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Social Relationships, Social Assimilation, and Substance-Use Disorders among Adult Latinos in the U.S

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Abstract

Based on social control perspectives and results from prior studies we test hypotheses about the extent to which characteristics of family and social networks are associated with substance use disorders (SUD), and whether these associations vary by sex. In this study SUD is alcohol or illicit drug abuse or dependence as defined by criteria of the Diagnostic and Statistical Manual of the American Psychiatric Association. With nationally representative data of adult Latinos from the National Latino and Asian American Survey (NLAAS), we found that respondents' language use with family, rather than language proficiency, appears to be a more efficient proxy for social assimilation to represent differential levels of risk of SUD. SUD was positively associated with problematic family relations for men but not women, and SUD was positively associated with more frequent interactions with friends for women but not men. The results suggest that the salient features of social assimilation associated with SUD include the context of language use and transformations in family and social network relationships that differ in important ways between Latino men and women.

A substantial body of epidemiologic studies confirms a central conclusion about substance-use patterns among Latinos in the U.S.: Latinos whose birthplace was outside the U.S. have lower rates of substance abuse and dependence than do Latinos born in the U.S. (Alegría, Canino, Stinson, & Grant., 2006; Amaro, Whitaker, Coffman, & Heeren, 1990; Boles, Casas, Furlong, Gonzalez, & Morrison, 1994; Burnam, Hough, Karno, Escobar, & Telles, 1987; Canino, Burnam, & Caetano, 1992; Grant et al., 2005; Ortega, Rosenheck, Alegría, & Desai, 2000; Turner & Gil, 2002; Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998a). Additional support for this conclusion comes from multiple international studies, including those conducted in Latin America, showing consistently lower national prevalence estimates for past

year substance-use disorders (SUD) than those reported in the U.S. (Vega et al., 2002; World Health Organization Workgroup [WHO], 2004).

Despite consistent differences in SUD between U.S.-born and foreign-born Latinos, reasons for the nativity effect are not well understood. One likely explanation is that those born abroad experience lower risk because socialization about alcohol and drug use within family and social networks is linked to strong social control against substance abuse, and immigrants carry these internalized controls with them into the U.S. Antonucci and Akiyama (1987) noted that immigrants rely on a “convoy” model to sustain cultural continuity, using families and extended social networks as agents to preserve prescribed and proscribed behaviors. Consequently, risk for SUD is heightened when there are disruptions in cultural continuity. A range of theories have been developed to explain culture change processes in general, relying on concepts of acculturation and assimilation (e.g., Alba & Nee, 2003; Berry, 1980; Gordon, 1964; Rumbaut, 1994; Vega, Gil, Warheit, Zimmerman, & Apospori, 1993), which are challenging to operationalize.

Critiques have been made regarding the exclusive reliance on acculturation measures *per se* for providing person-level explanations of Latino health behaviors including substance use (see Hunt, Schneider, & Comer, 2004). With data from the National Latino and Asian American Study (NLAAS), a nationally representative survey of Latinos ages 18 years and older, this study directly responds to the need for a better understanding of the aspects of family and social networks that increase the risk for substance abuse in the most rapidly growing minority population in the United States. Research hypotheses for this study, outlined below, are informed by prior research and theories on aspects of social assimilation that are most relevant for SUD in this population (i.e., timing of exposure to the dominant culture, language use, interactions with family and friends, and gender roles).

Immigration, generational status, and language use

When an individual comes into contact with another culture there are differential risks for negative outcomes based on their age of arrival in the new culture, and the continuity and intensity of exposure to both the culture of origin and the dominant culture (Karlsson, 2005). Research has shown that those who immigrated to the U.S. after age 24 are unlikely to use illicit drugs (Vega, Alderete, et al., 1998a; Vega et al., 2002). Because most substance use experimentation and heavy use in the U.S. occurs during the teen and young adult years (SAMHSA, 2005), and most disorders onset before the age of 24 (Kessler et al., 2005), introduction to U.S. culture during childhood and adolescence may be most problematic. Several interpretations have been given to these results including selection effects of immigration, cumulative exposure to social assimilation and adverse events mediated by length of stay in the US, and measurement artifacts (Vega, Sribney, Aguilar-Gaxiola, & Kolody, 1998b). Another explanation is that when childhood development occurs in countries with strong proscriptive norms against illicit drug use, such as in Latin America, and high levels of protective factors such as family stability and cohesiveness, they may be inoculated against substance abuse and dependence when they immigrate as adults.

Because 75% of Latinos residing in the U.S. are either immigrants or children of immigrants (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000; U.S. Census Bureau, 2005), nativity of one’s parents as well as one’s self is relevant for understanding risk for substance use and disorder. Hernandez and Charney (1998) found that drug use was successively higher across each of three generations, with the third generation reporting highest use rates. Data from the U.S. census indicate that some of the risk may be related to changes in family structure; Latinos experience a rapid transition from first-generation (immigrant) households consisting of two

parents with children, toward second and third generations with much higher proportions of female-headed households with children (Rumbaut, 2006).

Language use is reflective of affiliation patterns which change over time and across generations as extended exposure to U.S. society gradually shifts the predominant language emphasis from Spanish to English, especially between the first and second generations in the U.S. Studies continue to identify preference for and use of the English language as significant correlates for substance use among a wide range of Latino samples, including students and pregnant women (Epstein, Botvin, & Diaz, 2001; Finch, Boardman, Kolody, & Vega, 2000; Marsiglia & Waller, 2002). Although language has been criticized as a simplistic indicator of acculturation, it is commonly accepted in health research as a robust indicator of social assimilation, and an efficient predictor of higher risk in population health studies, which has not proven to be the case for acculturation measures in general. Experience has demonstrated that language alone explains more than 85% of variance in some acculturation scales when the scales are used to predict health outcomes (Cobas et al., 1996). However, it is important to note that the field continues to debate the validity of these measures as indicators of *personal acculturation* or as adequate predictors for assessing individual culture change. Arguments range from criticisms that language use measures have poor construct validity to conclusions that language is a valuable proxy measure for social assimilation and accompanying, yet poorly understood, changes in risk for mental health and substance abuse problems (Rogler, Cortes, & Malgady, 1991; Vega, Alderete, et al., 1998a). An important rationale of this study was to improve our understanding of the social processes set in motion through language selection and that are also correlated with health behaviors and outcomes such as substance dependence.

Social relations: friend and family support

Information about the extent to which social relations are related to the risk of SUD is severely limited by cross-sectional epidemiological studies that lack appropriate time ordered measures and a lack of longitudinal studies (Canino et al., 1992; Vega, Alderete, et al., 1998a; Vega, Sribney, & Achara-Abrams, 2003). Nevertheless, some research suggests that the risk of SUD among Latinos is associated with family and friend relationships, which are also influenced by nativity and culture change. Prolonged exposure to the U.S. under conditions of low education and social segregation is associated with shifts in social norms, affiliational patterns, and normative expectancies that weaken important protective factors of drug use and psychopathology such as family structure, cohesion and control (Gil, Wagner, & Vega, 2000). For example, U.S.-born Latino parents are more likely to exhibit problem behaviors such as depression and alcohol abuse, and they have higher rates of family conflicts and domestic abuse, and lower family cohesion and pride than immigrants (Burnam et al., 1987; Ortega et al., 2000; Vega, Alderete, et al., 1998a; Vega & Sribney, 2003). Moreover, in comparing responses to social stress over the life course (e.g., cumulative adversity), it has been shown that U.S.-born Latinos are more likely than Latino immigrants to use alcohol and drugs as a response to similar stress exposure levels, and these results have been interpreted as suggesting greater individual resilience and stronger positive support networks among immigrants (Barrett & Turner, 2005; Turner, Lloyd, & Taylor, 2006).

Problematic family environments exacerbate the stress experienced by offspring, whether the offspring are children or adults (Conger, Conger, Matthews, & Elder, 1999; Conger et al., 2002). The direct (language use and nativity) and mediated effects (weakened family social control) of culture change in the family system inform an ongoing climate of chronic family stress and adjustment problems that may very well carry forward into family relationships as adolescents mature into adulthood (Adam & Chase-Lansdale, 2002; Conger, 2001), and may sustain problematic substance-use behavior (Bonnheim & Korman, 1985).

Gender and Latino substance use

Population-based studies among adults have found that the prevalence of substance use, abuse, and dependence is significantly higher among Latino men than Latino women (Bachman et al., 1991; Canino, Anthony, Freeman, Shrout, & Rubio-Stipec, 1993; Vega, Alderete, et al., 1998a) and much higher for Latino women born in the U.S. compared to immigrant Latino women (Vega et al., 1998a). Explanations for this substantial sex difference among Latinos highlight prescribed social roles and behaviors in immigrant Latino families (Oetting & Beauvais, 1990), and the substantial amount of stigma associated with Latina substance use (Mora, 2002; Valdez, Kaplan, & Cepeda, 2000).

It is difficult to identify factors unique to drug abuse as separate from those related to alcohol abuse since most drug abusers are also alcohol abusers. Although alcohol abusers are not necessarily drug abusers, the high prevalence of comorbid addictions in males is very high. Females have far lower prevalence of abuse or dependence than do males, yet when females have substance problems it is very likely that they also will be comorbid. Therefore, it is problematic to construct empirical models that distinguish alcohol from drug abuse and dependence effects because of theoretical (e.g., potential confounding) and statistical power problems even when using relatively large data sets. To avoid these problems, we have combined alcohol and drug abuse and dependence in our modeling with the tacit recognition that the epidemiology of their respective onset patterns and antecedents do differ.

Social assimilation processes that proceed through social network interactions are likely to have substantial effects on Latino women's traditional roles within the family, and related consequences for alcohol and drug use and progression to dependence. On one hand, culturally embedded gender norms may not readily change, and thus may be protective against substance use. Alternatively, family conflicts associated with the process of assimilation might exacerbate pressures toward substance use, and shifting gender role expectations could increase women's affiliations with substance-using groups or partners. For example, research has identified an important role for men in women's initiation and persistent use of drugs (Amaro & Hardy-Fanta, 1995).

Research Hypotheses

Prior research on social assimilation suggests the following hypotheses. First, Latinos experiencing more social assimilation (as measured by proxies of nativity, parents' nativity among the U.S. born, age of arrival of immigrants, and language use) will have greater prevalence of lifetime SUD than Latinos with less assimilation. Based on prior research, we expect that Latinos with more problematic family relationships (i.e., less family harmony, pride, support, and cohesion, and more family conflict) will have higher rates of SUD than Latinos with more positive relationships. However, this study assessed family and friend relationships only at the time of the survey; hence, we cannot properly test causality. We can, however, examine the association of present family and friend factors and SUD by determining whether the quality of relationships differ between Latinos with and without lifetime SUD. We can also assess the association between past-year SUD and family and friend factors. Certainly, positive results for either of these tests of association should not be construed as causal evidence, but rather as a guide directing further research. Because of marked gender differences in SUD prevalence and strong gender role expectations, all hypotheses were evaluated separately for men and women. This study is important in that (1) respondents were allowed to answer the survey in their language of choice, (2) the study includes psychosocial correlates that have been associated with SUD in past research among Latino populations, such as language use and proficiency, nativity, and age of migration, and (3) it is one of the few studies that aims to examine the extent to which social relationships related to family and friends and

aspects of social assimilation increase the risk for substance abuse disorders among a nationally representative sample of the major Latino subgroups living in the U.S.

METHOD

Sample Design and Description

The methods and sampling design of the NLAAS have been described in detail elsewhere (Alegría et al., 2004; Heeringa et al., 2004). The Latino sample of the NLAAS study is a nationally representative sample of 2,554 Latinos 18 years of age and older of Mexican American, Puerto Rican, Cuban, or Other Latino self-identified origin, living in the non-institutionalized population of the 50 states and Washington D.C. Eligibility criteria included age (18 years or older), ethnicity (of Latino origin), and language (persons who spoke Spanish or English). The majority of the sample was interviewed in face-to-face interviews in their households. The weighted response rate for the sample was 75.5%.

Diagnostic Assessment

Lifetime and last-year prevalence rates of substance-use disorders were assessed using the diagnostic interview of the World Mental Health Survey Initiative version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI) (Kessler & Üstün, 2004). The WMH-CIDI is a fully structured diagnostic instrument administered by lay interviewers. This report uses diagnoses of the WMH-CIDI based on criteria of the Diagnostic and Statistical Manual for Mental Disorders, Version 4 (DSM-IV; American Psychiatric Association [APA], 1994). Validity of an earlier version of the CIDI had been assessed in a comparison with diagnoses obtained by trained clinicians (Wittchen, 1994).

The WMH-CIDI was translated to Spanish (SWMH-CIDI) and adapted to the language of the different Latino groups in our sample by an international committee of bilingual investigators. The translation process has been described in detail elsewhere (Alegría et al., 2004). The validity of the English and Spanish translation of the instrument was assessed by a clinical reappraisal study, the methods of which are described in detail elsewhere (Alegría et al., 2004; Kessler et al., 2004). Evaluation of the validity of the Spanish version is currently in progress. Preliminary findings of the instrument show good to moderate concordance between DSM-IV diagnoses based on the WMH-CIDI and the SCID (First et al., 1996 for mood and substance disorders).

The WMH-CIDI ascertains the use of alcohol and the following drugs, which were grouped together into one category (i.e., illicit drug use) for analysis: cannabis including marijuana and hashish; opioids including heroin, morphine, and other analgesics such as codeine; stimulants other than cocaine such as methamphetamine; anxiolytics such as sedatives and tranquilizers; hallucinogens (e.g., LSD, peyote); cocaine; and inhalants. Substances that are legitimate pharmaceutical products (e.g., pain killers, sedatives) were considered in our analyses if obtained without prescription or for purposes other than for what a health professional said they should be used.

A lifetime substance use disorder is generated by the WMH-CIDI if the person ever meets DSM-IV (APA, 1994) criteria for abuse or dependence of alcohol, or for any of the above mentioned drugs. Alcohol-use disorder as well as drug-use disorder refers to meeting criteria for either abuse and or dependence. Past year SUD is defined as meeting lifetime criteria for SUD and having three or more of the symptoms in Criteria A in the last twelve months.

Language Measures

Detailed description and reliability of all non diagnostic measures used in the NLAAS have been described elsewhere (Alegria et al., 2004). English and Spanish language proficiency measures were based on answers to the questions, *How well do you speak English (Spanish)?* with choices for answers: *poor, fair, good, or excellent*. Language spoken with family was assessed by asking, *What language do you speak with most of your family?* Language spoken with friends was based on the question, *What language do you speak with most of your friends?* Preferred language of thought was based on the question, *In what language do you think?* Choices for answers for these three questions were *Spanish all the time, Spanish most of the time, Spanish and English equally, English most of the time, or English all the time*. Since language spoken with family was highly dependent on nativity, parents' nativity for the U.S. born, and age of arrival for immigrants, a new dichotomous variable was created by taking the median response for family language use in each of the 6 subgroups, U.S. born with one or both parents' U.S. born, U.S. born with both parents foreign born, and immigrants with age of arrival 0–6, 7–17, 18–24, or ≥ 25 years, and classifying those with responses in the half toward greater Spanish use as “more Spanish” and those with responses in the half toward greater English use as “more English.” Thus, for the family language use variable used in analyses, “more Spanish” denotes the responses “Spanish all or most of the time or Spanish and English equally” for U.S. born with one or both parents U.S. born, “Spanish all or most of the time” for U.S.-born with both parents foreign born and immigrants with age of arrival 0–6 years, and “Spanish all the time” for all other categories of immigrants; and “more English” denotes other responses.

Family and Friend Scales

Family factors included family support, family harmony, family pride, family cohesion and family cultural conflict. *Family support* was measured using a three item scale assessing how often respondents seek family support (e.g., “How often do you talk on the phone or get together with family or relatives who do not live with you?”). The reliability of the scale in this sample was adequate ($\alpha = 0.71$). A similar 3-item scale was used to assess *friend support* ($\alpha = 0.77$). *Family harmony* was measured using a two item scale asking respondents how often relatives (not including spouse or partner) or children make too many demands on you or how often respondents argue with family or relatives. The reliability of this scale was $\alpha = 0.60$. Higher scores indicate higher levels of harmony. *Friend harmony* was similarly based on frequency of demands and frequency of arguments with friends. The reliability of this scale was $\alpha = 0.61$. *Family Pride* was assessed with a seven item subscale from the Family Environment Scale of Olson and colleagues (Olson 1986, 1989) ($\alpha = 0.91$). Respondents were asked about trust, loyalty, pride, and general orientation toward family members. The scale has been used in many studies with various Latino subgroups (Gil & Vega, 1996; Vega et al., 1993). Higher scores represent greater levels of family pride.

Family cohesion consists of a three item subscale from the Family Cohesion scale of Olson and colleagues (Olson 1986, 1989) ($\alpha = 0.82$). Items measure elements of family closeness and communication. As with the family pride scale, the scale has been used in several studies with Latinos. Higher scores represent higher levels of family cohesion. *Family cultural conflict* was evaluated using five items drawn from the Hispanic Stress Inventory, a scale that has been extensively psychometrically evaluated with Latinos (Cervantes, Padilla, Amado, & Salgado de Snyder, 1990; Cervantes, Gilbert, Salgado de Snyder, & Padilla, 1991) ($\alpha = 0.90$). The scale measures cultural and intergenerational conflict between the respondents and their families, such as interference of family with personal goals, arguments with family due to different belief systems, and breakdown of family unity. Higher scores represent higher levels of family conflict.

Statistical Analyses

All prevalence rates and mean scale scores in Tables 1–4, and 6 were calculated as weighted sample or subsample estimates. Table 5 was produced using weighted linear regressions with standard error estimates adjusted for the sampling design through a first-order Taylor series approximation, and significance tests were performed using design-adjusted Wald tests. Significance tests for Table 1 and Table 2 (except for tests of last-year prevalence in women) were performed using a Rao–Scott statistic for the Pearson χ^2 test for contingency tables adjusted for the survey design (Rao & Scott, 1984; Rao & Thomas, 1989; Sribney, 1998). Since observed last-year prevalence of substance-use disorder was zero in immigrant women, unweighted Fisher’s exact test (two-sided) was used to test the differences between last-year prevalence rates in immigrant and U.S.-born women in Table 2. Significance levels for the tests shown in Tables 3 and 6 were computed using logistic regressions with age-adjusted weights and terms for nativity, parents’ nativity, and age of arrival categories (i.e., the stratification). Odds ratios quoted in the text describing Table 3 were also obtained from the same stratified logistic regression. Results from these weighted logistic regressions were very similar to results from unweighted exact (i.e., permutation-based distribution rather than asymptotic) Mantel-Haenszel tests (Cytel Inc., 2005). Factor analysis (with sampling weights) was performed on the five family scales described in the previous subsection and for the two friend scales separately, and the first principal factor for the family scales and the first principal factor for the friend scales were retained and used as outcome variables for the analyses shown in Tables 5 and 6. Analyses were conducted using the Stata statistical software package, version 8.2 (StataCorp, 2004).

RESULTS

Table 1 shows the sociodemographic characteristics in the total Latino sample and separately for the U.S.-born and immigrant Latinos. U.S.-born Latinos comprised 41.6% of the total sample and immigrants 58.4%. (Note that persons born in Puerto Rico are U.S. citizens; and for persons of Puerto Rican origin in this study, “immigrant,” “U.S.-born,” and “arrival into U.S.” refer to someone born on the island now residing on the mainland, someone with mainland birthplace, and transition from island to mainland residence, respectively.) Overall, Mexican Americans were by far the largest Latino subgroup at 56.5%, followed by Puerto Ricans at 10.1%, and Cubans at 4.6%. Latinos originating from other locations made up the remainder (28.8%). U.S.-born Latinos were younger (median age 33 years) than immigrants (median age 36 years).

Immigrants had significantly lower levels of education than the U.S.-born: 36% of immigrants had no high school (less than 9 years of education) compared to only 10% of U.S.-born Latinos. The marital status differences between U.S.-born and immigrants are mostly due to younger age distribution of U.S.-born Latinos; once these rates are age-adjusted they show little difference. Of immigrants, about 40% arrived during childhood or adolescence (i.e., before age 18). About half of the U.S.-born reported that both parents were born in the U.S.

U.S.-born Latinos reported high levels of English proficiency (86.4%) and immigrants much lower levels (25.7%). Immigrants had high proficiency in Spanish (79.9%), and slightly over half of the U.S. born reported good or excellent Spanish proficiency (55.8%). For the vast majority of immigrants (74.5%), Spanish was spoken with family all of the time. Among U.S.-born Latinos, there was a more uniform distribution in language spoken with family, ranging from Spanish all of the time (12.2%) to Spanish and English equally (28.4%) to English all of the time (19.8%).

Table 2 shows age-adjusted lifetime and last-year prevalence of DSM-IV alcohol and drug abuse or dependence for the total Latino sample and for U.S.-born and immigrant Latinos

separately. All lifetime prevalences shown in Table 2 for U.S.-born Latinos are significantly higher than corresponding prevalences for immigrants. About one in five U.S.-born Latinos had a lifetime history of a substance disorder, but only about one in 20 Latino immigrants had a history of SUD. For men, 28.4% of U.S.-born Latinos have a lifetime diagnosis for substance abuse or dependence compared to only 10.0% of immigrants. The difference is even more dramatic among females: only 0.8% of immigrant Latinas have a lifetime substance abuse or dependence diagnosis compared to 10.2% of the U.S.-born. Last-year prevalences show a similar relationship, although the U.S.-born versus immigrant comparison does not always reach statistical significance because of the lower prevalences, which reflect lower numbers of observed last-year diagnoses. Indeed, in the NLAAS Latino sample, no last-year diagnoses for any type of substance-use disorders were observed among immigrant women.

All subsequent analyses were restricted to persons younger than age 65 years because no women and only 9 men aged ≥ 65 years were observed with lifetime SUD in the Latino sample of NLAAS. Additionally, immigrants were subdivided into age of arrival categories (see Table 3), and the U.S. born were categorized by the nativity of their parents (i.e., at least one parent U.S.-born or both parents foreign-born). Table 3 shows prevalence by parents' nativity of U.S. born and age of arrival of immigrants for men and women. Tested jointly these 6 categories were strongly associated with lifetime SUD ($p < 0.001$ for both men and women from age-adjusted 2×6 tables). Since the association of age of arrival and SUD was significantly different between women and men ($p = 0.005$)—immigrant women arriving after 6 years of age had near zero prevalence of SUD—we performed further analyses separately for women and men. Logistic regressions (not shown) revealed that education, income, marital status, and Latino subethnicity (i.e., Mexican, Cuban, Puerto Rican, or other) were not significantly associated with SUD in both men and women when nativity, parents' nativity of U.S. born, and age of arrival of immigrants were controlled.

We looked at five language measures as predictors of lifetime SUD: English proficiency, Spanish proficiency, preferred language of thought, language spoken with friends, and language spoken with family. After controlling for nativity, parents' nativity of U.S. born, and age of arrival of immigrants, only language spoken with family was significantly associated with SUD after a Bonferroni correction of 5 (for testing the five language measures). Table 3 shows the prevalence of lifetime SUD in men and women by language spoken with family, stratified by nativity, parents' nativity of U.S. born, and age of arrival of immigrants. Given this stratification, the difference in SUD prevalence between men who tend to speak more English with their family compared to men who speak more Spanish is about two-fold (OR = 2.5 with 95% confidence interval [1.4, 4.2] and $p = 0.002$ from stratified logistic regression; see Methods); among women the difference is about threefold overall (OR = 3.3 [1.8, 6.1] with $p < 0.001$ from stratified logistic regression). Since SUD prevalence among immigrant women is near zero for those arriving to the U.S. after 6 years of age, we repeated the analysis with an unweighted exact Mantel-Haenszel test (Cytel Inc., 2005) and also omitted this group; results were similar.

Table 4 shows results of the analyses used to evaluate the hypotheses that quality of relationships with family and friends will differ between Latinos with and without SUD. Here differences in family scale scores (support, harmony, pride, cohesion, and conflict) and friend scale scores (support and harmony) among those with and without a diagnosis of lifetime SUD are stratified by sex and adjusted for age. Scale scores were normalized to have mean zero and standard deviation one in the population represented by the sample. Note that positive scores on these scales indicate, respectively, more support, more harmony, more pride, more cohesion (all positive attributes), and more conflict (a negative attribute). Men and women with SUD reported significantly less family harmony, less pride, less cohesion and more conflict than those of the same sex without SUD. Women with SUD reported significantly *more* family

support than those without SUD; the male difference for family support was small and nonsignificant. Among men, differences in friend scale scores were nonsignificant between those with and without SUD. However, women with SUD reported significantly higher friend support and lower friend harmony than women without SUD. This latter finding of differential directions of the association of SUD with the two friend scales is not surprising upon closer examination of the scales; they are negatively correlated ($r = -0.27$; $p < 0.001$), and both scales are likely representative of the overall frequency and intensity of the respondent's relationships with friends; e.g., persons who gave positive responses to "How much can you open up to your friends if you need to talk about your worries?" (an item of the friend support scale) also reported that their friends make too many demands on them (an item of the friend harmony scale).

The five family scales were correlated in the pattern one would expect (with only one exception): support, harmony, pride, and cohesion all had positive pairwise correlations (the exception being support and harmony, which had a small negative correlation), and each of these four scales were negatively correlated with the family conflict scale. In order to see if the associations seen in Table 4 still remained after controlling for parents' nativity of the U.S. born, age of arrival of immigrants, family language use, and other demographic variables, we first ran factor analyses on the family and friend scales separately with both sexes combined to extract the first principal factors for each set of scales. Linear regression models were then fit (see Table 5) with these factors as outcome variables (after normalizing the factors to have mean 0 and SD 1). Factor analysis for the family scales yielded a first principal factor with loadings as follows: support 0.28, harmony 0.21, pride 0.85, cohesion 0.81, and conflict -0.56 . Clearly, this factor represents a positive family relationship. Factor analysis for the friend scales yielded a first principal factor with loadings proportional to 1 for the friend support scales and -1 for the friend harmony scale. As discussed earlier, this friend scales factor is reflective of the frequency and intensity of interactions with friends, whether positive or negative. Factor analyses run on the men and women separately yielded almost identical results. Linear regressions were also run on the individual scales (data not shown), and results were similar to that of the regressions for the principal factors, but were less powerful.

The first two data columns in Table 5 show results of regressions for the first principal factor of the family scales, separately for men and women. Men with SUD have significantly lower values of the family scales factor compared to men without SUD (-0.35 SD) after controlling for other covariates. Tested jointly, differences among categories of parents' nativity for U.S.-born men and age of arrival categories for immigrant men were marginally non significant ($p = 0.06$). Divorced, separated, or widowed men and never married men had significantly lower scores (joint test: $p = 0.004$). Interestingly, family language use was not significantly predictive for the family scales factor. No other covariates were significant among men in this and other models (other regression models, not shown, tested additional measures such as those shown in Table 1). For women, parents' nativity and immigrants' age at arrival were significantly associated with the family scales factor (joint test: $p < 0.001$). SUD, however, was not significantly associated with the family scales factor in women. As with men, marital status was significant ($p = 0.03$) and family language use non significant.

The third and fourth columns in Table 5 show regression results for the first principal factor of the friend scales. The model for men shows no significant association between the friend scales factor and SUD. For women, however, SUD is highly associated with the friend scales factor; on average the friend scales factor among women with SUD is about one half of a standard deviation higher than the factor among women without SUD. For women, education is also a highly significant predictor of the friend scales factor ($p < 0.001$) with more highly educated women having higher values on the factor (i.e., more contact with friends whether positive or negative).

In Table 6, we explore the relationship between the family and friend scales factors and last-year SUD. It is important to note that because family and friend scales factors characterize respondents' current relationships, it would be inappropriate to use these scales to predict lifetime SUD; the onset of SUD may have occurred years before the date of the survey interview and current relationships may not be reflective of relationships prior to or coincident with SUD onset (or a prior time period with SUD). Additionally, because the prevalence of last-year SUD is relatively low, precluding multivariate analyses, the results in Table 6 must be considered exploratory. In Table 6, persons are classified by whether their values on the family and friend factors are less than or equal to the median of the factor or greater than the median, and last-year SUD prevalence is shown by this classification. Also analyses are stratified by parents' nativity for U.S. born and age of arrival of immigrants (for men) since these categories were shown to have significant (or nearly significant in the case of men) associations with the factors (Table 5) and with SUD prevalence (Table 3). Consistent with relationships shown earlier, men with lower scores on the family scales factor had significantly higher past-year SUD rates ($p = 0.002$) when stratified by parents' nativity for the U.S. born and age of arrival for immigrants. For U.S.-born women, there was no significant association between past-year SUD rates and the family scales factor. For the friend scales factor in women, however, the association with past-year SUD prevalence was dramatic ($p < 0.001$); essentially all women who had past-year SUD had a value of the friend scales factor that was above the median value of the factor. Since numbers in some of cells in this table were small, we repeated the statistical tests of significance using unweighted exact Mantel-Haenszel statistics (Cytel Inc., 2005) and obtained similar results.

DISCUSSION

As expected, and consistent with other studies (Alegría et al., 2006; Grant et al., 2004; Vega, Alderete, et al., 1998a), we found that U.S.-born Latinos had significantly higher prevalence of SUD compared to immigrants. Additionally, as in other epidemiologic studies of Latinos (Bachman et al., 1991; Canino et al., 1992; Vega, Alderete, et al., 1998a), we found that the male to female ratio of SUD was substantially greater (up to three times higher) among all Latino groups than reported elsewhere in European American samples (Anthony, Warner, & Kessler, 1994; Hughes, Day, Marcantio, & Torpy, 1997; Warner, Kessler, Hughes, Anthony, & Nelson, 1995).

Although birthplace is confounded with language use in ways that are challenging to unravel in cross-sectional research, our findings are consistent with previous research in that respondents' language use with family (rather than other language measures) appears to be a proxy for social assimilation processes that represent differential risk of exposure to substance use. This occurs, we believe, because substance use experimentation develops during late childhood and adolescence primarily through interactions in family and peer-group networks. Thus, family language selection represents a vector of systematic socialization. It is clearly untenable to assume that socialization about substance use is categorically different in Spanish and English speaking social networks because the two are neither discrete nor static. Yet it is tenable that explanatory factors such as attitudes, beliefs, and direct modeling of substance-use behaviors co-vary systematically with language use.

For both men and women, more frequent use of English with family rather than Spanish was associated with higher odds of SUD, as was immigrating to the U.S. at an early age or being born in the U.S. Other research has shown that substance-use disorder prevalence is exceptionally low among Latino women who were older when they moved to the U.S. (Vega, Sribney, Aguilar-Gaxiola, & Kolody, 2004), but the age of greatest risk (0–6 years) among immigrants observed in this study is notably young. We found that Latino women who arrived after age 6 had almost no risk of SUD, possibly due to an inoculation effect carried forward

from their country of origin or stronger connection with values of the Latino culture of origin as compared to U.S.-born Latinas, or immigrant women who arrived during early childhood. Our analyses showed that low socioeconomic status was not related to SUD, probably an artifact of very low substance-use rates among Latino immigrants who are also the more likely to have family incomes below the poverty line. The absence of an income effect is in contrast with previous findings which have reported poverty as an important correlate of SUD (Kessler et al., 1994; Lorant et al., 2003). However, our findings are consistent with a handful of studies carried out with impoverished populations on the island of Puerto Rico (Bird et al., 1988; Canino et al., 2004; Warner, Canino, & Colon, 2001) and the United States (Angold et al., 2002). These studies did not find an association between traditional measures of socioeconomic status (SES) and psychiatric disorders or SUD, but rather found that measures of social capital and perception of poverty were better indicators. Segmented assimilation research would also augur toward an explanation that poverty *per se* is an insufficient causal factor, and that social context differences in neighborhoods, such as crime levels and higher rates of female headed households, are more robust indicators of susceptibility to substance abuse and dependence (Vega & Gil, in press). These explanations appear valid when considered in the light of the stronger anti-drug norms expressed by low SES immigrants.

Sex Differences in Family Relationships of Drug Dependent Latinos

At the bivariate level, compared to those without SUD, both men and women with SUD reported a more problematic family interaction pattern with less harmony, pride, and cohesion and more conflict. However, women with SUD reported *more* family support than women without SUD. In interpreting this finding it is important to note that for *all* women family support was highly correlated with family pride ($r = 0.28$) and cohesion ($r = 0.26$) and strongly negatively correlated with family cultural conflict ($r = -0.27$). One possible explanation for this finding relates to the measure itself, where women's responses to the family support questions reflect the subject's "help-seeking," emotional distress, or some other characteristic rather than an indication of the "support" and "closeness" of the family *per se*. It also raises questions that merit further investigation regarding how instrumental and emotional support are expressed among families with differing levels of social assimilation, and the consequences for substance-dependent family members. For example, other researchers have found evidence that families who endorse more traditional sex roles either encourage women to stay in unhealthy relationships with partners who are themselves using substances (Amaro, Nieves, Johannes, Labault-Cabeza, 1999), or due to concerns about stigma, act as a barrier to women receiving treatment (Szapocznick & Munoz, 1994).

In terms of relationships with friends, men with SUD do not differ in either friend support or harmony from men without SUD, whereas women with SUD have more friends support but also less friend harmony (i.e., greater conflicts and demands made on them by friends). We found that among women, the friend support and friend harmony scales were strongly negatively correlated ($r = -0.28$). It is likely that higher scores on friend support and lower scores on friend harmony are both related to the total number of friends and the frequency and emotional intensity of contact with them. It is important to note the positive association found between SUD and the combined friend measures in women (Tables 5 and 6) relate to U.S.-born and early arrival immigrant women only (since other Latinas have near zero rates of SUD). There are several possible pathways that would give rise to this association. Contact with friends raised in the dominant U.S. culture (e.g., U.S.-born whites) could be an important source for culture change in these women, which results in increased risk of SUD. On the other hand, many of the U.S.-born Latinas (such as the ones with U.S.-born parents) may already be so acculturated that contact with American friends may not accelerate culture change on an individual level. It may simply be that the friend scales may be proxies for extroversion or other personality traits, which are related to increased risk of SUD. It would be worthwhile in

future studies to examine this association between friend measures and SUD in Latino women compared to women of other ethnicities. It is also important to further investigate the extent to which friend support is dysfunctional because it *potentially* involves friends who also use substances.

Together, our analyses of family and friend relationships suggest that among those with a history of SUD, both men and women face family situations that are problematic (although the specific dimensions of problematic family relations differ), and consistent with other research, that women place a stronger reliance on friend networks to meet emotional needs than men (Colarossi & Eccles, 2003; Siebert, Mutran, & Reitzes, 1999; van Daalen, Sanders, & Willemsen, 2005). While these putative distinctions require replication and more detailed examination, it is possible that they reflect real differences in seeking and receiving support. Differences in strength of social ties could directly affect the prospects for continuing addictive behaviors or for recovery from alcohol and drug dependence.

Study Limitations

The results reported here should be interpreted with caution due to several limitations of the study. First, the cross-sectional study design necessarily limits making any conclusions about causality between family and friend relationships and SUD. Family measures may be proxies for the family environment and/or reflective of family genetics (e.g., father is an alcoholic), which would cause an individual to be susceptible to SUD. Or a negative family state could be caused by the individual's prior (or concomitant) SUD. Second, more complete information about the content of friend and family interactions is needed to assess their independent and reciprocal relationships in offering social support for and social control of men and women with SUD. Third, although the rate of non-response is within the range of other national epidemiologic surveys (Kessler et al., 1994, 2005), absence of information from the eligible respondents who did not respond to the survey (27%), means the prevalence estimates and correlates of SUD could be biased. Fourth, we aggregated alcohol and illicit drug abuse and dependence into one category of substance-use disorders, although we acknowledge that these disorders may differ in important ways. However, this was necessary given the low prevalence estimates, particularly of drug dependence among Latina women. Finally, although the very low prevalence of past-year SUD among Latino women and the zero prevalence observed in immigrant women are likely an accurate representation of the SUD distribution, the relatively small numbers rendered in-depth analysis of last-year SUD impossible.

The limitations must be balanced against key strengths of study. This exploratory study used data from the first nationally representative survey of Latinos in the U.S., with multiple indicators of cultural allegiance and affiliation, and a standard assessment of SUD. The data allow examination of hypotheses that speak to the complicated processes underlying social assimilation, and their consequences for the well-being of the fastest growing minority group in the U.S. The findings reported here are clear that Latino women and men with SUD have very different relational patterns with family and friends that merit continued attention in etiologic, services, and recovery research.

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Table 1
 Socio-Demographic Characteristics of U.S. Latinos in the National Latino and Asian American Study.

| | Immigrants | U.S.-born | All | Test of nativity difference (unadjusted) | Test of nativity difference (age-sex adjusted) |
|----------------------------------|------------|-----------|-------|--|--|
| Observed sample | 1622 | 924 | 2546 | | |
| Weighted sample | 58.4 | 41.6 | 100.0 | | |
| Female | 48.4 | 48.6 | 48.5 | NS | - |
| Male | 51.6 | 51.4 | 51.5 | *** | - |
| Age (y) | | | | | |
| 18-24 | 15.2 | 28.6 | 20.7 | | |
| 25-34 | 30.8 | 24.7 | 28.3 | | |
| 35-49 | 32.1 | 27.3 | 30.1 | | |
| 50-64 | 14.7 | 11.6 | 13.4 | | |
| ≥65 | 7.2 | 7.8 | 7.5 | | |
| Marital status | | | | *** | * |
| Married | 56.9 | 44.7 | 51.8 | | |
| Divorced, separated, widowed | 18.2 | 18.9 | 18.5 | | |
| Never married | 24.9 | 36.4 | 29.7 | | |
| Education (y) | | | | *** | *** |
| No high school (<9) | 35.7 | 9.8 | 24.9 | | |
| Some high school (9-11) | 19.2 | 19.7 | 19.4 | | |
| High school graduate (12) | 20.0 | 30.9 | 24.6 | | |
| Some college (13-15) | 16.1 | 27.7 | 20.9 | | |
| College degree or greater (≥16) | 9.0 | 11.9 | 10.2 | | |
| Household income (\$) | | | | *** | *** |
| 0-14,999 | 30.3 | 23.5 | 27.5 | | |
| 15,000-34,999 | 32.1 | 23.8 | 28.7 | | |
| 35,000-74,999 | 25.1 | 31.4 | 27.7 | | |
| ≥75,000 | 12.5 | 21.2 | 16.1 | | |
| Nativity of parents of U.S.-born | | | | - | - |
| Both parents U.S.-born | | 49.4 | 20.5 | | |
| One parents U.S.-born | | 17.2 | 7.2 | | |
| Both parents foreign born | | 33.4 | 13.9 | | |

| Immigrants' age (y) at arrival to U.S. | Immigrants | U.S.-born | All | Test of nativity difference (unadjusted) | Test of nativity difference (age-sex adjusted) |
|--|------------|-----------|------|--|--|
| 0-6 | 11.6 | | 6.8 | | |
| 7-17 | 28.1 | | 16.4 | | |
| 18-24 | 30.6 | | 17.9 | | |
| ≥25 | 29.7 | | 17.3 | | |
| Latino subgroup | | | | ** | ** |
| Puerto Rican ² | 7.8 | 13.3 | 10.1 | | |
| Cuban | 6.8 | 1.5 | 4.6 | | |
| Mexican | 55.0 | 58.6 | 56.5 | | |
| Other Latino | 30.4 | 26.5 | 28.8 | | |
| English language proficiency | | | | **** | **** |
| Excellent or good | 25.7 | 86.4 | 51.0 | | |
| Fair or poor | 74.3 | 13.6 | 49.0 | | |
| Spanish language proficiency | | | | **** | **** |
| Excellent or good | 79.9 | 55.8 | 71.2 | | |
| Fair or poor | 20.1 | 44.2 | 28.8 | | |
| Language spoken with family | | | | **** | **** |
| Spanish all the time | 74.5 | 12.2 | 52.0 | | |
| Spanish most of the time | 12.3 | 14.4 | 13.1 | | |
| Spanish and English equally | 8.1 | 28.4 | 15.5 | | |
| English most of the time | 3.9 | 25.1 | 11.6 | | |
| English all the time | 1.1 | 19.8 | 7.9 | | |

¹ All data except observed sample counts are reported as weighted estimates of population percentages.

² Persons born in Puerto Rico are U.S. citizens. "Immigrant," "U.S.-born," and "arrival to U.S." refer to island birthplace, mainland birthplace, and transition from island to mainland residence, respectively.

NS = nonsignificant;

* $p < 0.05$;

** $p < 0.01$;

**** $p < 0.001$.

Table 2

Lifetime and Last-Year Prevalence of DSM-IV Substance Abuse or Dependence¹ for U.S. Latinos in the National Latino and Asian American Study.

| | Immigrants | | | U.S. born | | | All | | |
|---------------------------|------------|------------|----------------------------|---------------|-----------|------------|-----------|----------|--|
| | Last Year | Lifetime | Last Year | Lifetime | Last Year | Lifetime | Last Year | Lifetime | |
| Men (N = 1124) | | | | | | | | | |
| Alcohol | 1.9 (0.5) | 9.7 (1.2) | 5.6 (1.3)** | 27.4 (2.8)*** | 3.4 (0.6) | 16.7 (1.7) | | | |
| Drug | 0.8 (0.6) | 3.8 (0.8) | 2.0 (0.6) | 17.5 (2.1)*** | 1.4 (0.4) | 9.4 (1.1) | | | |
| Any substance | 2.5 (0.6) | 10.0 (1.2) | 7.3 (1.5)** | 28.4 (3.0)*** | 4.5 (0.6) | 17.4 (1.8) | | | |
| Women (N = 1422) | | | | | | | | | |
| Alcohol | 0.0 (0.0) | 0.4 (0.2) | 2.2 (0.8) ² *** | 9.6 (1.4)*** | 1.0 (0.4) | 4.3 (0.8) | | | |
| Drug | 0.0 (0.0) | 0.6 (0.3) | 0.8 (0.4) ² ** | 4.9 (1.0)*** | 0.4 (0.2) | 2.4 (0.7) | | | |
| Any substance | 0.0 (0.0) | 0.8 (0.3) | 2.5 (0.8) ² *** | 10.2 (1.6)*** | 1.1 (0.4) | 4.8 (1.0) | | | |
| Sexes combined (N = 2546) | | | | | | | | | |
| Alcohol | 1.0 (0.3) | 5.2 (0.7) | 3.9 (0.8)*** | 18.8 (2.0)*** | 2.2 (0.4) | 10.7 (1.2) | | | |
| Drug | 0.4 (0.3) | 2.2 (0.4) | 1.4 (0.4) | 11.4 (1.4)*** | 0.9 (0.2) | 6.0 (0.7) | | | |
| Any substance | 1.3 (0.3) | 5.5 (0.8) | 5.0 (1.0)*** | 19.6 (2.2)*** | 2.9 (0.4) | 11.3 (1.3) | | | |

¹ Sex-specific prevalence rates for immigrants and U.S. born were age-adjusted separately for men and women. Prevalence rates for immigrants and U.S. born for sexes combined were age-sex adjusted. Prevalence rates for all persons were unadjusted. Standard errors shown in parentheses.

² Unweighted Fisher's exact test (two-sided) used for test of difference between last-year prevalence rates of immigrant women and U.S.-born women. Test of differences for men and sexes combined was a weighted Rao-Scott statistic for the Pearson χ^2 test; see Methods.

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$, for test of difference between immigrants and U.S. born.

Table 3

Lifetime Prevalence of DSM-IV Substance Abuse or Dependence¹ by Language Use with Family for U.S. Latino Men and Women, Age 18–64 years.

| | Men | | | Women | | |
|-------------------------------|---|---|------------------|---|---|------------------|
| | More English with family ^{2,3} | More Spanish with family ^{2,3} | All ⁴ | More English with family ^{2,3} | More Spanish with family ^{2,3} | All ⁴ |
| <i>N</i> | 338 | 613 | 951 | 387 | 779 | 1166 |
| U.S. born | | | | | | |
| One or both parents U.S. born | 41.3 (4.3) | 24.6 (7.3) | 32.1 (3.6) | 17.8 (3.7) | 6.5 (2.9) | 13.4 (2.7) |
| Both parents foreign born | 28.3 (7.0) | 16.0 (5.8) | 24.3 (3.7) | 7.9 (3.4) | 2.5 (1.6) | 6.0 (1.8) |
| Immigrants | | | | | | |
| Age (y) of arrival into U.S. | | | | | | |
| 0–6 | 29.5 (10.9) | 9.9 (5.4) | 19.0 (6.6) | 10.5 (4.8) | 0.9 (0.9) | 5.5 (2.7) |
| 7–17 | 14.0 (5.8) | 8.9 (4.9) | 10.5 (4.1) | 0.5 (0.5) | 0.6 (0.6) | 0.5 (0.4) |
| 18–24 | 15.0 (6.6) | 7.1 (2.8) | 8.4 (2.6) | 0 (0) | 0.3 (0.3) | 0.3 (0.2) |
| ≥25 | 37.5 (18.4) | 6.5 (3.7) | 9.1 (3.7) | 0 (0) | 0.1 (0.1) | 0.1 (0.1) |

¹ Prevalence rates, given as percentages with standard errors shown in parentheses, adjusted by age within each nativity, parents' nativity, and age of arrival category.

² $p = 0.002$ for men and $p < 0.001$ for women for test of difference between family language use categories from logistic regression stratified by parents' nativity and age of arrival categories with age-adjusted weights; see Methods.

³ "More Spanish" denotes the responses "Spanish all or most of the time or Spanish and English equally" for U.S. born with one or both parents U.S. born, "Spanish all or most of the time" for U.S. born with both parents foreign born and foreign born with age of arrival 0–6 years, and "Spanish all the time" for all other categories of foreign born. "More English" denotes other responses.

⁴ $p < 0.001$ for both men and women for differences among nativity, parents' nativity, and age of arrival categories (from the Rao–Scott statistic for the Pearson χ^2 test for the 2×6 contingency table), $p = 0.005$ for joint test of difference between men and women of nativity, parents' nativity, and age of arrival categories (from logistic regression).

Table 4

Mean Family, Friend, and Social Scales¹ by Lifetime DSM-IV Substance Abuse or Dependence Diagnosis for U.S. Latino Men and Women, Age 18–64 years.

| <i>N</i> | Men | | Women | |
|--------------------------|--------------------------------|-----------------------------------|-------------------------------|------------------------------------|
| | Substance-use diagnosis 171 | No substance-use diagnosis 867 | Substance-use diagnosis 64 | No substance-use diagnosis 1216 |
| Family scales | | | | |
| Family support | −0.12 (0.10) | −0.08 (0.04) | 0.44 (0.14) | 0.08 (0.03) [*] |
| Family harmony | −0.16 (0.10) | 0.14 (0.05) [*] | −0.58 (0.22) | −0.08 (0.04) [*] |
| Family pride | −0.16 (0.09) | 0.13 (0.04) ^{**} | −0.53 (0.12) | −0.06 (0.04) ^{***} |
| Family cohesion | −0.17 (0.09) | 0.08 (0.04) ^{**} | −0.40 (0.13) | −0.03 (0.04) ^{**} |
| Family cultural conflict | 0.17 (0.06) | −0.17 (0.05) ^{***} | 0.46 (0.15) | 0.10 (0.04) [*] |
| Friend scales | | | | |
| Friend support | −0.05 (0.10) | 0.05 (0.03) | 0.64 (0.13) | 0.02 (0.03) ^{***} |
| Friend harmony | −0.20 (0.07) | 0.03 (0.05) | −0.49 (0.20) | 0.09 (0.03) ^{**} |

¹ Scales normalized to mean zero and standard deviation one. Scale means were age-adjusted for each sex and substance-use diagnosis subgroup. Standard errors of means shown in parentheses.

^{*} $p < 0.05$,

^{**} $p < 0.01$,

^{***} $p < 0.001$ for difference between persons of same sex with and without substance-use diagnosis.

Table 5
 Linear Regression Models of First Principal Factors of Family and Friend Scales for U.S. Latino Men and Females, Age 18–64 years.

| | First principal factor of family scales ¹ | | | First principal factor of friend scales ² | | |
|----------------------------------|--|-------------------------|-------------------------|--|------------------------|------------------------|
| | Men | Women | Male | Male | Female | Female |
| <i>N</i> | 949 | 1164 | 948 | 948 | 1164 | 1164 |
| Substance abuse or dependence | -0.35 [-0.56, -0.14]** | -0.27 [-0.64, 0.10] | 0.07 [-0.13, 0.28] | 0.07 [-0.13, 0.28] | 0.47 [0.22, 0.71]*** | 0.47 [0.22, 0.71]*** |
| Age (y) | | | | | | |
| 18–24 | -0.23 [-0.46, 0.00] | 0.01 [-0.26, 0.29] | 0.06 [-0.12, 0.25] | 0.06 [-0.12, 0.25] | 0.04 [-0.19, 0.28] | 0.04 [-0.19, 0.28] |
| 25–34 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35–49 | 0.01 [-0.15, 0.17] | 0.13 [-0.15, 0.40] | -0.33 [-0.49, -0.18]*** | -0.33 [-0.49, -0.18]*** | -0.10 [-0.31, 0.10] | -0.10 [-0.31, 0.10] |
| 50–64 | -0.03 [-0.25, 0.18] | 0.23 [-0.03, 0.50] | -0.18 [-0.38, 0.02] | -0.18 [-0.38, 0.02] | 0.18 [-0.05, 0.40] | 0.18 [-0.05, 0.40] |
| Education (y) | | | | | | |
| No high school (<9) | -0.20 [-0.49, 0.10] | -0.11 [-0.40, 0.18] | -0.20 [-0.45, 0.04] | -0.20 [-0.45, 0.04] | -0.39 [-0.62, -0.16]** | -0.39 [-0.62, -0.16]** |
| Some high school (9–11) | 0.06 [-0.12, 0.23] | -0.08 [-0.37, 0.22] | -0.19 [-0.41, 0.04] | -0.19 [-0.41, 0.04] | -0.20 [-0.36, -0.03]* | -0.20 [-0.36, -0.03]* |
| High school graduate (12) | 0 | 0 | 0 | 0 | 0 | 0 |
| Some college (13–15) | -0.08 [-0.30, 0.15] | 0.11 [-0.17, 0.39] | 0.13 [-0.05, 0.32] | 0.13 [-0.05, 0.32] | 0.14 [-0.05, 0.33] | 0.14 [-0.05, 0.33] |
| College degree or greater (≥16) | -0.01 [-0.22, 0.20] | -0.03 [-0.31, 0.25] | 0.18 [-0.10, 0.46] | 0.18 [-0.10, 0.46] | 0.23 [0.01, 0.44]* | 0.23 [0.01, 0.44]* |
| Marital status | | | | | | |
| Married | 0 | 0 | 0 | 0 | 0 | 0 |
| Divorced, separated, widowed | -0.38 [-0.64, -0.13]** | -0.25 [-0.45, -0.04]* | 0.35 [0.08, 0.61]* | 0.35 [0.08, 0.61]* | 0.12 [-0.04, 0.28] | 0.12 [-0.04, 0.28] |
| Never married | -0.23 [-0.40, -0.05]* | -0.23 [-0.46, -0.01]* | 0.38 [0.26, 0.51]*** | 0.38 [0.26, 0.51]*** | 0.15 [-0.10, 0.40] | 0.15 [-0.10, 0.40] |
| Nativity of parents of U.S.-born | | | | | | |
| One or both parents U.S.-born | -0.20 [-0.44, 0.04] | -0.48 [-0.72, -0.25]*** | -0.39 [-0.76, -0.03]* | -0.39 [-0.76, -0.03]* | 0.28 [0.09, 0.46]** | 0.28 [0.09, 0.46]** |
| Both parents foreign born | -0.37 [-0.68, -0.05]* | -0.28 [-0.60, 0.03] | -0.32 [-0.69, 0.06] | -0.32 [-0.69, 0.06] | 0.11 [-0.16, 0.39] | 0.11 [-0.16, 0.39] |

| | First principal factor of family scales ¹ | | | First principal factor of friend scales ² | | |
|--|--|-------------------------|------------------------|--|------|--------|
| | Men | Women | Male | Female | Male | Female |
| <i>N</i> | 949 | 1164 | 948 | 1164 | 948 | 1164 |
| Immigrants' age (y) at arrival to U.S. | | | | | | |
| 0-6 | -0.25 [-0.51, 0.02] | -0.62 [-0.86, -0.37]*** | -0.33 [-0.70, 0.04] | 0.30 [0.05, 0.55]* | | |
| 7-17 | -0.22 [-0.47, 0.02] | -0.21 [-0.50, 0.08] | -0.43 [-0.73, -0.14]** | 0.05 [-0.22, 0.32] | | |
| 18-24 | -0.02 [-0.25, 0.20] | -0.03 [-0.22, 0.15] | -0.50 [-0.86, -0.14]** | 0.07 [-0.20, 0.34] | | |
| ≥25 | 0 | 0 | 0 | 0 | | |
| Language spoken with family ³ | | | | | | |
| More Spanish | 0 | 0 | 0 | 0 | | |
| More English | -0.07 [-0.19, 0.06] | -0.16 [-0.33, 0.01] | 0.12 [-0.08, 0.31] | 0.04 [-0.20, 0.29] | | |
| Constant | 0.55 [0.30, 0.80]*** | 0.29 [-0.02, 0.60] | 0.27 [-0.07, 0.61] | -0.19 [-0.51, 0.12] | | |

¹ First principal factor of family scale = 0.28×family support + 0.21×family harmony + 0.85×family pride + 0.81×family cohesion - 0.56×family cultural conflict. Factor normalized to mean zero and standard deviation one. Test of difference between all terms (except constant) in model for men and model for women significant at $p = 0.007$ (16 d.f.).

² First principal factor of friend scale is proportional to the friend support scale minus the friend harmony scale. Factor normalized to mean zero and standard deviation one. Test of difference between all terms (except constant) in model for men and model for women significant at $p = 0.01$ (16 d.f.).

³ See footnote 3 to Table 3.

* $p < 0.05$,

** $p < 0.01$,

*** $p < 0.001$.

Table 6

Last Year DSM-IV Substance Abuse or Dependence Prevalence¹ by First Principal Factors of Family and Friend Scales for U.S. Latino Men and Women,² Age 18–64 years.

| Sex | Stratification variables | First principal factor of family scales ³ | | | First principal factor of friend scales ⁴ | | | Test of difference ⁶ |
|--------------|-------------------------------|--|-----------------------|---------------------------------|--|-----------------------|---------------------------------|---------------------------------|
| | | ≤ median ⁵ | > median ⁵ | Test of difference ⁶ | ≤ median ⁵ | > median ⁵ | Test of difference ⁶ | |
| Men | | | | | | | | |
| N | | 418 | 412 | ** | 402 | 427 | | NS |
| | U.S.-born | | | | | | | |
| | One or both parents U.S.-born | 10.1 (2.4) | 5.0 (2.1) | | 8.1 (3.2) | 7.4 (2.4) | | |
| | Both parents foreign born | 12.1 (4.8) | 0.2 (0.2) | | 5.5 (2.7) | 9.0 (4.4) | | |
| | Immigrants | | | | | | | |
| | Age (y) at arrival to U.S. | | | | | | | |
| | 0–6 | 5.5 (3.7) | 4.2 (4.1) | | 4.1 (4.0) | 5.6 (3.8) | | |
| | 7–17 | 4.1 (2.4) | 2.3 (2.0) | | 3.5 (2.4) | 2.7 (2.2) | | |
| | 18–24 | 4.9 (2.1) | 1.6 (1.6) | | 3.7 (2.3) | 1.5 (1.0) | | |
| Women | | | | NS | | | | *** |
| N | | 281 | 212 | | 210 | 282 | | |
| | U.S.-born | | | | | | | |
| | One or both parents U.S.-born | 3.4 (1.8) | 2.8 (1.5) | | 0.1 (0.1) | 4.9 (1.8) | | |
| | Both parents foreign born | 2.8 (2.2) | 0.6 (0.6) | | 0.0 (0.0) | 3.6 (2.2) | | |

¹ Prevalence rates, given as percentages with standard errors shown in parentheses, adjusted by age within each nativity, parents' nativity, and age of arrival category.

² Data for immigrant men with age of arrival ≥ 25 y and women immigrants not shown since last-year substance abuse or dependence prevalences were zero for immigrant women and near zero for immigrant men age of arrival ≥ 25 y.

³ See footnote 1 to Table 5.

⁴ See footnote 2 to Table 5.

⁵ Weighted median of factor.

⁶ Test of difference between \leq median and $>$ median factor categories obtained from a logistic regression stratified by parents' nativity and age of arrival categories with age-adjusted weights; see Methods. NS = nonsignificant.

** $p < 0.01$,

*** $p < 0.001$.