

ACCULTURATION, ALCOHOL EXPECTANCIES, AND ALCOHOL USE
AMONG MEXICAN-AMERICAN ADOLESCENTS

A Dissertation

by

CLAUDIA GRACIELA FLATO

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2009

Major Subject: Psychology

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ABSTRACT

Acculturation, Alcohol Expectancies and Alcohol Use

Among Mexican-American Adolescents. (December 2009)

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Chair of Advisory Committee: Dr. Antonio Cepeda-Benito

The current study was designed to examine the influence of cultural orientation on alcohol involvement among Mexican-American adolescents. This study assessed whether cultural orientation predicted positive and negative alcohol expectancies for the effects of drinking one to two drinks or bingeing; and whether alcohol-use expectancies mediated the effects of acculturation on drinking practices. The participants were 300 Mexican-American high school students ($M = 16.5$, $SD = 1.15$; 178 female and 122 male) from a city along the Texas/Mexico border who were mostly self-identified as 2nd generation Mexican-Americans. The students completed the questionnaires regarding alcohol involvement, acculturation, and alcohol expectancies. Significant findings in the current study indicated a higher orientation to Mexican culture predicted higher levels of alcohol involvement for boys; whereas, a higher orientation to U.S. culture predicted higher alcohol involvement for girls. Also, identification with Mexican culture for girls predicted negative alcohol expectancies for low and high quantities of alcohol use.

DEDICATION

Franklin, Grace, and William Flato; and Flores-Stringel family:

No words can express the gratitude I feel for your love, patience, and kindness.

Thank you for your unwavering support throughout the completion of my

Doctor of Philosophy degree.

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1. INTRODUCTION: ACCULTURATION, ALCOHOL EXPECTANCIES, AND ALCOHOL USE AMONG MEXICAN-AMERICAN ADOLESCENTS

Alcohol use among adolescents in the United States remains alarmingly high. The National Survey of Drug Use and Health (NSDUH, Office of Applied Studies [OAS], 2008) indicated that in 2007, approximately 10.7 million underage drinkers (27.9% of all underage persons ages 12-20) reported imbibing alcohol in the past month; about 7.2 million (18.6%) were binge drinkers (consuming five or more drinks on the same occasion); and 2.3 million (6.0%) were heavy drinkers (binge drinking on one occasion at least 5 days in the last month). Among adolescents aged between 12 to 17 years, approximately 16% had drunk alcohol at least once in the last month, 9.7% had binged, and 2.3% reported heavy drinking (OAS, 2008). Although epidemiological studies point to small but sustained declines in alcohol use among adolescents since approximately the year 2000, ninety four percent (94%) of the alcohol consumed by 15-17 year olds occurs during binge episodes and, the ratio of young consumers who report binge drinking is much higher than for adults (Johnson, O'Malley, Bachman, & Schulenberg, 2009; Pacific Institute for Research and Evaluation [PIRE], 2005). The consequences of alcohol misuse by youth have serious negative consequences for their physical and mental, as well as their social, relational and academic functioning. Further, individuals who begin to use alcohol during their adolescence, particularly before the

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age of 15, have an approximately 5 times greater risk of developing alcohol dependence during their life time than those who did not start to drink until after their 21st birthday (Hingson, Hereen, & Winter, 2006; OAS, 2008).

An additional observation in drinking trends in the U.S. between 2002 and 2007 is that the difference between male and female drinking patterns has become smaller with regards to current alcohol use (Johnston, O'Malley, Bachman, & Schulenberg, 2009; OAS, 2004; 2008). However a significant difference remains in patterns of alcohol use between males and females aged 12 and over. Males reported 57.5% current drinking whereas females reported 45% of past month alcohol use. The differences in gender patterns of drinking become larger for binge and heavy alcohol use [30.8% males; 15.1% females - binge and 10.5% males; 3.3% females – heavy (NSDUH, 2007)]. In Mexico, A study utilizing 1998 national survey data, indicates that overall per capita consumption of alcohol is low (only 12% of the urban population aged 18 to 65 consume alcohol on a weekly basis) according to Gutierrez (2000; as cited in Medina-Mora, Borges, and Villatoro, 2000). The proportion of weekly drinking increased to 26%, with 74% binge drinking when only males were considered in the analyses suggesting a cultural tendency of greater alcohol consumption for males in Mexico (Medina et al. 2000). Abstention was common for females although rates appear to be decreasing from 63.5% in 1989 to 55.3% in 1998 (Medina et al. 2000). The indication is that although drinking practices still differ considerably by gender in Mexico, similarly to the U.S. the difference is declining.

1.1 Latino Adolescents and Alcohol Use

Alcohol use among Latino adolescents, particularly Mexican-Americans has been the subject of research studies in the last decade, but the research in this area is still limited. Focusing attention on cultural, ethnic, and/or gender influences in adolescent drinking facilitates the identification of specific groups who may be at higher risks of developing alcohol problems (Stewart & Powers, 2003; Griffin, Scheier, Botvin, & Diaz, 2000). For instance, patterns of alcohol use for Mexican and Mexican-American adults reflect a tendency for high quantity of alcohol use per drinking episode but with drinking occurring at low frequency rates (Caetano & Medina-Mora, 1988, Cervantes Gilbert, Salgado de Snyder, & Padilla, 1990-1991, Gilbert, 1987). Our knowledge is still very limited regarding patterns of alcohol use among Latino adolescents. However, Stewart and Powers (2003) found that upon examining the impact of different variables such as ethnicity, social class, and gender on adolescent drinking, gender and ethnicity were more powerful predictors than social class.

In 2003, the population of children between the ages of 12-17 in the United States was estimated to be 24.9 million. Approximately four million (16.1%) were of Latino origin. Of these, the majority were United States citizens by birth (77.8%) and of Mexican heritage (71%) (OAS, 2004; NSDUH, 2005). The distribution of Latino subgroups was as follows: Puerto Rican (11.8%), Central and South American (10.9%), Cuban (3%), and other (3.1%). Regarding drinking practices within Latino subgroups, adolescents of Mexican descent fell in the mid range of past month alcohol use (16.5%)

compared to Puerto Rican (14.3%), Central or South American (17.1%), Cubans (21.2%), and other Latinos (16.8%). (OAS, 2004; NSDUH, 2005).

Nielsen and Ford (2001) analyzed data from the 1998 National Health Survey of Drug Abuse (NHSDA – now NSDUH) and found significant differences in patterns of alcohol use among adolescents of Cuban, Mexican, Puerto Rican, and South American origin. Mexican-American adolescents reported drinking more frequently than Cuban-American adolescents and more frequently and heavily than those of Puerto Rican and South American descent. A NSDUH 2003-2004 report on alcohol use among persons 12-20 years old indicated that Mexican-Americans reported slightly higher lifetime alcohol use (55.5%) than Cuban-Americans (53.4%), Puerto Ricans (53.7%) and South Americans (53.5%), with Cubans reporting higher past year (47.2%) and past month alcohol use (32.4%) than Mexican-Americans (44.4% past year and 25.4% past month), Puerto Ricans (44.1% past year and 23.3% past month) and Central/South Americans (42.8% past year and 27.8% past month). Although Central and South Americans reported the highest rate of binge alcohol use (20.2%) than any other Latino subgroup (range 14.7% to 18.1 %), Central and South Americans reported the lowest rates of heavy alcohol use (3.2%) than any other subgroup (4.4% to 6.1%). Mexican-Americans reported higher binge drinking (18.1%) than Cubans (17.2%) and Puerto Ricans (14.7%), but less heavy alcohol use (4.4%) than Cubans (6.1%).

Overall, Latino adolescents have been found to report lower rates of past month use (16.4% compared to 17.9%) and binge drinking (9.9% compared to 10.8%) than non Hispanic Whites, with Latinos born in the United States reporting both higher past

month use (17.1% compared to 14.1%) and higher binge drinking than those born in a foreign country (10.3% compared to 8.5%). Higher acculturation to more acceptable drinking practices in the U.S. has often been identified as a contributor to changes in drinking practices that occur in Latino subgroups, specifically, in Latinos of Mexican descent (Caetano, Ramisetty-Mikler, Walisch, McGrath, & Spence, 2008; Delva et al. 2005, Epstein, et al. 2001; Gil, Wagner, & Vega, 2000; Kail, Zayas, Malgady, 2000; Swaim, Wayman, & Chen, 2004; Vega & Gil, 1999; Vega, Sribney, & Achara-Abrahams, 2003, Yan, Beck, Howard, Shattuck, & Kerr, 2008).

1.2 Acculturation and Drinking Practices of Latinos and Mexican-Americans

Acculturation is often defined as value, norms, attitudinal, and behavioral changes effected to conform to a new culture (Gordon, 1964 as cited in Epstein, Doyle, & Botvin, 2003; Segura, Page, Neighbors, Nichols-Anderson, Gillasp, 2003). The study of acculturation has three primary purposes: 1) assess the effects that living in a majority society has over individuals in minority groups, 2) assess how immigrants change as they participate in the majority society, and 3) assess how ethnically diverse groups relate to each other as they evolve together in order to adapt to a more “culturally plural” society (Berry, 2005). More concretely, researchers have been interested in knowing whether and to what extent acculturation relates to a number of health and well being indicators, including medical conditions, family dynamics, and alcohol and substance abuse (Berry, 2005; Cuellar et al. 2004).

Three common models used to explain the impact of acculturation on immigrant families include the Linear Acculturation Model, the Marginality Stress Model, and the

Acculturative Stress Model (Neff et al. 1987; Berry 1980 as cited in Zimmerman & Sadowsky, 1993; Sadowsky et al. 1991). The Linear Acculturation Model states that as Latino immigrants become more acculturated to the U.S mainstream culture they also become more similar in behaviors to members of the host country (Zimmerman & Sadowsky, 1993). For example, Mexican-Americans at the lowest levels of acculturation would be expected to retain the old culture drinking patterns of high quantity, but low frequency (drinking to get drunk, but not frequently for males, although gender differences are declining) (Zimmerman & Sadowsky, 1993; Caetano & Medina-Mora, 1988; Swaim, et al. 2004).

The Marginality Stress Model assumes that the maximum stress related to acculturation occurs when the individual is distant from his original culture's values and behaviors while not necessarily accepting of the new culture's values and behaviors (Sadowsky et al. 1991). The Acculturative Stress Model suggests that the process of changing to fit into the mainstream culture while forsaking some of the values from the original culture produce stress. Applying these models to explain the drinking patterns of Mexican-descent Latinos, either the marginality or acculturative stress models would predict higher levels of alcohol consumption among second than first generation Mexican-Americans because drinking is often used to cope with stress in general (Gilbert, 1987).

There are several complexities associated with the issue of assessing acculturation. Some researchers propose that acculturation is a unidimensional construct that can be conceptualized along a single continuum from the person's culture of origin

to the immersion in the dominant or host culture (e.g., Cuéllar, Harris, & Jaso, 1980; Gordon, 1995). The alternative perspective posits that acculturation is bi-dimensional, adherence to the dominant culture and maintenance of the culture of origin (e.g., Berry, 1997; Magaña, De la Roncha, Amsel, Fernandez, & Rulnick, 1996; Marín & Gamba, 1996; Rogler, Cortés, & Malgady, 1991; Ryder et al. 2000). Negy and Woods (1992b) warn also about the tendency to view acculturation as a unidirectional event between the minority group and the majority group, but in fact both groups may influence each other as they become into contact. Although English language use, generational status, and acculturation scores are correlated (Sodowsky et al. 1991), Negy and Woods (1992a) suggest measuring acculturation through various methods (e.g., generational status, language, and SES) because a single measure of acculturation may produce unreliable and superficial results. Although several studies have reported that generational status has a linear relationship with acculturation (where levels of acculturation increase for second, third, and fourth generation Latinos), there seems to be a lack of consensus among researchers regarding an operational definition for acculturation and the appropriate way to assess this construct. (Cuellar, Harris, & Jasso, 1980; Gamst, et al. 2002, Hunt et al. 2004, Negy & Woods, 1992b; Sodowsky et al.).

Overall, the research on the impact of acculturation on Latinos has produced conflicting results, with some studies showing that acculturation to American values and customs is associated with better outcomes (e.g., better nutrition - Sabogal, Perez-Stable, Otero-Sabogal, & Hiatt, 1995; Woodruff, Zaslow, Candelaria, & Elder, 1997; low obesity – Khan, Sobal, and Martorell, 1997; lower rates of depression – Gonzalez,

Haan, & Hiton; less cocaine use – Wagner-Echeagaray, Schuetz, Chilcoat, & Anthony, 1994; as cited in Cuellar et al. 2004), and others showing poorer outcomes (e.g., high obesity - Sundquist and Winkleby, 2001; higher rates of depression – Vega et al. 1998; as cited in Cuellat et al. 2004; higher poly-drug use – Epstein, et al. 2001). One study found no differences in depression and self-esteem measures between U.S. born Latinas and immigrant Latinas (Cervantes, et al. 1990-1991). One of the reasons offered for the lack of consistent results across the literature is that researchers have used different methodologies to measure acculturation (Hunt, et al. 2004; Negy & Woods, 1992a; Zemore, 2007). Another major criticism of the research is the practice of grouping together Latinos of different national origins. Although heterogeneous Latino subgroups may share overarching cultural values and practices (e.g., familismo), they are likely to differ with regards to more specific beliefs and practices, such as alcohol and substance use and other health related behaviors (Caetano & Clark, 2003; Chun & Akutsu, 2003; Hunt, Schneider, & Comer, 2004; Okazaki & Sue, 1995).

For the purpose of illustration, a description of selected research themes that have studied the impact of acculturation on Latinos is presented. In a review, Cuellar et al. (2004) concluded that the impact of acculturation on specific physical and mental issues is unclear. For example, whereas some authors reported that high acculturation is associated with better nutrition and knowledge of healthy eating practices (Otero-Sabogal et al. 1995 (as cited in Cuelar 2004; Woodruff et al. 1997), other authors report that highly acculturated Latinos tend to be overweight with respect to Latinos who score low on acculturation measures (Sundquist and Winkleby, 2001). Methodological

measurement differences cannot be attributed to the inconsistency cited above, as these studies used consistently language (English) preference as proxy for acculturation.

A less conflicting picture of research findings regarding the negative association between acculturation and mental health has been offered. Suarez-Orozco (1997) noted that a high number of studies showed that Mexican immigrants had better mental health and reported more academic interest and achievement than third generation Mexican-Americans; Hurtado-Ortiz & Gauvain (2007) found a correlation between higher academic achievement and lower levels of acculturation among Mexican-American youths, as well. Similarly, Vega et al. (1998) indicated that U.S. born Mexican-Americans had a higher lifetime prevalence rate for any disorder (48.1%) when compared to Mexican born immigrants (24.9%) as measured by the Composite International Diagnostic Interview.

Studies conducted with Latinos have proposed that acculturation may explain the nature of the relationships that exist between alcohol use patterns and Latinos' country of origin, generational status, and language spoken at home (Epstein, et al. 2001; Gil, Wagner, & Vega, 2000; Kail, et al. 2000; Vega & Gil, 1999; Vega, Sribney, & Achara-Abrahams, 2003). Epidemiology studies report that the probability of engaging in heavy drinking among Latino adolescents is greatest for Mexican-Americans (Kail, et al. 2000; Vega & Gil, 1999; Vega, et al. 2003). However, the same research also shows that heavy drinking in the past two weeks among Mexican-American students whose first language was Spanish is lower than for those whose first language was English (Delva et al. 2005). Further, Epstein et al. (2001), found that among seventh and eighth

grade Latino adolescents from New York City, adolescents who spoke primarily English or who were bilingual at home engaged in greater polydrug use than those who spoke only Spanish with their parents.

In the United States, frequent self-regulated drinking is deemed acceptable, but overuse is generally viewed negatively (Gureje, Vazquez-Barquero, & Janca, 1996). However, among Mexicans, patterns of consumption are characterized by a higher cultural tolerance of sporadic episodes of excessive drinking where the cultural norm is intoxication (Gureje, et al. 1996; Caetano & Medina-Mora, 1988; Cherpitel, Borges & Medina-Mora, 2001). Thus Mexican-Americans (in the U.S.) appear to display a pattern of heavy and infrequent drinking that contrasts with the more frequent yet moderate consumption of alcohol of Non-Hispanic Whites (Caetano & Medina-Mora 1988; Cherpitel et al. 2001; Gureje, et al. 1996; & Villatoro, et al. 1998). Studies regarding Mexican-Americans patterns of drinking indicate that acculturation may increase the risk for alcohol abuse (Caetano et al. 2008; Caetano & Medina-Mora, 1988; Delva, 2005;). However, other researchers have found that acculturation did not seem to predict quantity of alcohol consumed or reasons for drinking, in fact, low acculturation to the U.S. among some Latino subgroups seemed to increase the likelihood of developing alcohol related disturbances (Kail et al. 2000). The different relationship between acculturation to the U.S. and patterns of drinking for Mexican-American and other Latino subgroups highlight the need to examine acculturation effects on drinking behavior separately for each Latino subgroup.

1.3 Acculturation, Gender Differences, and Alcohol Use

Acculturation seems to have a different effect for Latinas and Mexican-American females than males in terms of drinking patterns. For instance, it appears that women engage in higher frequency of drinking as they become more acculturated to the United States (Caetano et al. 2008; Valentine, & Mosley, 2000). Cervantes et al. (1990-1991) stated a change was observed from less frequency-high quantity to more frequency-high quantity drinking for men, and a change from abstention or infrequent drinking to moderate frequency of drinking in women. In a sample of college students ($n= 148$), acculturation was not related to Mexican-American males' alcohol use, but was related to higher past year alcohol use and binge drinking for females (Rafaelli et al. 2007). Similarly, an epidemiological study including 2,175 Mexican-American participants (ages 18-34) found that foreign-born females (presumably not acculturated to U.S.) were less likely than U.S. born females to be current drinkers and tended to report less frequency and quantity of use; foreign born males reported similar rates of current alcohol use than U.S. born males (Slone, Norris, Gutierrez Rodriguez, Gutierrez Rodriguez, Murphy, & Perilla, 2006; Strunin, Edwards, Godette, Heeren, 2007). Contrastingly, Fosados et al. 2007 conducted a study including ninth graders ($n = 198$) from Southern California; the results indicated that cultural separation (identifying with their family's country of origin's culture – not acculturated to U.S.) was a risk factor for current use among females; whereas assimilation to the U.S. was a protective factor for males. However, marginalization or no identification with either culture was a risk factor for lifetime alcohol and drug use for males and a greater risk for current use for females

(Fosados et al.). It appears that acculturation in relation to gender differences and drinking patterns warrant further study, particularly in adolescence when on-set alcohol use occurs.

1.4 Alcohol Expectancies

Alcohol expectancies are an important construct in the alcohol abuse literature as they are believed to play a pivotal role in the motivation to drink (Goldman, Brown, Christiansen, Goldman, M. S., Inn, A., 1982; Goldman, Del Boca, & Darkes, 1999; Tapert, Tate, & Brown, 2001; Fromme, Stroot, & Kaplan, 1993; Fromme and D'Amico 2000; Zamboanga, 2005). The expectancy construct has been conceptualized as an organism's ability to utilize information stored in memory to guide and organize future behavior (Tolman & Postman, 1954). Outcome expectancies can be defined also as beliefs about the probable consequences of engaging in a behavior (Goldman, 2002). Expectancies define a relationship between a stimulus, a response, and the outcome of a response; such a relationship is thought to influence future behavior (Goldman, Del Boca, & Darkes, 1999).

Goldman (1999) posited that behaviors guided by expectancies tend to be automatic given that expectancies can be conceptualized as information templates that are reflexively activated and put into motion by the nervous system following stimulation. The hypothesized function of expectancies is to prepare the organism to cope in the future with situations that were encountered in the past (Goldman, 1999). Behavior related outcome expectancies can be learned through both actual and vicarious experiences, as well as acquired knowledge about how to behave under specific

circumstances (Goldman, 1999). Alcohol-outcome expectancies have been defined as neurocognitive structures that influence drinking behavior (Del Boca, et al. 2002).

Children's alcohol expectancies are associated with drinking onset and extended alcohol use (Goldman, Brown, Christiansen, & Smith, 1991). The nature of this association is reciprocal, with expectancies influencing motivation to drink and drinking modifying alcohol use expectancies (Goldman, et al. 1991). Alcohol expectancies develop through both real and vicarious experiences (Tapert, Tate, & Brown, 2001). Thus, variables such as age, family, peers, cultural values, beliefs and customs related to drinking contribute to the shaping of alcohol expectancies (Goldman, et al. 1991; Lindman, Sjöholm, & Lang, 2000).

Miller, Smith, and Goldman (1990) analyzed the development of alcohol expectancies in children (grades 1-5) by assessing expectancies with a modified version of the Alcohol Expectancies Questionnaire – Adolescent (AEQ-A; Christiansen et al. 1982). Through hand puppets and simplified language, the administrator read items from the AEQ-A in order to include children at different levels of language and reading development. The results indicated that children's positive expectancies about alcohol increased with age, and the greatest difference was observed between children in the 3rd and 4th grade (Miller et al. 1990).

Another study assessing children's alcohol expectancies among 2nd (mean age 8) and 3rd graders (mean age 9), found that children have defined alcohol expectancies prior to alcohol consumption (Query, Rosenberg, & Tisak, 1998). The children were presented with pictures of adults in different setting drinking ice tea or beer. Twenty-five

percent of the children had tasted beer and 80% had tasted ice tea (presumably an adult drink), but there were no significant differences between those who had tasted beer in terms of the expectancies held. The results indicated that the children held more negative expectancies about the effects of drinking beer than drinking iced tea. Interestingly, the children expected more impairment for women than for men as a result of drinking beer (Query et al. 1998). Differences as a function of the children's ethnicity were not examined. However the outcome expectancy of more impairment for women than for men appeared to illustrate the influence of socialization and gender-role norms in the formation of expectancies.

Smith, Goldman, Greenbaum, and Christiansen (1995) conducted a longitudinal study to assess adolescents' alcohol expectancies over a 2 year period through the 7th and 8th grades (ages 12 – 14 years). These authors tested the hypothesis that once drinking begins there is a reciprocal influence between alcohol use and alcohol expectancies. Smith et al. (1995) determined a baseline for the participants on expectancies and drinking, and then the students were reassessed every 12 months for two years. Social facilitation, which appears to be the most salient alcohol outcome expectancy among adolescents (Smith et al), was the focus of the study. The results indicated that social enhancement expectancy predicted subsequent drinking behavior over and above the influence of previous drinking, and drinking experience provided subsequent expectancy over and above the influence of prior expectancy. Among adolescents who indicated little or no alcohol use during baseline, those highest in the expectancy for social facilitation from alcohol began to drink and increase their drinking at a faster rate over

the subsequent 2 years. Also, adolescents with low positive expectancies regarding social enhancement either did not begin drinking or increased their drinking only gradually. This finding seems to support the assumption that previously held positive outcome expectancies about alcohol may guide drinking behavior and the expectancies may become reinforced through subsequent drinking (Goldman 1999).

1.5 Alcohol Expectancies in Latino Populations

Comparison studies of ethnic differences, acculturation, and alcohol expectancies among Latinos and Non-Hispanic Whites suggest that Latinos tend to report more positive expectancies of social extroversion effects from heavy drinking (Cervantes, et al. 1990-1991; Johnson & Glassman, 1999; Kail et al. 2000; Marin & Gamba, 1996; Marin, Posner, & Kinyon, 1993). Several studies corroborate the findings that expectancy domains endorsed by diverse ethnic groups such as Puerto Ricans, Dominicans, Non-Hispanics Whites, Irish, Mexican-Americans, and Central/ South Americans vary according to the drinking practices of each ethnic group (Johnson & Gallo-Treacy, 1993; Johnson & Glassman, 1999; Kail et al. 2000; Marín & Gamba, 1996). For instance, Marín et al. (1993) utilized a sample of 1740 San Francisco residents of which Latinos comprised 69.2% of the sample and the majority of these Latinos were from Central America and Mexico. Through a phone interview, participants responded to questions on acculturation, average alcohol use, and general expectancies about the use of alcohol. Their findings indicated that Latinos endorsed more expectancies of all types (i.e. cognitive, social, behavioral, and emotional) than Non-Hispanic Whites. Among Latino participants not differentiated by acculturation

levels, Latino abstainers (individuals who reported drinking less than 12 drinks per year and who had not had a drink in the previous year) were more likely to report emotional and behavioral impairment expectancies from alcohol than light, moderate, and heavy drinkers. Among Non-Hispanic Whites, both abstainers and heavy drinkers reported more behavioral and emotional impairment expectancies than light and moderate drinkers. In other words, among Latinos (not differentiated by generational status), heavier drinkers reported less negative expectancies of emotional and behavioral impairment. However, when separated by generational status, less acculturated Latinos reported ambivalent expectancies of more impairment as well as more social facilitation as a result of drinking. There were no significant differences in expectancies between Mexicans and Central Americans (Marín & Gamba, 1996).

A study examining alcohol expectancies and drinking behaviors in Mexican-American college students (mean age 25) found that expectancies of physical and social pleasure as well social assertiveness predicted frequency of heavy drinking (26% of variance explained) above and beyond demographic variables such as age, gender, religiosity, and parental education level (7% of variance explained [Zamboanga, 2005]). Thus, Mexican-American students who held sociability and physical pleasure expectancies engaged in more frequent heavy drinking. In this regard, the domain of alcohol expectancies associated with heavy drinking (social and physical pleasure enhancement) held by Mexican-Americans in Zamboanga (2005) was similar to the domain of expectancies associated with heavy drinkers in Non-Latino Whites reported by Brown (1985).

Another study compared drinking patterns and alcohol expectancies of young adults (23 years average) in a sample of recent immigrants (individuals from Central America and Mexico averaging 2.8 years in the U.S.) and U.S. born Latinos (Cervantes et al. 1990-1991). The results indicated that U.S. born Mexican-Americans held more positive alcohol expectancies than Mexican immigrants. Men held more positive outcome expectancies than women and this gender difference was larger between immigrant Latinos than U.S. born Mexican-Americans. The expectancy findings were congruent with the participants' patterns of alcohol use. Immigrant men consumed alcohol in greater quantity and frequency than women and this gender difference was greater for immigrants than for U.S. born Mexican-Americans (Cervantes et al. 1990-1991).

Research studies on alcohol expectancies among Spanish speaking only Latino populations have been limited to examinations of the psychometric properties of self-report measures. Mora-Ríos, Natera, Villatoro, & Villalvazo (2000) studied the factor structure of a Spanish version of the Alcohol Expectancy Questionnaire (AEQ-A; Brown, Christiansen, & Goldman, 1987) using a sample of university students from Mexico ($N = 678$). Using exploratory and confirmatory factor analyses (EFA and CFA), these authors indicated that an 8-factor solution, rather than the 6-factor solution of the original English version (Brown et al. 1980), provided the best fit for the data. The internal consistency of the eight scales ranged from .58 for tension reduction to .80 for aggression and feelings of power. Similarly, Pérez-Aranibar, Van den Broucke, and Fontaine (2005) adapted and evaluated a Spanish version of the adolescent form of the

AEQ (AEQ; Brown et al. 1987) with a sample of 672 university students from Peru. These authors recommended a 3-factor solution and much briefer measure rather than the original 7-factor, 90-item AEQ-A (Brown et al. 1987). The internal consistency of the 3 scales ranged from .70 for positive/negative motor expectation to .94 for positive personal and social expectancies. Pérez-Aranibar et al. found construct validity based on small to medium correlations (.1 and .3), which were significant at the $p < .01$.

Flato et al. (2006) examined the psychometric properties of a Spanish version of the CEOA in a sample of Mexican adolescents. Flato et al. conducted the first attempt to test the validity of CEOA with a Spanish speaking population, and the first study to examine alcohol expectancies with Spanish speaking, school-age adolescents. The 7-factor structure of the original English version of the CEOA (Fromme et al. 1993) replicated to a sample of Spanish-speaking adolescents from Mexico. Flato et al. found that the fit indices suggested that the 7-factor model provided adequate fit for the data. Examination of the item-factor loadings further corroborated the factorial similarity between the CEOA-Spanish and the original CEOA (Fromme et al. 1993). Not only were the ranges of item-loadings within the factors very similar across Flato et al. and Fromme et al. but the rank orderings of the loadings within each scale were also strikingly similar across studies. For example, the highest loading in five of the seven factors corresponded to the same item in both Flato et al. and Fromme et al.

The internal consistency estimates of the CEOA-Spanish scales ranged from .61 to .82, with the lower value corresponding to the negative self-evaluation scale (4 items) and the higher value corresponding to cognitive and behavioral impairment subscale (9

items). These values were comparable also to those reported by Fromme and Valdivia (2000) where the internal consistency estimates of the original scales ranged from .59 (negative self-evaluation) to .89 (cognitive and behavioral impairment).

Flato et al. (2006) also provided evidence of other construct validity for the Spanish version of the CEOA, as positive and negative alcohol expectancy scores were predictive of alcohol consumption. Overall, the Flato et al. pattern of results supported a multifactorial conceptualization of alcohol expectancies, the notion that alcohol expectancies may develop with little, if any, alcohol-drinking experience, and the predictive validity of alcohol expectancies to alcohol use.

1.6 Rationale for the Present Study

Epidemiological studies suggest that alcohol use rates are high and binge drinking is a serious problem for Latino adolescents (CAMY, 2006; Hingson, Hereen, & Winter, 2006; NSDUH, 2004; SAMHSA, 2005). Examining the potential factors that increase alcohol use among Latino adolescents may enhance the development of culture-sensitive treatment models and prevention programs that take into account the specific characteristics of ethnic or cultural populations.

Congruent with cultural customs and attitudes about drinking, drinking patterns of Mexicans are characterized by low drinking frequency but high quantity when drinking (Caetano & Medina-Mora, 1988; Medina-Mora et al. 2000). However, researchers have noted that later generations of Mexican-Americans appear to adopt patterns of drinking frequency more similar to those of Non-Hispanic Whites (Caetano & Medina-Mora, 1988; Cervantes et al. 1990-1991; Gilbert 1987; Zemore, 2007).

Thus, greater acculturation to American mainstream lifestyle may result in greater assimilation to American patterns of greater frequency of drinking while retaining greater quantity per occasion (Caetano & Medina-Mora, 1988; Neff et al, 1987; per Zimmerman & Soderstrom, 1993). It should be noted also that while Latino adolescents report slightly lower past month alcohol use than Non-Hispanic White adolescents, Latinos born in the United States reported significantly higher past month binge alcohol use than foreign born Latinos (OAS, 2004).

Alcohol expectancy studies among Latinos and Non-Hispanic Whites suggest that Latinos tend to report more positive expectancies of social extroversion effects from heavy drinking, but also that scores across alcohol expectancy domains may vary according to the drinking practices of each ethnic group (Cervantes, et al. 1990-1991; Johnson & Glassman, 1999; Kail et al. 2000; Marín & Gamba, 1996; Marin, Posner, & Kinyon, 1993; Vélez-Blasini, 1997). When compared to Non-Hispanic Whites, findings suggest that Latinos endorsed more alcohol expectancies of all types (i.e. cognitive, social, behavioral, and emotional; Marin et al. 1993). However, among Latinos at different levels of acculturation, less acculturated Latinos endorsed less positive expectancies than U.S. born Latinos (Cervantes et al. 1990-1991), or endorsed ambivalent expectancies of more impairment as well as more social facilitation as a result of drinking (Marin et al. 1993). The relationship of positive expectancies and higher alcohol use seems to be similar across ethnicities. In other words, endorsement of positive expectancies (e.g. physical pleasure and social enhancement) seems to lead to increased drinking patterns regardless of ethnic background (Goldman, Del Boca, &

Darkes, 1999; Marin & Gamba, 1996; Marin, Posner, & Kinyon, 1993; Mora-Ríos et al. 2000; Smith, Goldman, Greenbaum, & Christiansen, 1995; Vélez-Blasini, 1997, Zamboanga 2005).

Alcohol expectancies seem to develop at an early age and can be acquired through both real and vicarious experiences (Goldman, Brown, Christiansen, & Smith, 1991; Tapert, Tate, & Brown, 2001). Further, the association between alcohol expectancies and drinking behaviors seems to be reciprocal (Goldman et al. 1991). Children in the 1st through 5th grades held positive expectancies about alcohol use and these expectancies increased with age. The greatest difference occurred in children in the 3rd and 4th grades (Miller et al. 1990). Also, children in the 2nd and 3rd grades seem to have well defined alcohol expectancies even before initiating alcohol use. (Query et al. 1998). A longitudinal study assessing adolescents' alcohol expectancies over a 2 year period in 7th and 8th grades provided support for the premise of a reciprocal influence between alcohol expectancies and drinking (Smith et al. 1995). The results indicated that social enhancement expectancy predicted subsequent drinking behavior beyond previous drinking experience. Likewise, drinking experience predicted expectancies of social enhancement above the influence of prior expectancies held by the adolescents (Smith et al. 1995).

Theorists invoke acculturation to the U.S. as well as retention of Mexican values as explanatory variables for the changes observed over time in the drinking patterns of individuals of Mexican origin. Thus, in assessing acculturation, the present study will differentiate between acculturation to the U.S. and retention of Mexican culture to test

the influence of these constructs on drinking patterns and alcohol expectancies. Given that drinking patterns vary considerably by gender among Mexicans (Caetano et al. 2008), cultural influences in drinking will be examined separately in boys and girls to primarily investigate the following:

a) Evaluate whether cultural orientation is associated with alcohol involvement (quantity, frequency, and frequency of binge drinking) among Mexican-American adolescents. Based on the Marginalization Theory and Acculturative Stress Model, it is expected that an interaction will exist between high retention of Mexican culture and U.S. acculturation scores such that individuals high in marginalization (low scores in both, Mexican and U.S. acculturation) will report higher levels of alcohol involvement.

b). Assess whether alcohol expectancies predict alcohol involvement among Mexican-American adolescents, and whether cultural orientation predicts positive and negative alcohol expectancies. Alcohol expectancies will be assessed at two levels of specificity. That is, the expectancies measure will differentiate between alcohol expectancies for the effects of one to two drinks, as well as for the effects of five or more drinks (binge drinking). It is anticipated that positive alcohol expectancies will predict higher levels of alcohol involvement at both levels of specificity. It is expected that marginalization will be correlated with positive expectancies at both levels of specificity, but Mexican orientation for girls will predict with negative expectancies for high and low levels of alcohol involvement.

c). Given that alcohol-expectancies can be learned vicariously by exposure to normative drinking practices (Goldman, 1999; Donovan, Molina, & Kelly, 2009), it is

hypothesized that higher orientation to Mexican culture and/or low biculturalism (marginalization) will be correlated with positive expectancies for binge drinking.

The second goal of the study, if the outlined hypotheses are correct, is to test whether alcohol-use expectancies mediate the effect of acculturation on drinking practices.

2. METHOD

2.1 Participants

The participants were 300 high school students ($M = 16.5$, $SD = 1.15$; 178 female and 122 male). The majority of the students were in the 9th or 11th grade (27.3% and 48.7% respectively). Students in the 10th and 12th grade accounted for 11% and 7.7% of the sample. Most of the students reported the United States as place of birth (87%); only 12% reported having been born in Mexico. However, regarding their parents' place of birth, the sample was evenly divided (fathers: 51% USA and 44% MX; mothers: 48.3% USA and 47.7% MX). Thus, most of the students reported being 2nd generation Americans (42.3% - either parent was born in MX). Students who reported that both parents had been born in the USA accounted for 11% of the sample, 20% had at least one grandparent born in Mexico, and the rest of the sample (11.3%) indicated that their parents and grandparents had been born in the USA. Additionally, students who identified highly with Mexican culture accounted for 8% of the sample, those low in biculturalism (marginalized) accounted for 30%, those identified as high bicultural accounted for 60%, and those who reported high acculturation to the U.S. accounted for 2% of the sample. All participants spoke and read English and the majority, except for 2 students, chose to complete questionnaires in English. Regarding drinking practices, boys reported slightly higher scores in all indicators of alcohol involvement. Specifically, boys reported drinking slightly higher quantity ($M = 2.24$, $SD = 1.23$) than girls ($M = 1.99$, $SD = 1.08$); higher frequency of alcohol use (boys: $M = 2.16$, $SD =$

1.09, girls: $M = 2.05$, $SD = 1.07$); and higher frequency of binge drinking (boys: $M = 1.58$, $SD = 1.01$, girls: $M = 1.37$, $SD = .75$).

2.2 Measures

2.2.1 Demographic and Proximal Involvement with Alcohol Measures

The participants answered questions regarding age, gender, place of birth, parents' place of birth and education level, generational status (1st, 2nd, or 3rd+ generation), frequency of visits/trips to Mexico, and average length of trips to Mexico. However, frequency of visits to Mexico and length of trips were excluded from the analyses given a possible misunderstanding of the questions that led to a qualitative rather than a quantitative tendency in the responses. Questions regarding proximal involvement with alcohol were assessed through six questions assessing frequency and quantity of alcohol use including frequency of binge drinking in the last 30 days. Three questions were included in the analyses and were used to create a composite variable of alcohol involvement ($\alpha = .86$): 1. How often do you usually drink? (1= never to 5= everyday) 2. When you drink, how much do you usually drink at one time? (1= less than 1 drink to 4 = 5+ drinks). In the last 30 days, how many times did you drink five or more drinks at any one time (per occasion – [1= never to 5= everyday])?

2.2.2 The Comprehensive Effects of Alcohol (CEOA)

Composition of the scale: The CEOA is a Likert type scale that assesses the effects of alcohol use. The full scale contains 76 items; however it is divided into two independent parts. Thirty-eight items assess the individual's beliefs about the effects of alcohol and 38 items evaluate the subjective beliefs about whether those effects are good

or bad. The respondents rate the effects of alcohol in a 1(disagree) to 4(agree) scale; twenty items assess positive effects and 18 items assess the negative effects of drinking alcohol. The CEOA contains the following factors: sociability, tension reduction, liquid courage, sexuality, cognitive and behavioral impairment, risk and aggression, and self-perception (Fromme, et al. 1993). Only the expected effects of alcohol portion of the measure will be used for the purposes of this study. Also, the measure's instructions were modified to assess the students' expectancies when having one to two drinks ($\alpha = .92$ for current study) and when having 5 or more drinks on the same occasion ($\alpha = .94$ for current study).

Psychometric properties: The internal consistency was reported as adequate (scales ranged from .59 -.89; Fromme & Valdivia, 2000) and construct validity of the CEOA was assessed through the results of several Confirmatory Factor Analyses. Loadings on the positive expectancy factors ranged from .33 to .79 and the loadings on negative expectancy factors ranged from .61 to .99. Test-retest reliability was assessed over a two-month interval and the results indicated ranges of $r = .66$ to $.72$ for positive effects; $r = .59$ to $.78$ for negative effects; $r = .75$ to $.81$ for positive value; $r = .53$ to $.65$ for negative value (the participants age was not specified; $n=129$) (Fromme, et al. 1993).

Normative data: Data were collected from 344 psychology students at a Mid-Atlantic University. The participants' average age was 20 years with 57% female participants. The sample was formed by 14% abstainers, 14% light drinkers, 24% moderate drinkers, and 48% heavy drinkers. Additional data were collected from 485 participants for the confirmatory factor of the analysis. The additional sample was

comprised of 66% women with a mean age of 19. Six percent were abstainers, 12% light drinkers, 34% moderate drinkers, and 48% heavy drinkers. All participants were predominately Caucasians.

2.2.3 *Spanish Adaptation of the CEOA*

Composition of the scale: A Spanish version CEOA was obtained from the author of the CEOA (Fromme et al. 1993). The Spanish version of the questionnaire was modified by a substance abuse researcher in México City, D.F. The wording of some phrases adapted to make them grammatically congruent with the colloquial Spanish used in Mexico. The modified Spanish version was translated back into English by the corresponding author and two independent English speakers judged the back translations as equivalent with the original English versions.

Psychometric properties: The internal consistency was reported as adequate given that the scales Cronbach's Alpha ranged from .61 -.82 (Flato, 2006). Construct validity of the CEOA-Spanish was assessed through the results Confirmatory Factor Analyses (including two missing-data treatments Full Information Maximum Likelihood – FIML and Pairwise deletion). Loadings on the positive expectancy scales ranged from .46 to .80 and the loadings on negative expectancy factors ranged from .31 to .83 in an analysis of expectancy and evaluation scales (Flato, 2006).

Normative data: Data were collected from 345 adolescents (59% female) attending high school within a school district in Mexico City, D.F, Mexico. The participants were adolescents between the ages of 14 to 17 years of age ($M = 15.6$; $SD = .795$). Approximately 77% reported living with both of their parents, 18% reported

living only with their mothers only, 1% reported living with their fathers only, and approximately 4% reported living with someone other than a parent. Most participants reported drinking alcohol at least once in their lifetime (78%), and most of these had their first drink between the ages of 15 and 17 (66%).

2.2.4 Acculturation Rating Scale for Mexican-Americans-II (ARSMA-II)

Composition of the scale: The ARSMA-II is an orthogonal, multidimensional scale that measures orientation to both Mexican and Anglo orientation via the Mexican Orientation Scale (MOS) and the Anglo Orientation Scale (AOS). The 30-item Likert type scale measures acculturation along 3 primary factors: language, ethnic identity, and ethnic interaction.

Psychometric Properties: The MOS has 17 items and a Coefficient Alpha of .88. The AOS is comprised of 13 items with a Coefficient Alpha of .83. Linear acculturation categories (levels 1-5) and orthogonal acculturative categories (traditional, low bicultural, high bicultural, and assimilated) can be generated with the ARSMA-II (Cuellar, Arnold, & Maldonado, 1995).

Concurrent validity was assessed through a sample of 171 individuals who received the original ARSMA and the ARSMA-II yielding a Pearson product moment correlation of .89. Psychometric properties specific to the Spanish version of the ARSMA were not provided.

Normative data: The normative sample included 379 participants (43% males and 48% females. the rest were missing gender data). The participants represented 5 generational levels of Mexican, Mexican-Americans, and Non-Hispanic Whites in a

border region of South Texas. The ethnic composition of the sample was as follows: Non-Hispanic Whites represented 11% of the sample, but only 3.7% did not speak Spanish at all. Approximately 58% reported Mexican-American background and 23% identified themselves as Mexicans. The average educational level was 1-2 years of college; although no mean age of the participants was reported. Generational status of the 379 participants was reported as follows: Seventy two participants endorsed 1st generation status (born in Mexico, but with varying degrees of exposure to the U.S.). Second generation status was endorsed by 79 participants, 70 reported 3rd generation status, 78 reported 4th generation status, and 74 reported 5th generation status. The Cronbach alpha for the ARSMA in the current study was ($\alpha = .80$).

2.3 Procedure

The experimental procedures for data collection followed the recommendations of Texas A&M University Internal Review Board for the use of human subjects in research. Texas A&M University recognizes the ethical principles, considerations, and concerns expressed in the report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research entitled *Ethical Principles and Guidelines for the Protection of Human Subjects of Research (The Belmont Report)*.

Data were collected from adolescents attending two separate high schools in a small city in South Texas where the population is approximately 95% Mexican-American. One school district granted a request to collect data in its high schools. Two principals permitted data collection in their high schools and selected four classes that would ensure minimal disruption to the overall academic curriculum. The classes

included students attending basic and advance level courses, as well as students from the 9th through the 12th grade. Four teachers from the health and the science departments allowed the researcher to collect data in each of their eight “blocks” (classes) per day. The researcher visited the students’ classes one week prior to data collection to invite them to participate in the research study voluntarily without penalties for declining participation. The researcher explained the purpose of the study as stated in the consent forms and the students received Consent and Child Information forms to take home with instructions to return the forms to the researcher the following week. Consent forms were collected from the participants on the day of data collection; the researcher and students reviewed the purpose of the study before the questionnaires were provided to the students. Additionally, the students were reminded of their right to withdraw from the study at anytime. Approximately 60% of all students invited to the study had parental consent to participate in the study. The principal investigator was at hand during data collection to clarify questions or instructions on the measures and to collect the questionnaires. Only Latinos of Mexican-American descent were included in the sample in order to avoid confounding effects caused by including a culturally heterogeneous sample of Latinos (Okazaki & Sue, 1995 and Hunt, et al. 2004).

The students completed the questionnaires at school during classes selected by the school principals. Data collection was completed in 4 days. The participants completed the questionnaires in 30 to 45 minutes; those students that did not participate in the study, or who finished early had been instructed by their teachers to complete homework or to engage in a quiet activity of their choice for the remainder of the class

period. The participants were given the choice of receiving the questionnaires in English or Spanish; all except two students chose to complete the questionnaires in English. The two students who chose to complete the questionnaire in Spanish received Spanish copies of the ARSMA and the CEOA obtained from the developers of the measures and the CEOA-Spanish version used in a previous study in Mexico City. Spanish versions of the demographics questionnaire were developed by the researcher who is a native Spanish speaker and evaluated/back translated by additional bilingual individuals and researchers to ensure the appropriate translation. The CEOA was modified to include space for the participants to rank each of the alcohol expectancy questions with regards to light and binge drinking. The participants answered two sets of instructions, their expectancies about alcohol when drinking 1 or 2 drinks (light drinking), and when drinking 5 or more drinks on the same occasion. The two questions were answered one item at a time (i.e., If I had 1 or 2 alcoholic drinks, I would be outgoing – 1 = disagree and 4 = agree. And, If I had 5 or more alcoholic drinks on the same occasion, I would be outgoing – 1 = disagree and 4 = agree).

2.4 Data Analysis

The ARSMA acculturation measure was divided into the Mexican Orientation Scale (MOS) and the U.S. Orientation Scale (AOS) to determine cultural orientation as specified by the ARSMA developers. These scales represent the mean of responses related to Mexican or U.S. culture; thus the higher the mean on each variable represent the students' reported higher preference for Mexican or U.S. culture (Cuellar, et al. 1995). Additionally, an interaction term (MOS + AOS) was included in the analyses to

assess the effects of marginalization. The lower the scores on the MOS+AOS variable, would indicate higher levels of marginalization. Previous studies indicating that males and females have different patterns of alcohol use and that acculturation tends to influence this difference (Fosados, 2007, Zimmerman & Sadowsky 1993, Swain et al, 2004), a Two-Way Analysis of Variance was performed to assess whether there was an interaction between acculturation and gender on alcohol involvement (Figure 1). After an interaction was found, the data was split by gender for all of the statistical analyses.

Separate CEOA measures were used for positive expectancies at low (1-2 drinks) and high (5+ drinks) levels, as well as for negative expectancies at low and high levels. Multiple Imputation (MI; Rubin 1987, as cited in Schafer & Graham, 2002) was used for the CEOA and ARSMA- II given that these questionnaires had more than 5% missing values. Specifically, The MOS and AOS scales used in this study had 9% missing values each; the CEOA for low and high quantity of alcohol use had 18% and 26% missing values respectively for positive expectancies and 20% and 21% respectively for negative expectancies. Another critical variable for the regression analysis was a question assessing the quantity of alcohol consumed in the last 30 days. It appeared that participants who answered “never” to “How often do you usually drink?” seemed to match those participants with missing values for the question “How many times did you drink at any one time in the last 30 days?” Possible reasons for missing values in the quantity of drinking question may have been a question design error. The question assessing quantity of drink in the last 30 days did not have “never” or “0” as an answer choice; thus, some students seemed to have opted to leave the question blank or

unanswered.”Never” and SYS missing values were recoded into a separate variable to check whether the 28 out of 300 participants who did not answer the quantity of drink question had answered “never” in the frequency of drink question. All 28 missing values in quantity of drink had answered “never” in frequency of drink. Subsequently, missing values in the quantity of drink question were changed to the answer choice “less than one drink”.

Preliminary analysis included a Two-Way ANOVA to assess the presence of an interaction between gender and acculturation on alcohol involvement. Bivariate correlations were also conducted to determine drinking practices of the participants and to assess the relationship between frequency of drinking, frequency of binge drinking, quantity of drinking, age, grade level, acculturation to the U.S. or Mexico, and positive and negative alcohol expectancies at low and high levels of drinking. In order to test the study’s main hypotheses, the following analyses were performed:

1. Multiple hierarchical regression analyses were conducted for boys and girls separately. Alcohol involvement (AI) consisted of the sum of three items assessing drinking frequency, quantity of alcohol use, and frequency of binge drinking. To assess the potential influence of acculturation in substance, AI was regressed on the MOS, AOS, and the sum of these two variables (MOS+AOS). The interaction variable was created by computing the product of the MOS and AOS (Neter, et al. 1996). Also the product of positive and negative alcohol expectancies was obtained; a significant interaction between the acculturation variables would indicate that marginalization might be a better predictor of

2. To assess the potential impact of expectancies on alcohol use, AI was regressed on positive alcohol expectancies, negative alcohol expectancies and the interaction of these two variables. All variables were centered by converting to z scores to reduce collinearity (Neter, Kutner, Natchtsheim, Wasserman, 1996). These analyses were repeated for alcohol expectancies for drinking one or two drinks and for drinking five or more drinks in one occasion.
3. To assess the potential impact of acculturation on alcohol expectancies, each type of expectancy (positive and negative) for each amount of drinking (1 or 2 drinks and 5 or more drinks) was regressed on MOS and AOS.
4. Following the secondary goal of the study, AI was regressed on both the relevant alcohol expectancy variables and the relevant acculturation variables to assess the following conditions necessary for a mediation effect: If MOS and/or AOS predict AI, and if alcohol expectancies predict AI, and if MOS and/or AOS predict alcohol expectancies. No mediation effect was tested given that the conditions necessary to warrant the analysis of a mediation effect were not met

3. RESULTS

Findings from the Two-Way ANOVA confirmed an interaction between gender and acculturation on alcohol involvement ($F(3, 297) = 2.77, p = .04$). Thus the subsequent analyses performed in this study were separated by gender (See Figure 1).

3.1 Bivariate Correlations

The bivariate correlation analyses showed that all indicators of alcohol involvement correlated with MOS for male adolescents (See Table 1). The MOS+AOS term correlated positively with alcohol involvement, quantity, and frequency of binge. In addition, AI correlated with all expectancies according to their descriptor (positive or negative) for boys. For female participants, AI correlated positively with greater identification with U.S. culture (see Table 2). Additionally, AI correlated negatively with negative expectancies for 1-2 drinks and for binge drinking in female participants. The MOS+AOS term also correlated negatively with negative expectancies for 1-2 drinks and for binge drinking.

3.2 Multiple Regression Analyses

The multiple regression analyses used to evaluate whether marginalization (interaction between MOS and AOS) would predict alcohol involvement yielded no significant results. MOS was entered in the first block, AOS in the second block, and finally, the interaction variable was entered in the third block. The results indicated that marginalization did not predict alcohol involvement in either boys or girls. Thus, the idea that marginalization may predict alcohol involvement was not confirmed by this study. However, as expected from the correlation analyses, MOS predicted AI ($r = .285$,

$r^2 = .081$, $b = .298$, $\beta = .292$, $p = .001$) for boys, so that for every unit increase in MOS alcohol involvement also increased. As for girls, AOS predicted increased alcohol involvement although with small but significant variance explained ($r = .154$, $r^2 = .024$, $b = .398$, $\beta = .154$, $p = .04$).

Two regression models assessing whether the alcohol expectancies predicted AI in males and females were specified. The first model assessed whether positive and negative expectancies for 1-2 drinks predicted AI, whereas the second model assessed the influence of expectancies for binge drinking. For boys, positive and negative expectancies predicted AI for 1-2 drinks ($r = .544$, $r^2 = .296$, $b = .456$, $\beta = .430$, $p = .001$; $b = -.614$, $\beta = -.533$, $p = .001$ respectively) as well as for binge drinking ($r = .473$, $r^2 = .224$, $b = .585$, $\beta = .547$, $p = .001$; $b = -.326$, $\beta = -.362$, $p = .001$ respectively). It was noted that negative expectancies for 1-2 drinks were stronger predictors of decreased AI, whereas positive expectancies for binge drinking were stronger for increased AI in boys. For girls, the results also indicated that positive and negative expectancies for 1-2 drinks predicted AI ($r = .338$, $r^2 = .104$, $b = .280$, $\beta = .296$, $p = .001$; $b = -.326$, $\beta = -.362$, $p = .001$ respectively). Additionally, the expectancies for binge drinking were stronger predictors of AI ($r = .333$, $r^2 = .111$, $b = .339$, $\beta = .362$, $p = .001$; $b = -.389$, $\beta = -.400$, $p = .001$ respectively).

As previously specified, each type of alcohol expectancy (positive and negative) for 1 or 2 drinks and binge drinking was regressed on MOS and AOS separately. The results indicated that neither MOS nor AOS predicted positive or negative expectancies for boys at either level of drinking quantity. For girls, only MOS predicted negative

expectancies for 1-2 drinks ($r = .303$, $r^2 = .081$, $b = .350$, $\beta = .322$, $p = .001$) and binge drinking ($r = .177$, $r^2 = .031$, $b = .146$, $\beta = .164$, $p = .04$). Neither acculturation scale predicted positive expectancies for girls.

Several conditions were necessary in order to assess whether alcohol expectancies mediated the effect of acculturation on drinking practices. First, it was necessary for MOS and/or AOS to predict AI, then alcohol expectancies needed to predict AI, and finally MOS and/or AOS needed to predict alcohol expectancies. For boys, MOS predicted AI, and positive and negative expectancies at low and binge levels predicted AI, but MOS did not predict any of the alcohol expectancies. For girls, AOS predicted AI; positive and negative alcohol expectancies for low and binge drinking predicted AI in the expected direction, but AOS did not predict any of the alcohol expectancies. Thus, the conditions necessary to warrant the analysis of a mediation effect were not met in the current study's sample of Mexican-American adolescents.

The hypothesis that cultural orientation would be associated with alcohol involvement among Mexican-American adolescents was confirmed for boys and girls. That is, Mexican cultural preference was associated with alcohol involvement for boys and U.S. cultural preference was associated with alcohol involvement for girls. The assumption that an interaction would exist between high retention of Mexican culture and U.S. acculturation scores such that individuals high in marginalization would report higher levels of alcohol involvement was not confirmed by the analyses in this study.

The second hypothesis in this study asserted that positive alcohol expectancies would predict higher levels of alcohol involvement at both levels of specificity. It was

expected that marginalization would be correlated with positive expectancies at both levels of specificity. Also it was expected that Mexican orientation for girls would predict negative expectancies for high and low levels of alcohol involvement. The results partially confirmed this hypothesis. Positive expectancies for binge drinking were stronger predictors of AI in boys than negative expectancies for binge. In contrast, negative expectancies for 1-2 drinks and for binge were stronger predictors of a decrease in alcohol involvement for girls. Marginalization did not predict alcohol expectancies for either boys or girls. However, as expected, Mexican orientation for girls did predict negative expectancies for alcohol involvement for 1-2 drinks and for binge drinking. The results did not confirm the assumption that higher orientation to Mexican culture and/or low biculturalism (marginalization) would be correlated with positive expectancies for binge drinking.

4. DISCUSSION

One major contribution of this study is the finding that a higher reported orientation to Mexican culture predicted higher levels of alcohol involvement for boys; whereas, a higher orientation to U.S. culture predicted higher alcohol involvement for girls. Similar results had been indicated by previous studies assessing acculturation, gender differences, and alcohol use among U.S. and foreign born Latino (a) adults (Cervantes et al. 1990-1991, Gilbert, 1997, Rafaelli et al. 2007, Strunin et al. 2007, Zemore, 2007, Caetano et al. 2008). It appears that in this study's sample of Mexican-American adolescents located within the Texas-Mexico border area, retaining cultural preference for Mexican culture presents a possible risk factor for alcohol use in boys, whereas greater U.S. acculturation presents as a possible risk factor for alcohol use in girls.

According to Medina-Mora et al.(2000) the cultural characteristics of Mexican drinking patterns may be defined as "fiesta drinking," that is, low frequency but high quantity of alcohol use where drinking usually leads to inebriation. However, this practice is more acceptable for males and not for females who are expected to abstain. Although, in Mexico, abstention from alcohol use in women seems to be decreasing, it is still considered culturally acceptable for males to drink until inebriated during festivities or infrequent occasions, but not acceptable for women (Medina-Mora et al.). Zamboanga et al. (2006) found results confirming the Medina-Mora et al. review in a college student sample of Mexican-American adults; Mexican cultural preference was a higher risk for heavy drinking for men, particularly in social settings, yet adherence to U.S. culture did

not predict a higher risk for heavy drinking for women. However, Zamboanga only focused on heavy drinking practices as opposed to general alcohol involvement. In this current study of adolescents, it appears that Mexican-American boys reporting greater adherence to Mexican culture also reported greater alcohol use. Conversely, girls, reporting greater preference to U.S. culture reported greater alcohol use similar to previous studies of adults that focused on alcohol use rather than only heavy use (Cervantes et al. 1990-1991, Gilbert, 1997, Rafaelli et al. 2007, Strunin et al. 2007, Zemore, 2007, Caetano et al. 2008).

Fosados et al. (2007) reported that among Mexican-American adolescents in California, high acculturation to U.S. culture predicted less current alcohol use in boys. In the current study, higher preference to U.S. culture did not predict lower alcohol involvement in boys or girls. As previously mentioned, a lack of consistent results across research studies may be in part related to the complexity of varied methodologies used to assess acculturation (Hunt, et al. 2004; Negy & Woods, 1992a), as well as differences in individual geographical communities. For instance, although the current study and Fosados et al. were similar regarding sample size and ethnicity, they differed regarding the participants age (older in the current study) and in the assessment measure used for acculturation.

Additionally, Fosado et al. captured the effect of marginalization indicating that marginalization presented a higher risk factor for alcohol use than adherence to either culture. In the current study, similar expected effects of marginalization on alcohol use were not confirmed. A possible reason for the lack of significant results regarding

marginalization in the current study may be that the area where data collection occurred is quite homogeneous regarding ethnic background. Based on a Texas education agency survey (2002), the student body of the district where data was collected was approximately 99% “Hispanic” primarily of Mexican descent. Thus, it is likely that the participants in this study may not yet have experienced marginalization effects that seem evident in previous studies, which have taken place in locations considered more culturally diverse.

Although homogeneous groups are sometimes preferred in research studies designed to detect specific beliefs and practices of a cultural group (Caetano & Clark, 2003; Chun & Akutsu, 2003, Hunt, et al. 2004), in this study, a homogenous sample may have diluted to effects of marginalization. Fitting into the U.S. culture (i.e. speaking English, watching U.S. television programs, identifying as U.S. citizens...) in the community where data collection took place, may not yet allow the adolescents in this study to feel the pressures of marginalization. Instead, a form of adaptation to new values or acquiring U.S. cultural norms may occur under the protective factor of living in an ethnically homogeneous community, hence acculturation occurs, but the pressures of marginalization may not be as evident.

An additional contribution of this study is the finding that identification with Mexican culture for girls predicted negative alcohol expectancies for low and high quantities of alcohol use. One reason for this finding may be that alcohol-expectancies can be learned vicariously and influenced by normative drinking practices (Goldman, 1999; Donovan, et al. 2009). Studies have found that expectancies endorsed by diverse

ethnic groups such as Puerto Ricans, Dominicans, Non-Hispanics Whites, Irish, Mexican-Americans, and Central/ South Americans reflect the drinking practices reported by each group (Johnson & Gallo-Treacy, 1993; Johnson & Glassman, 1999; Kail et al. 2000; Marin & Gamba, 1996; Marin et al. 1993). Also, Marín et al. (1993) found that adult Latinos who reported low alcohol use in the previous year were more likely to report emotional and behavioral impairment expectancies from alcohol than those who engaged in light, moderate, and heavy drinking.

As suggested by previous studies, Mexican females tend to report significantly lower alcohol use than their male counterparts (Medina-Mora et al. 2000). Thus, if drinking is shunned for females in Mexican culture, it is not surprising that young girls who also report limited alcohol use experience, possibly as a result of less acculturated parents, would endorse negative alcohol expectancies. The lack of a significant relationship between preference of U.S. culture and positive alcohol expectancies in girls was surprising given that acculturation to the U.S. (AOS) predicted higher alcohol use. Girls may have reported the culturally acceptable negative expectancies for alcohol, as they adapt to a more permissible pattern of drinking.

Acculturation (MOS or AOS) did not predict alcohol expectancies for boys who participated in the current study. The predictive influence of alcohol expectancies for alcohol involvement across ethnicities has been consistently confirmed in previous research studies (Cervantes, et al. 1990-1991; Johnson & Glassman, 1999; Kail et al. 2000; Marin & Gamba, 1996; Marin, Posner, & Kinyon, 1993; Vélez-Blasini, 1997;

Meier, Slutske, Arndts, & Cadoret, 2007;). In fact, in this current study, it was confirmed that positive and negative expectancies predicted alcohol involvement for boys and girls.

Previous studies have noted individuals' level of acculturation and gender is associated with the direction of alcohol expectancies that they might hold according to cultural patterns of drinking (Cervantes et al. 1990-1991; Marin et al. 1993). Also, given that normative cultural practices of alcohol use predict the direction of expectancies, it had been hypothesized that Mexican cultural preference for boys would predict positive alcohol expectancies for 1-2 drinks and particularly for binge drinking (Goldman, 1999). However, such assumption was not confirmed by the statistical analyses in this study for boys. A possible explanation for this finding might be that U.S. orientation and Mexican orientation is likely similar for boys in regards to positive and negative alcohol expectancies in this border community. In other words, positive expectancies do not differ significantly according to cultural orientation (MOS or AOS) in this particular sample of adolescents. The findings indicating that Mexican cultural preference in girls predicted alcohol expectancies raises questions regarding the predictive influence that acculturation to U.S. or retention of Mexican culture may have on expectancies for boys. Further studies are warranted to investigate acculturation and its relationship to alcohol expectancies.

The current study underscores the importance of continued research among adolescents assessing not only acculturative factors, but also gender and alcohol expectancies and their roles in alcohol use/involvement. The purpose of this study was threefold; a) Evaluate whether acculturation is associated with alcohol involvement

among Mexican-American adolescents. The results indicated that acculturation as well as retention of Mexican culture affected adolescents differently according to their gender. b). Assess whether alcohol expectancies predict alcohol involvement and whether acculturation predicts positive and negative alcohol expectancies among Mexican-American adolescents. The results confirmed numerous studies that have established the particular role that alcohol expectancies have in the prediction of alcohol use across gender, ethnicity, and age. c). Evaluate whether higher orientation to Mexican culture and/or low biculturalism (marginalization) predicted positive expectancies for binge drinking. Mexican cultural orientation (MOS), as expected in particular for boys, did not seem to be a predictor for positive alcohol expectancies for binge drinking. In fact, it predicted negative expectancies at low and high levels of alcohol use for girls only. Further, the mediation effect of marginalization was not confirmed in this sample even though previous studies indicated this effect among adolescents in California (Fosados et al. 2007).

Finally, this study intended to assess whether or not alcohol-use expectancies mediate the effect of acculturation on drinking practices. The results indicated that acculturation is a complex construct and in the current study did not seem to indicate a linear relationship between alcohol expectancies and alcohol use. Instead, the retention of Mexican culture predicted negative alcohol expectancies in girls, but no decrease in alcohol involvement as a result of greater acculturation to the U.S.

4.1 Limitations and Future Direction

Noteworthy limitations in this study include that the findings may be geographically specific and not generalized to the Latinos within the overall population of the U.S. The findings may be potentially generalized to Mexican-American adolescents attending a public high school in a relatively low SES school district and in a low SES geographical region in Texas (median household income is less than 75% of the median household income in the state). Although permission to collect data was requested from approximately 10 school districts in South Texas, most districts rejected the content of the study's measures as unrelated to their educational curriculum and sensitivity to alcohol use questions in high school students. Thus data collection was limited to two high schools within one school district. Also, as previously mentioned the highly homogenous sample may have contributed to a diluted effect of marginalization, given that in the area of data collection, marginalization may be more related to SES than to cultural background and no measures of SES were included in this study. Further, the measure of acculturation used in this study was not specifically developed for adolescents and some students questioned the meaning of some terms used in the measure (i.e. Anglo).

Continued research is needed in the study of acculturation, expectancies, and alcohol use in Mexican- American adolescents. Acculturation as well as retention of culture of origin has proven to be an extremely complex construct to assess. Consensus regarding the most effective manner in which to assess acculturation has not been reached, but as research in the area increases, awareness also grows regarding effective

measures that capture evasive aspects of acculturation such as marginalization and acculturative stress. Cross-sectional or longitudinal large scale studies may be a possible, if not practical, alternative to small scale studies such as the present study to provide a clearer picture of the effects of acculturation on drinking practices and alcohol expectancies.

5. SUMMARY AND CONCLUSION

5.1 Summary

Alcohol use among adolescents is still a cause for concern in our country. Although there appears to be some declines in alcohol use among adolescents, rates of alcohol use are still significant. Underage drinkers generally consume alcohol during binge episodes and early age of alcohol use initiation has been linked to future alcohol related disorders. Previous studies have indicated that gender and ethnicity are stronger predictors of alcohol use than even social class. Hence, one overarching purpose of this study was to focus attention on the potential cultural and or ethnic influences that may contribute to alcohol use among Mexican-American boys and girls.

There is still a dearth of studies assessing the influence of acculturation (and potential mediators or moderators) on alcohol use among adolescents. The current study adds to the body of research regarding the complex relationship between acculturation, alcohol expectancies, gender, and alcohol use among Mexican-American adolescents. The results of this study indicated that Mexican culture predicted higher levels of alcohol involvement for boys and adherence to U.S. culture predicted higher alcohol involvement for girls. Additionally, this study confirmed past research indicating that positive alcohol expectancies are predictors of alcohol involvement. Previous studies had reported a relationship between retention of Mexican culture and negative expectancies for female adults; the current study found similar results in Mexican-American female adolescents. Mexican cultural preference for girls predicted negative alcohol expectancies for low and high levels of alcohol use.

5.2 Conclusions

The results of the current study contributed to the limited existing body of knowledge and confirmed previous research that Mexican-American acculturation is associated with alcohol involvement among Mexican-American boys and girls. Positive expectancies also predicted higher levels of alcohol involvement. More specifically, Mexican cultural preference was found to predict alcohol use for boys and U.S. cultural preference was associated with alcohol use for girls. However, the results failed to confirm the hypothesis that cultural marginalization would predict higher use as well as positive expectancies for low and binge drinking. The current study provides evidence to support the notion that alcohol use preventive programs for adolescents may be more effective if acknowledging the acquisition of ethnically cultural norms that may contribute to the development of protective, or the retention of norms that may lead to potential risk factors for alcohol use.

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APPENDIX A

Table 1
Correlates of Alcohol Involvement for Male Participants

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. AI	-	.912**	.832**	.879**	.197*	.097	.269**	.022	.269**	.229*	-.371**	.277**	-.154**
2. Freq.		-	.699**	.733**	.124	.050	.209*	-.064	.163	.204*	-.356**	.219*	-.142
3. Quant.			-	.656**	.237	.168	.202*	.082	.251**	.190*	-.367**	.218**	-.260**
4. FBInge				-	.192*	.0669	.316**	.024	.316**	.224*	-.250**	.294**	-.093
5. Age					-	.847**	-.075	.023	-.049	.030	-.130	.090	-.030
6. Grade						-	-.050	.073	-.007	.036	-.188	.054	-.054
7. MOS							-	-.216*	.833**	-.046	-.051	.047	.042
8. AOS								-	.360**	.040	.022	.035	.049
9. M+A									-	-.021	-.036	.065	.068
10. PE1										-	.377**	.570**	.233**
11. NE1											-	.161	.599**
12. PE2												-	.576**
13. NE2													-

Note: AI = Alcohol Involvement Freq = Frequency of alcohol use, Quant = Quantity, FBInge = Frequency of binge, MO = Mexican orientation, AOS = U. S. Orientation, M+A = MOS+AOS, PE1= Positive Expectancies at 1-2 drinks, NE1 = Negative Expectancies at 1-2 drinks, PE2 = Positive Expectancies at 5+ drinks, NE2 = Negative Expectancies at 5+ drinks.* significant at the $p < .05$; ** significant at $p < .01$.

Table 2
Correlates of Alcohol Involvement for Female Participants

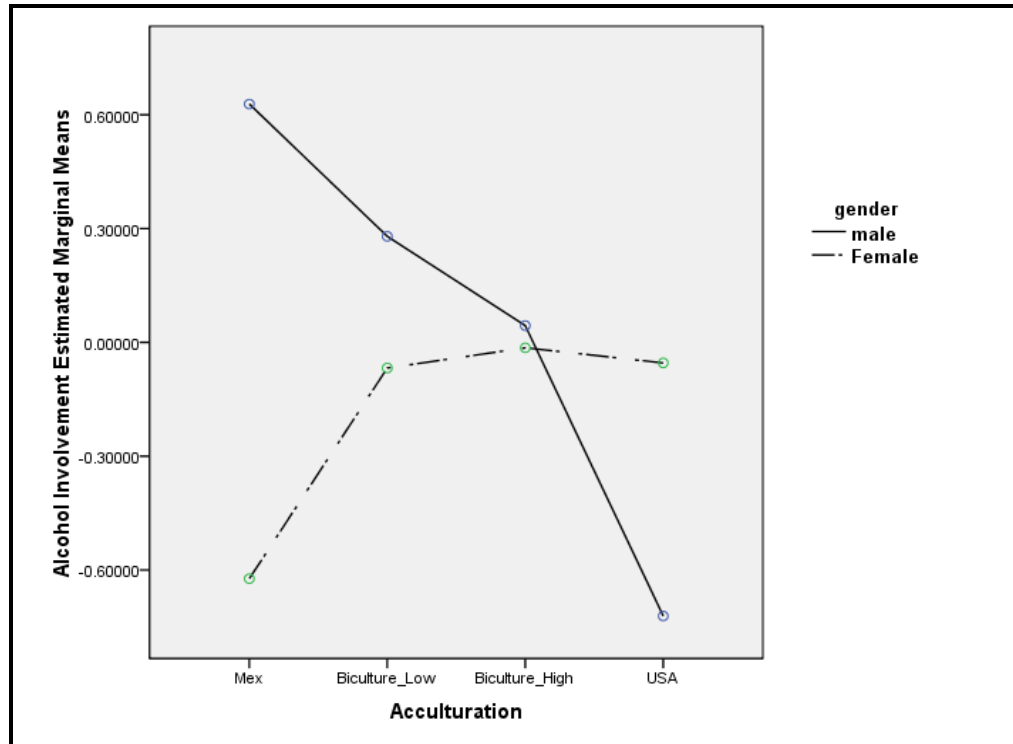
Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. AI	-	.912**	.886**	.799**	.081	.203**	-.103	.154*	-.002	.119	-.218**	.113	-.175*
2. Freq.		-	.694**	.626**	.046	.186*	-.108	.210**	.030	.109	-.191*	.071	-.165*
3. Quant.			-	-.550**	.208	.322**	-.108	.144	-.003	.014	-.303**	.044	-.219**
4. FBinge				-	-.022	.014	-.026	-.002	-.027	.170*	-.090	.136	-.124
5. Age					-	.826**	-.093	.045	-.067	-.214**	-.250**	.048	-.047
6. Grade						-	-.153*	.116	-.080	-.162*	-.208**	.033	.064
7. MOS							-	-.338**	.788**	.113	.284**	-.017	.116
8. AOS								-	.313**	.019	.004	.067	.087
9. M+A									-	.126	.289**	.026	.173*
10. PE1										-	.486**	.680**	.397**
11. NE1											-	.342**	.635**
12. PE2												-	.624**
13. NE2													-

Note: AI = Alcohol Involvement Freq = Frequency of alcohol use, Quant = Quantity, FBinge = Frequency of binge, MO = Mexican orientation, AOS = U. S. orientation, M+A = MOS+AOS, PE1= Positive Expectancies at 1-2 drinks, NE1 = Negative Expectancies at 1-2 drinks, PE2 = Positive Expectancies at 5+ drinks, NE2 = Negative Expectancies at 5+ drinks.* significant at the $p < .05$; ** significant at $p < .01$.

FIGURES

Figure 1

Interaction between Gender and Acculturation on Alcohol Involvement



VITA

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