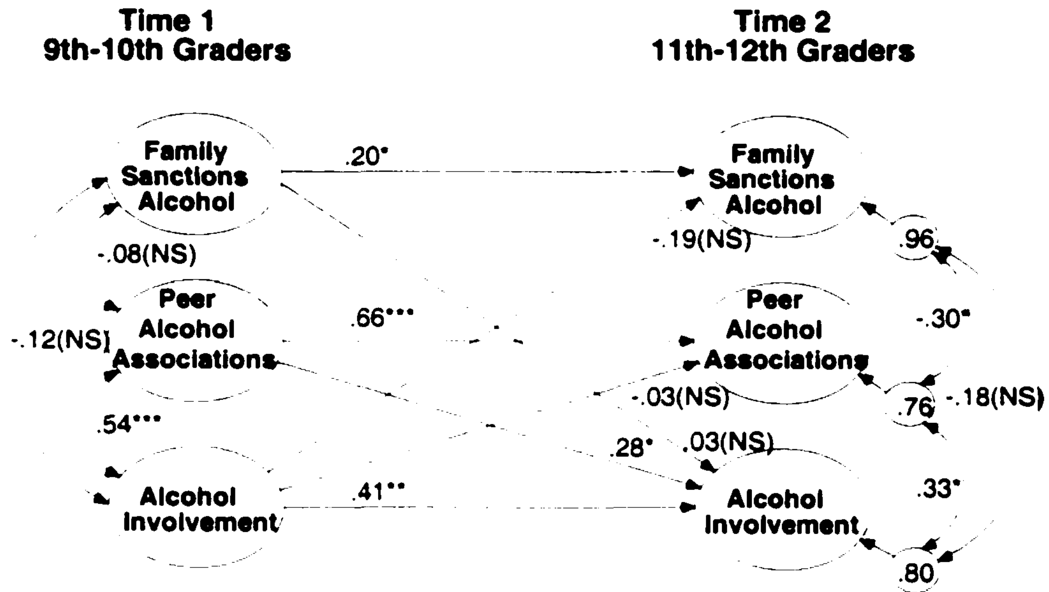

Figure 2. Structural equation model for Mexican American females (High School Adjustment).

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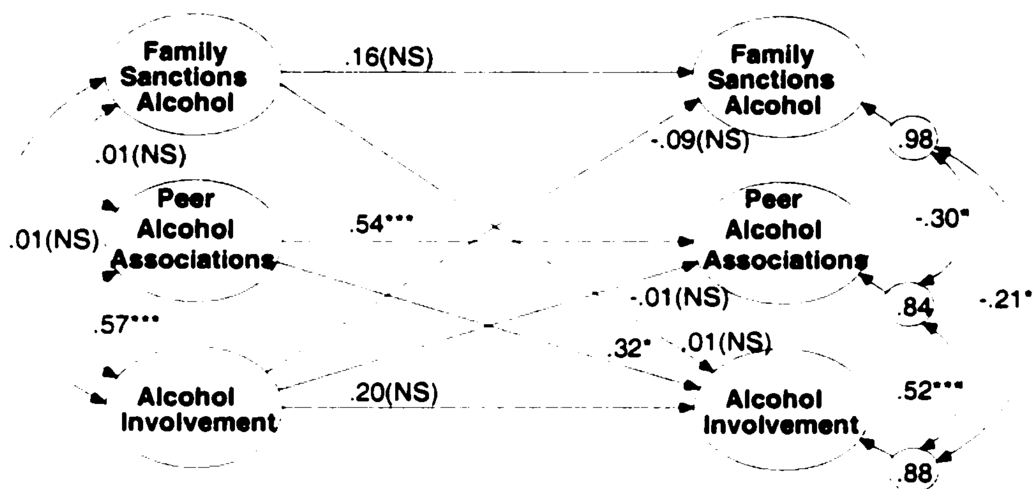

Figure 3. Structural equation model for Mexican American males (Low School Adjustment).

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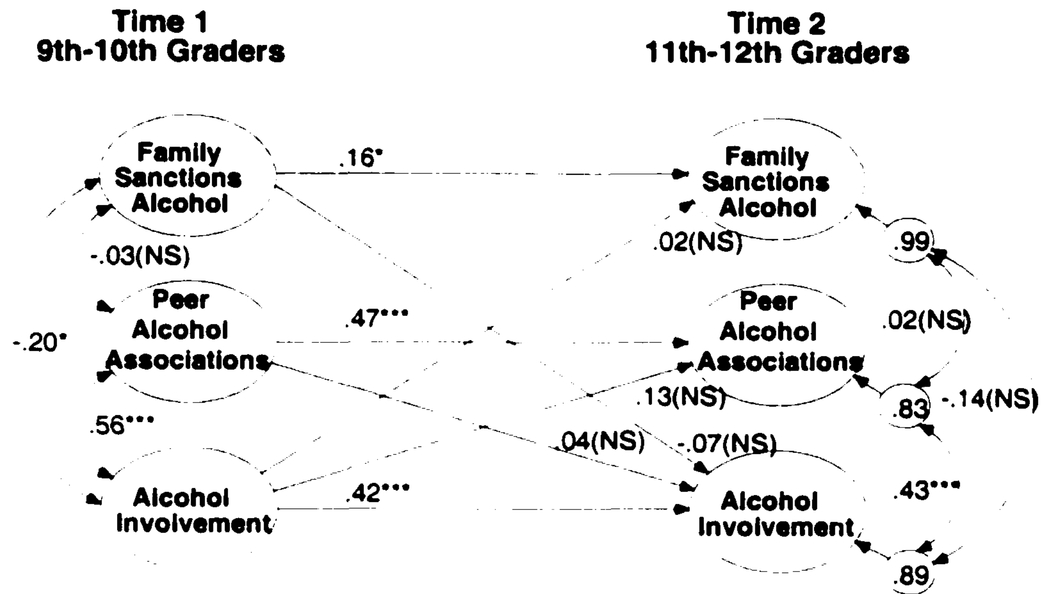

Figure 4. Structural equation model for Mexican American females (Low School Adjustment).

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