How Gender Shapes the Relationship between Acculturation and Health among Mexican American Immigrants*

March 7, 2008

Bridget K. Gorman
Department of Sociology
Rice University

Jen'nan Ghazal Read
Department of Sociology and Center for Health Policy Research
University of California, Irvine

Patrick M. Krueger
Division of Management, Policy, and Community Health
University of Texas School of Public Health,
Population Research Center
University of Texas-Austin
Leonard Davis Institute of Health Economics
University of Pennsylvania

ABSTRACT

Background: The declining health of immigrants as they acculturate to U.S. society is well established, but few studies have examined whether and how gender shapes this relationship. This study examines (1) whether the relationship between acculturation and medical conditions varies by gender among Mexican Americans (the largest immigrant population in the U.S.), and (2) whether the mechanisms that mediate the relationship between acculturation and medical conditions operate differently for men and women (e.g., family structure, socioeconomic status, access to and utilization of health care, health behaviors, mental distress).

Methods: We use pooled data from the 1998-2006 waves of the National Health Interview Survey (NHIS) to examine these questions. We create a multi-dimensional measure of acculturation that combines four items: nativity, duration of U.S. residence, citizenship status, and language use. Negative binomial regression models the total number of health conditions and logistic regression models specific medical conditions including asthma, heart disease, and diabetes.

Results: Immigrants with the lowest levels of acculturation are the healthiest, reporting significantly fewer medical conditions, and this protection is appreciably stronger for men than for women. The mechanisms that we examine only partially account for the relationship between acculturation and medical conditions, and many of those mechanisms have similar relationships with health for both men and women.

Discussion: The results indicate that the processes associated with becoming more incorporated into American society have different health implications for Mexican immigrant women and men and that the well-established finding of worsening health with increased acculturation holds more strongly for men. Our finding that the mediators of the relationship between acculturation and health are largely similar suggests that policies or interventions that target those mechanisms might improve the health of both men and women.

INTRODUCTION

Over 33 million immigrants live in the United States today, totaling 11.5 percent of the U.S. population. Mexican immigrants comprise the single largest group and account for one-third of all U.S. immigrants who arrived between 1990 and 2000 (Kritz and Gurak 2004; Sanez 2004). The sheer size of the Mexican migrant population coupled with the poorer social, economic, and health conditions in Mexico has garnered much attention and debate among policymakers and public health officials because immigrant health and well-being may have important consequences for U.S. population health and the health care system. Significantly, Mexican immigrants appear quite healthy when they arrive in the U.S. but through the process of acculturation—or integration into U.S. society—their health deteriorates to the level of their native-born counterparts (Markides and Coreil 1986; Iannotta 2002; Markides and Eschbach 2005).

Whether and how this pattern of deteriorating health varies by gender has received much less attention, and the limited evidence to date suggests that both the initial and long-term health trajectories of Mexican immigrants might vary for men and women, thereby changing how we address this public policy concern (Antecol and Bedard 2006; Read and Gorman 2006). We expect gender to be important for understanding the health of Mexican immigrants for at least three reasons. First, there are substantial and persistent differences in the health status of men and women, and in the manner which social, economic, and behavioral risk factors shape these health disparities (e.g., Verbrugge 1985; Gorman and Read 2006; Bird and Rieker 2008). Second, since migration processes differ for Mexican men and women, the theories that are used to explain immigrant health (e.g. selectivity, health behaviors) may be less useful for understanding the health of Mexican immigrant women (Kanaiaupuni 2000). And, third,

2

acculturation processes differ for men and women due to differences in lifestyles in Mexico, motivations for migrating, and subsequent reception and location in U.S. society (Donato et al. 2006), implying that the relationship between acculturation and health may differ for men and women.

Two major questions guide our research on the gender-acculturation-health nexus. First, does the well-established relationship between acculturation and health vary by gender for Mexican Americans?[1] Second, do the mechanisms through which acculturation influences health vary by gender? In other words, do the processes associated with becoming more incorporated into American society have the same health implications for Mexican immigrant women and men, and do the mechanisms traditionally believed to mediate the link between acculturation and health (family structure, socioeconomic status, access to and utilization of medical care, health behaviors, and mental health) operate differently for Mexican immigrant men and women?

Answers to these questions have implications for theory, methods, and policy. Theoretically, we bring a "gender lens" (Curran et al. 2006) to the issue of Mexican immigrant health by viewing health patterns as gendered processes, both in terms of migration and subsequent acculturation, thereby extending prior research that either controls for gender or focuses on either men or women. Methodologically, we extend the work of Lopez-Gonzalez and colleagues (2005) and create a multi-dimensional measure of acculturation that incorporates nativity, duration of U.S. residence, citizenship, and language usage. Our measure offers a richer understanding of acculturation than research that uses only single item measures such as nativity or time since arrival. From a public policy perspective, we move beyond broad indicators of health status, such as self-rated health, to examine several medical conditions that are potentially life threatening and very costly to treat or maintain. Our research may shed insight on the

---

[1] We use the term Mexican American to refer to Mexicans living in the United States, both foreign- and native-born.

3

differential impact that Mexican immigrant men and women may have on the U.S. health care

system, given that men and women typically suffer from different health conditions (see

Verbrugge 1985; Rieker and Bird 2000).

GENDER, IMMIGRANT ACCULTURATION, AND HEALTH

Recent decades have seen the development of three bodies of research that inform the

current study: research on immigrant health, research on gendered patterns of migration and

acculturation, and research on gender disparities in health and mortality. The first body of

research points to the importance of acculturation in explaining the declining health of

immigrants—especially Hispanic or Mexican immigrants—with increased duration in U.S.

society (Cho and Hummer 2001; Cho et al. 2004; Antecol and Bedard 2006; Akresh 2007). The

second body of literature highlights gender differences in the push and pull factors that drive

migration, as well as gender differences in acculturation that can result in very different

opportunities and outcomes for immigrant men and women (Hondagneu-Sotelo 1994, 1999;

Pessar 1999a; Kanaiaupuni 2000; Amaro and de la Torre 2002; Donato et al. 2006). The third

body of research examines the causes of women's longer life expectancy than men, and the

manner and reasons why morbidity and disability rates differ between men and women (see

reviews by Gorman and Read 2007; Bird and Rieker 2008). For the most part, the first body of

literature has paid little attention to the gendered nature of migration and acculturation, the

second has focused more on the social and economic outcomes of acculturation than on health,

and the third has only begun to explore how gendered patterns of disease vary across

racial/ethnic and immigrant groups.

Yet, when considered together, there is good evidence to assume that gender plays an

important role in shaping the acculturation-health relationship, especially among Mexican immigrants. We know that health outcomes are shaped both positively and negatively by the constraints that are placed on men's and women's health-related choices (Bird and Rieker 2008). Gender differences in health are due, in part, to biological differences between men and women, but social circumstances (especially work and family conditions) also influence norms and expectations regarding the behavior of men and women, and these in turn help to create, maintain, and even exacerbate biological differences in health. Thus, individuals routinely make decisions within a context of constrained choices, and so even if health is a priority, the decisions they make are not always healthy.

This concept of "constrained choice" is useful as we think about how the process of migration and acculturation might have different health-related consequences for Mexican men and women. Scholars have noted that, traditionally, Mexico is a very patriarchal society, where women are often responsible for maintaining domestic life and are subordinate to men, and men are viewed as breadwinners and protectors of women. Although women in Mexico have made gains in independence and equity over time, substantial differences remain (Hondagneu-Sotelo 1994; Hondagneu-Sotelo and Cranford 1999; Pessar 1999b; Kanaiaupuni 2000; Parrado and Flippen 2005). This gendered environment also influences the likelihood, manner, and purpose of migration from Mexico to the United States. Studies have shown that even though female migration from Mexico has been increasing over time, more men migrate to the U.S. than women (Kritz and Gurak 2004; Hill and Wong 2005). Overall, migration is less of an independent choice for Mexican women. Men typically cross the border in search of employment or adventure, while women are more likely to be accompanied by relatives or a coyote when they cross, and more often for the purpose of family reunification (Boyd 1992; Hondagneu-Sotelo

1994; Boyd and Grieco 2003; Donato and Patterson 2004; Curran et al. 2006; Donato et al. 2006). Upon arriving in the United States, studies show that gender relations between Mexican men and women are reconstructed, often in such a way that women make some gains in terms of independence and decision-making ability. These shifts are may be quite modest, but they nevertheless reflect an improvement in status vis-à-vis gender relations in Mexico (Hondagneu-Sotelo 1999; Boyd and Grieco 2003; Parrado and Flippen 2005). At the same time, men lose status and power with migration, and the gendered-nature of these status changes are why women often desire to settle in the U.S. permanently, but men want to return to Mexico as quickly as possible (Hondagneu-Sotelo 1994; Pessar 1999a, 1999b).

From a health standpoint, the pre- and post-migration status of gender relations has important implications for persons who migrate to the United States from Mexico. If we apply the concept of "constrained choices" to this process, we can identify two pathways through which gender may shape the health outcomes of Mexican American men and women. First, if women have less say over the migration decision than men and move more often for family reunification than for economic opportunity, then women may be less selected on health than their male counterparts—a factor that may contribute to the sicker profile of Mexican American women when compared to Mexican American men (Read and Gorman 2006). At minimum, that Mexican men migrate at younger ages than Mexican women (Kanaiaupuni 2000) suggests that their initial health profile will be more positive. Second, given the male-bias in gender relations in Mexico, women participate in health-damaging behaviors (e.g., heavy drinking) at lower rates than men (Caetano and Mora 1988; Vega et al. 1998; Lopez-Gonzalez et al. 2005). Yet, studies have consistently shown that female participation in health-damaging behaviors, including poor diet or a high BMI, drug use, smoking, and especially drinking increases with acculturation

among women (Amaro et al. 1990; Markides et al. 1990; Gilbert 1991; Vega et al. 1998; Lopez-Gonzalez et al. 2005; Antecol and Bedard 2006; Akresh 2007). Indeed, Curran and Saguy (2001) note that female migrant networks are often made up of women of the same age who live in close proximity to each other, and where somewhat risky and nontraditional behaviors are likely to be encouraged. In addition, resettlement in the U.S. is a stressful process for Mexican women, especially given their high rates of poverty and employment in low wage occupations, and there is the potential for harm if men attempt to reassert their status through the use of violence or other forms of control over women (Hondagneu-Sotelo and Cranford 1999; Hondagneu-Sotelo 2001; Kritz and Gurak 2004).

The studies cited above also find that the relationship between acculturation and health behaviors is much weaker, and sometimes totally absent, for men. This suggests that the acculturation process may be more damaging to the physical health of Mexican women than men—although this is by no means certain. While Mexican men had, and retain, more ability and acceptance of their engagement in health-damaging behaviors, the stresses of the resettlement process are exacerbated by their relative loss of privilege and power, both within society-at-large and in comparison to women (Hondagneu-Sotelo 1994). This stress can be damaging to the body over time, especially if men also intensify their engagement in health-damaging behaviors. To date, however, it still remains unclear as to whether the relationship between acculturation and physical health problems differs significantly for men and women.

MECHANISMS LINKING GENDER, ACCULTURATION, AND HEALTH

The decline in health as immigrants spend more time in U.S. society has been attributed to several sets of factors that are linked with acculturation (e.g., Cho et al. 2004; Jasso et al.

2004). We focus on five sets of factors that have well-established relationships with health, that are differentially shaped by gender, and that might be shaped by different social policies: family, socioeconomic status, medical care, health behaviors, and mental health.

First, Mexican immigrants who are married are more likely to stay married than their U.S. born counterparts, and they tend to live in larger or extended families (Ramirez and de la Cruz 2003). Because of the family reunification process of U.S. immigration policy (Martin and Midgeley 2006), immigrants often settle in areas of the country where they know people and find other co-ethnic residents (Arnold 1989). This process of chain migration (Arnold 1989; Nee and Sanders 2001) means that immigrants initially come to the U.S. with strong social network ties. These ties are particularly important as immigrants adjust to a new culture and can be drawn on in times of need. Immigrants are more likely than the native-born to both utilize and provide instrumental supports such as economic exchanges and co-residence with extended kin (Glick 1999, 2000). Extended families can also protect health by providing positive social roles, discouraging risky behavior and violence, and protecting against disease and mortality (Umberson 1987; Waite 2006). But family and social ties might weaken as immigrants become part of the broader community (Nee, Sanders, and Sernau 1994; Alba and Nee 2003), with the unintended consequence that their health declines as well. Given that women are more tightly bound to family during the process of migration and resettlement (Hondagneu-Sotelo 1994; Donato and Patterson 2004), family characteristics might be more protective for women against the health declines that accompany acculturation.

Second, both male and female Mexican immigrants have high rates of employment (Larsen 2004), which provides both income and integration into the community. But Mexican immigrants may be more likely to work in low status or dangerous occupations than their U.S.

born counterparts, and Mexican immigrants have lower levels of education than U.S born Mexican Americans (Everett et al. 2008). Thus, adjusting for work and socioeconomic factors may actually increase the impact of acculturation on health, because earned income is lower, and working conditions are likely poorer, among Mexican immigrants. These relationships are also gendered, in that Mexican migrant women are less likely to be employed, and when they are working, they engage in different types of work than Mexican migrant men (Kritz and Gurak 2004). Studies have also shown that male migrants are negatively selected on education because the most educated have better opportunities in Mexico, while women are positively selected on education (Kanaiaupuni 2000; Parrado and Flippen 2005).

Third, Mexican Americans, especially immigrants, have relatively low levels of access to and utilization of health care (Riedel 1998; Ku and Matani 2001). The combination of jobs that provide poor quality health benefits and lower earnings leave many Mexican immigrants with greater financial barriers to health care access and utilization, even among those who are citizens or who have children that are citizens (Riedel 1998). Those who have less access to or utilization of health care services may be unaware of some chronic health conditions that have relatively mild symptoms (e.g., hypertension, hypercholesterolemia, early stages of diabetes), which, if left untreated, can lead to disability or other expensive outcomes. Over time, the probability that immigrants come into contact with the health care system increases, and their health may appear to decline simply because previously undiagnosed problems are brought to their attention. Prior research has consistently shown that men are less likely than women to interact with the health care system (Gorman and Read 2007), and so immigrant women may be more likely to be diagnosed with health problems than men.

Fourth, the cultural values of the sending countries buffer immigrants from the adverse

effects of U.S. lifestyle by promoting healthier behaviors (e.g., nutritious diets and lower levels of smoking, drinking, and drug use). But, over time, immigrants begin to undertake less healthy behaviors and increase their levels of smoking and drinking (Balcazar, Peterson, and Cobas 1996; Abraido-Lanza, Chao, and Florez 2005; Acevedo-Garcia et al. 2005), and their body mass index rises (Abraido-Lanza et al. 2005; Antecol and Bedard 2006). Frequency of exercise, however, appears to increase with acculturation (Evenson, Sarmiento, and Ayala 2004; Abraido-Lanza et al. 2005; Jonnalagadda and Diwan 2005). Yet, as discussed above, women appear to experience greater health behavior changes with acculturation than men, and so adjustment for these characteristics might explain a larger portion of the acculturation-health relationship for women.

Finally, some, but not all studies find that immigrants have better mental health and lower levels of depression than U.S. born Mexican Americans. On one hand, the least acculturated immigrants may benefit from strong social ties that reduce stress and improve mental health (Rogler, Cortes, and Malgady 1991). Some find that first-generation immigrants experience less depression and greater well-being compared to the U.S. born, even when adjusting for demographic and family factors (Escobar, Nervi, and Gara 2000; Harker 2001). Others find that increased acculturation is associated with a higher risk of depression (Shen and Takeuchi 2001; Cuellar, Bastida, and Braccio 2004), and that low levels of English usage are associated with poorer emotional health (Angel, Buckley, and Finch 2001; Finch, Frank, and Vega 2004). On the other hand, the stress associated with moving to a new country may be damaging to mental health, and greater acculturation may come with improved familiarity with surroundings, new friends and family ties, and improved mental health and lower levels of depression (Rogler et al. 1991; Rogler 1994; Angel, Buckley, and Sakamoto 2001; González, Haan, and Hinton 2001;

10

Franzini and Fernandez-Esquer 2004; Miller et al. 2006). One study of poor Latino women revealed that anxiety attacks were highest among women who spoke Spanish as their primary language, and depression was greatest among women with traditional cultural beliefs (Cordero and Kurz 2006). Since women are more likely to express emotional upset through depressive mood and anxiety disorders than men (Rosenfeld 1999; Keyes and Goodman 2006), accounting for psychological health might be more salient for explaining the acculturation-physical health connection for Mexican women.

In sum, gender shapes migration, incorporation, and health processes, but prior research has not systematically addressed the link between gender, acculturation, and health. This oversight partially reflects the lack of available data—most studies on gender differences in health rely on surveys that permit adjustment for race and ethnicity, but often contain too few members of individual minority and nativity groups to sustain disaggregated analyses (Read and Gorman 2006). Our study advances prior work by using multiple years of a nationally representative U.S. dataset that provides large numbers of U.S. and foreign born Mexicans, includes several variables that tap into acculturation, and offers numerous variables that might mediate the relationship between acculturation and health.

DATA AND METHODS

Data

We use the 1998-2006 waves of the National Health Interview Survey (NHIS), an annual, cross-sectional survey conducted by the National Center for Health Statistics and the Centers for Disease Control and Prevention, and administered by the U.S. Census Bureau (National Center for Health Statistics various years). The NHIS data oversample blacks and Hispanics, and are

nationally representative of the non-institutionalized U.S. population. The NHIS conducts face-to-face interviews about the demographic, socioeconomic, and health characteristics of all members of sampled households. One sample adult (aged 18 and above) is randomly selected from each household for inclusion in the Sample Adult File, and asked a detailed set of questions about health status, health care, and health behaviors. After restricting the sample to those who identify as Mexican or Mexican American, and keeping only those observations with valid information on our independent measures, our sample size is 23,018.[2]

Dependent Measures

Our primary dependent variable is a sum of eight life-threatening or very costly medical conditions. Respondents in the NHIS were asked a series of yes/no questions about whether they had ever been told by a doctor or other health professional that they had hypertension, heart disease (coronary artery disease, angina pectoris, or any other heart condition or disease), stroke, diabetes, emphysema, cancer (excluding skin cancer), asthma, or ulcer. The sum of the items provides a count of the number of conditions, offers a broad summary of respondents' health, and indicates their burden of co-morbidity. Because the conditions listed may have different implications for long term disability or mortality, and have different prevalence rates for men and women, we also examine hypertension, heart disease, and diabetes separately—three health conditions that are prominent contributors to disability and mortality in the United States.

Independent Measures

Our key predictor is acculturation. We build on the work of Lopez-Gonzalez, Aravena, and Hummer (2005) and create a measure of acculturation that draws on four pieces of

---

[2] The percent missing on most variables was less than 3%, with the exception of family income-to-poverty ratio, where 24 percent of cases had missing values. Thus, we did not drop cases with missing information for income, and instead use a single, conditional mean imputation that introduced a stochastic component into the imputed values to better reflect the variability found among the non-imputed cases (see Gelman and Hill 2007).

information: nativity (US born vs. foreign born); duration of US residence for foreign born respondents (under 10 years vs. over 10 years); citizenship status (citizen vs. non-citizen); and language of interview (English only vs. any Spanish). Our measure adds language usage to the measure used by Lopez-Gonzalez, Aravena, and Hummer (2005), because we focus specifically on Mexican migrants. This is an important addition, given the central role the language acquisition plays in shaping the lives of U.S. immigrants. According to Boyd (1992: 307): "Language is a key variable affecting the SES position of all immigrants….language represents social and human capital, and it shapes labor market experiences. Knowing the language of the host society enhances the ability to obtain information about the new society: information about schools, health care, social programs, housing, and employment opportunities." Given that Mexican migrant women have poorer English skills than Mexican migrant men (Boyd 1992), language ability might significantly shape differences in men's and women's health status.

This variable has eight categories: (1) foreign born, under 10 years of residence in the US, non-citizen, and completed at least part of the interview in Spanish (n=3,247); (2) foreign born, under 10 years US of residence, non-citizen, and spoke only English during the interview (n=646); (3) foreign born, under 10 of residence, and a US citizen (n=154)[3]; (4) foreign born, 10 years or more or residence, non-citizen, and completed at least part of the interview in Spanish (n=3,808); (5) foreign born, 10 years or more of residence, non-citizen, and spoke only English during the interview (n=1,414); (6) foreign born, 10 years or more of residence, US citizen, and completed at least part of the interview in Spanish (n=1,522); (7)=foreign born, 10 years or more of residence, US citizen, and spoke only English during the interview (n=1,513); and (8) US born (the reference, n=10,714).

---

[3] Due to the small cell size, we cannot distinguish between English and Spanish usage during the interview for foreign born respondents who have lived in the US for less than 10 years but are US citizens.

All analyses are stratified by gender, and adjust for age in years at the time of interview. Marital status is coded categorically as married and living with spouse (reference), married but not living with spouse, cohabiting, divorced or separated, widowed, or never married. Two additional dummy variables indicate whether there are any children under the age of five (1=yes, 0=no) or seniors aged 65 and older (1=yes, 0=no) living in the home.

Employment status is coded categorically as currently working in a low status occupation (reference), currently working in a high status occupation, currently working in a dangerous occupation, homemaker, student, retired, not working because of disability, and not working for some other reason.[4] Education is measured continuously as the number of years of schooling completed and ranges from no formal schooling (coded as 0) to those who have a Ph.D., M.D., or J.D. degree (coded as 21). The income-to-poverty ratio indicates the respondents' family income as a proportion of the income level that the U.S. federal government has set as the poverty line—those living at or below the poverty level were coded as 1, and those living above the poverty level were coded as 0.

We measure access to care categorically as insured and has a usual place to go for medical care (reference), not insured or no usual place for care, and not insured and no usual place for care. Utilization of medical care indicates whether respondents last saw a doctor about their own health within the last year (coded as 0), or more than one year ago (coded as 1). We construct a measure of financial barriers to medical care during the last year, coded as 1 if the respondent had delayed medical care, did not receive medical care, or did not receive prescribed medications for financial reasons during the last 12 months, and coded as 0 otherwise ($\alpha = .70$).

---

[4] High status occupations include: executive, administrative, and managerial; professional specialty; technicians and related support; and sales occupations. Low status occupations include: administrative support; private household; service; farming, forestry, and fishing; precision production, craft, and repair; operators, fabricators, and laborers; and transportation and material moving occupations. Dangerous occupations include: protective service; military; and handlers, equipment cleaners, helpers, and laborers.

Psychological distress is assessed with six questions that ask: "During the past 30 days, how often did you feel [symptom]?" The symptoms include "so sad that nothing could cheer you up," "nervous," "restless or fidgety," "hopeless," "that everything was an effort," and "worthless." Each item ranges from 1 (none of the time) to 5 (all of the time); we take their average ($\alpha = .88$). This index has been previously validated with a two-stage clinical reappraisal survey, effectively distinguishes among cases and non-cases with DSM-IV disorders in the community, and is becoming widely used in population health surveys (Kessler et al. 2002).

Smoking status is coded categorically as current smokers who smoke every day (reference), current smokers who smoke only some days, former smokers, and those who have never smoked. Drinking frequency is coded categorically as lifetime abstainer (reference); former drinker; and current drinkers who drink 1-2 drinks, 3-4 drinks, or 5+ drinks per occasion. Body Mass Index (BMI) is grouped into four categories (World Health Organization 1995): underweight (BMI < 18.5), normal weight ($18.5 \leq$ BMI < 25.0, reference), overweight ($25.0 \leq$ BMI < 30.0), and obese (BMI $\geq$ 30.0). BMI is not a health behavior per se, but it results directly from dietary, physical activity, and smoking practices. Physical activity is measured as the averaged response to three questions ($\alpha = .66$) that asked about participation in (a) vigorous activities for at least 10 minutes that cause heavy sweating or large increases in breathing or heart rate, (b) light or moderate activities for at least 10 minutes that caused only light sweating or a slight to moderate increase in breathing or heart rate, and (c) physical activities specifically designed to strengthen muscles such as lifting weights or doing calisthenics. Responses ranged from 1=never, 2=less than once a week, 3=1-2 times per week, 4=3-4 times per week, and 5=5+ times per week.

Analysis

We use negative binomial regression to model the number of health conditions, because the dependent variable is marked by over-dispersion. We use logistic regression when modeling hypertension, coronary heart disease, and diabetes separately. All analyses (including descriptive statistics and regression models) are weighted to represent the non-institutionalized U.S. population, and use the "svy" commands in Stata to estimate Taylor linearized standard errors that account for the complex sampling frame used by the NHIS (StataCorp 2007; National Center for Health Statistics various years). We use the method described by Korn and Graubard (1999) to estimate our standard errors appropriately when pooling data across sampling frames, as recommended by the NCHS (2007).

RESULTS

Table 1 presents the weighted characteristics of the sample of Mexican American men and women. The acculturation status variable shows that a slightly lower percentage of women (52.4%) than men (58.2%) are immigrants, and that foreign born individuals exhibit relatively low levels of acculturation. About 15% of respondents (male or female) are non-citizens who have resided in the U.S. for less than 10 years and who spoke at least some Spanish during the interview, and another 16% of the respondents are non-citizens who have lived in the U.S. for 10 or more years and who spoke at least some Spanish during the interview. In contrast, relatively few immigrants are citizens or spoke only English during the interviews.

(Table 1 about here)

With the exception of education level, men and women differ significantly on every measure in Table 1. Compared to men, women are older, more likely to report that they live with children under the age of 5 or seniors aged 65 and older, and are more likely to be

divorced/separated, or widowed. Women are also less likely to work in low status or dangerous occupations than men, and 32% are homemakers, whereas 85% of men work outside of the home. Both men and women average less than the 12 years of education, which is usually associated with a high school degree. Despite their higher levels of poverty, women report greater access to and utilization of medical care services than men, although they also report greater financial barriers to medical care. Over 57% of women are insured and have a usual place for care, compared to only 46% of men. Only 22% of women have not seen a doctor during the last year, compared to 44% of men.

Women also smoke, drink, and exercise at lower rates than men. The prevalence of overweight and obesity is very high among both men and women—62% of women and 71% of men are overweight or obese—but men are more likely to be overweight and women are more likely to be obese. Women report higher levels of psychological distress than men, although their greater number of medical conditions and higher prevalence of hypertension, heart disease, and diabetes might partially reflect their greater likelihood of having seen a doctor in the past year.

Table 2 presents odds ratios from negative binomial regression models for the number of medical conditions among Mexican American women and men. The age-adjusted model for Mexican American women shows that all foreign born women report fewer conditions than U.S. born women. For example, those who are foreign born, have lived less than 10 years in the U.S., are non-citizens, and spoke any Spanish during the interview have 40% fewer conditions than U.S. born Mexican Americans. Mexican American men exhibit a similar pattern, but the effect is significantly stronger (p-value=.003).[5] The fully-adjusted models further control for family characteristics, socioeconomic status, medical care, health behaviors, and psychological distress.

---

[5] We compared the coefficients for women and men by pooling our sample and testing for an interaction between gender and acculturation status. The p-values in the remainder of Table 2 (and Tables 3 through 5) are calculated in the same fashion.

Adjusting for these characteristics reduces the relationship between acculturation and medical conditions for both men and women, although the protective influence of acculturation remains significantly stronger among men (p=.006).

(Table 2 about here)

The p-values for the tests of differences in the relationship between the control variables and medical conditions for women and men show that, in general, the coefficients are not significantly different. The reported number of medical conditions is significantly higher among those who are older, retired or unable to work, former smokers, obese, or who report financial barriers to obtaining medical care or have higher levels of psychological distress. Lower numbers of reported medical conditions are associated with diminished contact with the medical care system – an effect that likely reflects their reduced opportunity to receive a diagnosis of a medical condition. The relationship between education and medical conditions is significantly different for men and women, and is associated with a lower number of reported conditions among women, but a higher number among men.

Negative binomial models for the number of medical conditions provide insight into the total burden of disease, but they may obscure important differences among specific conditions. Thus, we examine hypertension, heart disease, and diabetes separately on Tables 3 through 5, and several patterns emerge when we compare findings across these tables. First, the relationship between acculturation and each medical condition is stronger for men than women in the age-adjusted models. For example, compared to U.S. born women, women who are foreign born, have lived in the U.S. for less than 10 years, are non-citizens, and who spoke any Spanish during the interview have 11% lower odds of reporting hypertension, 16% lower odds or reporting heart disease, and 39% lower odds or reporting diabetes. But among men, that same level of

acculturation is associated with 67% lower odds of hypertension, 49% lower odds of heart disease, and 77% lower odds of diabetes, compared to U.S. born men.

(Tables 3, 4, and 5 about here)

Second, the mediators explain a large share of the association between the acculturation index and each medical condition, although the acculturation variables are still more strongly associated with lower odds of hypertension and heart disease for men than for women. The pattern varies for each medical condition. Table 3 shows that for hypertension, the most acculturated women (lived in the U.S. for 10 or more years, citizens, and spoke only English during the interview) were 36% less likely to have acculturation than U.S. born Mexican American women. Among men, only those who have lived in the US for more than 10 years, who are non-citizens, and who spoke some Spanish during the interview experience a lower odds of hypertension (odds ratio = .75).

Table 4 shows that when adjusting for all of the mediators, there is no significant relationship between acculturation and heart disease among men in the fully-adjusted models. But, some foreign born women have significantly *increased* odds of reporting heart disease after adjusting for the mediators, although this relationship varies by language of interview. For women who spoke only English during the interview, they remain less likely than US born Mexican American women to have heart disease. But women who spoke any Spanish have higher odds of reporting heart disease.

For diabetes, Table 5 shows that after adjusting for all of the mediators, the acculturation variables are not significantly associated with diabetes among women, and the association between acculturation and diabetes is greatly attenuated among men. Table 5 shows that there is no association between acculturation and diabetes in the fully-adjusted model for women, but the

least acculturated men are 55 percent less likely to have diabetes.

Finally, the mediators show some differential relationships for men and women for each of the three conditions, but some of this variation may be due to the relatively low prevalence of any single condition (see Table 1). Nevertheless, consistent with the results from the negative binomial models for the total number of conditions (see Table 2), the impact of education is significantly different for men than for women for all three conditions examined here. Specifically, education is positively associated with hypertension, heart disease, and diabetes for men, but these associations are negative for women. No other mediator shows significant differences between men and women across the three medical outcomes examined here. Again, this finding underscores the importance of bringing a gender lens to examinations of acculturation and health, as studies show that Mexican women are more likely to positively self-select on education than Mexican men (Kanaiaupuni 2000; Parrado and Flippen 2005). As a result, not only might their educational achievements motivate women to seek out health care, as they may be more able capitalize on the health-benefits of their education in the United States, it is likely that education influences health through different mechanisms, such as English language ability – a key factor shaping immigrants' ability to access the health care system and follow medical advice (Boyd 1992).

CONCLUSION

Social science and health scholars of various stripes have increasingly recognized the need to bring a gender lens to bear in their research. Thus, our first research question asked whether the relationship between acculturation and health was different for Mexican American men and women. Consistent with our expectations, we found gender differences in the

relationship between acculturation and health for total number of conditions, as well as for hypertension and heart disease separately. Specifically, men reported fewer medical conditions than women at each level of acculturation. Mexican American men and women migrate to the US for different reasons (Donato et al. 2006), and our results suggest that the process of acculturation into US society may also differ for men and women, in ways that have important implications for health.

Our second research question asked whether the mediators of the acculturation-health relationship differed for Mexican American men and women. Education was the only mediator that had a different relationship with both the total number of medical conditions and the three conditions we examined separately. Higher levels of education were modestly associated with fewer conditions among women, but a modestly higher numbers of conditions among men. The worse health among more educated men contrasts with prior research that finds that more education is associated with better health (Link and Phelan 1995; Rogers, Hummer, and Nam 2000; Mirowsky and Ross 2003), and might possibly result from differences in educational attainment among cohorts of male Mexican immigrants, the negative selection of Mexican American men who immigrate into the US, or the constraints on finding work and adequate health care among Mexican immigrants regardless of their education. Further, the average level of education among Mexican Americans immigrants is far below a high school degree, and is only just above a high school degree for recent cohorts of U.S. born Mexican Americans (Everett et al. 2008).

The remaining mediators have similar relationships with the medical conditions for Mexican American men and women, with some inconsistent exceptions when examining specific conditions. Although our data are not well suited to assess the causal impact of these mediators

on health outcomes, they highlight factors that differentiate the most and the least acculturated, and they suggest possible domains that policies might target to maintain the relatively good health of Mexican immigrants. Because most of the mediators had similar relationships with the medical conditions among men and women, many policy interventions may be similarly effective at improving the health of Mexican American men and women. Family structure, socioeconomic status, financial barriers to health care, health behaviors, and mental health are each associated with the number of medical conditions among Mexican American men and women. Policies might use various levers to influence the health of Mexican Americans, such as strengthening efforts at family reunification, improving employment conditions and opportunities, or providing interventions to improve health behaviors and lose weight. Further, many of those interventions may improve the health of other race/ethnic groups as well. Despite the low levels of health care access and utilization among Mexican Americans, and especially immigrants (Riedel 1998; Ku and Matani 2001), health care alone will not close disparities in medical conditions.

Our analyses have several strengths including a large, nationally representative sample of Mexican American men and women; a detailed measure of acculturation that builds on the work of Lopez-Gonzalez and colleagues (2005), and that incorporates information about citizenship, language usage, and duration in the US; a large number of potential mediators of the acculturation-health relationship; and a focus on medical conditions rather than more global— but also more ambiguous—measures of self-rated health. Although self-rated health may provide a more global assessment of health, it is ultimately a subjective assessment, and the meaning of self-rated health appears to change with language use and time spend in the U.S., making it an imperfect measure for research on acculturation (Shetterly et al. 1996; Finch et al. 2002).

Nevertheless, our study is not without limitations. First, like most prior research, our study cannot assess the impact of selective migration into and out of the US on the health of Mexican Americans. The least successful and least healthy immigrants may quickly return to Mexico, thereby inflating the apparent benefits of low levels of acculturation (Elo et al. 2004; Palloni and Arias 2004). In turn, the remaining immigrants may appear to be relatively healthier. But, we find that those immigrants who have been in the U.S. for more than 10 years still have significantly better health than US born Mexican Americans, even after adjusting for a variety of factors that have likely changed after immigration (e.g., access to health care, health behaviors) or that may be correlated with selection into migration into the U.S. (e.g., education).

A second and related limitation is that we rely on cross-sectional data to assess the relationship between acculturation and health. Longitudinal data would allow us to partially overcome issues of selective migration (and to investigate whether those selective forces work differently for men and women), and might help us to more clearly identify the causal impact of the mediators on medical conditions. But there are few longitudinal studies available that examine Mexican Americans both before and after they migrate to the US, with comparable data on U.S. born Mexican Americans. Future work could use data from multiple sources such as the Mexican Migration Project, the Mexican Health and Aging Study, and the National Health Interview Survey to provide a more comprehensive picture of the selective forces that shape men's and women's migration and health.

Although the acculturation of Mexican immigrants into U.S. society might help immigrants find better jobs, attain greater acceptance into US society, and ultimately, become more successful, that process also brings along the risk of worsening health. We find that greater levels of acculturation are associated with increased numbers of medical conditions that are

prevalent in the population and expensive to treat or maintain—factors that may lead to increased burdens both on immigrants and the US healthcare system. (Notably, contrary to much discussion in the popular media, it is US born Mexican Americans, not recent immigrants, who have more medical conditions and are likely to require more resources to manage those conditions.)

In sum, there are important gender differences in the relationship between acculturation and health. Some of those differences result from different family characteristics, socioeconomic status, medical care, health behaviors, and mental health among Mexican American men and women, although the impact of each of those sets of covariates is similar for men and women. Nevertheless, important gender differences in the relationship between acculturation and health persist even after adjusting for various mediators. Future work must further endeavor to uncover the origin of those differences, while recognizing the importance of gender for understanding the acculturation-health relationship.

REFERENCES

Abraido-Lanza A. F., Chao M. T., and Florez K. R. (2005). "Do Health Behaviors Decline with Greater Acculturation?: Implications for the Latino Mortality Paradox." *Social Science and Medicine* 61:1243-1255.

Acevedo-Garcia D., Pan J., Jun H.-J., Osypuk T. L., and Emmons K. M. (2005). "The Effect of Immigrant Generation on Smoking." *Social Science and Medicine* 61:1223-1242.

Akresh I. R. (2007). "Dietary Assimilation and Health among Hispanic Immigrants to the United States." *Journal of Health and Social Behavior* 48:404-417.

Alba R. and Nee V. (2003). *Remaking the American Mainstream: Assimilation and Contemporary Immigration*. Cambridge: Harvard University Press.

Amaro H. and de la Torre A. (2002). "Public Health Needs and Scientific Opportunities in Research on Latinas." *American Journal of Public Health* 92:525-529.

Amaro H., Whitaker R., Coffman G., and Heeren T. (1990). "Acculturation and Marijuana and Cocaine Use: Findings from HHANES 1982-84." *American Journal of Public Health* 80:54-60.

Angel J. L., Buckley C. J., and Finch B. K. (2001). "Nativity and Self-Assessed Retirement Age Hispanics and Non-Hispanic Whites." *International Migration Review* 35:784-804.

Angel J. L., Buckley C. J., and Sakamoto A. (2001). "Duration or Disadvantage? Exploring Nativity, Ethnicity, and Health in Midlife." *Journals of Gerontology: Social Sciences* 56B:S275-284.

Antecol H. and Bedard K. (2006). "Unhealthy Assimilation: Why Do Immigrants Converge to American Health Status Levels?" *Demography* 43:337-360.

Arnold F. (1989). "Unanswered Questions About the Immigration Multiplier." *International Migration Review* xxiii:889-892.

Balcazar H., Peterson G., and Cobas J. A. (1996). "Acculturation and Health-Related Risk Behaviors among Mexican American Pregnant Youth." *American Journal of Health Behavior* 20:425-433.

Bird C. E. and Rieker P. P. (2008). *Gender and Health: The Effects of Constrained Choices and Social Policies*. New York: Cambridge University Press.

Boyd M. (1992). "Gender Issues in Immigration and Language Fluency." Pp. 305-372 in *Immigration, Language, and Ethnicity: Canada and the United States*, edited by B. R. Chiswick. Washington, DC: The AEI Press.

Boyd M. and Grieco E. (2003), "Women and Migration: Incorporating Gender into International Migration Theory", Retrieved February 26, 2008 from Migration Information (http://www.migrationinformation.org/Feature/display.cfm?id=106)

Caetano R. and Mora M. E. M. (1988). "Acculturation and Drinking among People of Mexican Descent in Mexico and the United States." *Journal of Studies on Alcohol* 49:462-471.

Cho Y., Frisbie W. P., Hummer R. A., and Rogers R. G. (2004). "Nativity, Duration of Residence, and the Health of Hispanic Adults in the United States." *International Migration Review* 38:184-211.

Cho Y. and Hummer R. A. (2001). "Disability Status Differentials across Fifteen Asian and Pacific Islander Groups and the Effect of Nativity and Duration of Residence in the U.S." *Social Biology* 48:171-195.

Cordero A. and Kurz B. (2006). "Acculturation and the Mental Health of Latina Women in the Women, Infant, and Children Program." *Affilia: Journal of Women and Social Work* 21:46-58.

Cuellar I., Bastida E., and Braccio S. M. (2004). "Residency in the United States, Subjective Well-Being, and Depression in an Older Mexican-Origin Sample." *Journal of Aging and Health* 16:447-466.

Curran S. and Saguy A. (2001). "Migration and Cultural Change: A Role for Gender and Social Networks." *Journal of International Women's Studies* 2:54-77.

Curran S. R., Shafer S., Donato K. M., and Garip F. (2006). "Mapping Gender and Migration in Sociological Scholarship: Is It Segregation or Integration?" *International Migration Review* 40:199-223.

Donato K. M., Gabaccia D., Holdaway J., Manalansan M., and Pessar P. R. (2006). "A Glass Half Full? Gender in Migration Studies." *International Migration Review* 40:3-26.

Donato K. M. and Patterson E. (2004). "Women and Men on the Move: Undocumented Border Crossing." Pp. 111-130 in *Crossing the Border: Research from the Mexican Migration Project*, edited by J. Durand and D. S. Massey. New York: Russell Sage Foundation.

Elo I. T., Turra C. M., Kestenbaum B., and Ferguson B. R. (2004). "Mortality among Elderly Hispanics in the United States: Past Evidence and New Results." *Demography* 41:109-128.

Escobar J. I., Nervi C. H., and Gara M. A. (2000). "Immigration and Mental Health: Mexican Americans in the United States." *Harvard Review of Psychiatry* 8:64-72.

Evenson K. R., Sarmiento O. L., and Ayala G. X. (2004). "Acculturation and Physical Activity among North Carolina Latina Immigrants." *Social Science and Medicine* 59:2509-2522.

Everett B. G., Rogers R. G., Krueger P. M., and Hummer R. A. (2008). "Trends in Educational Attainment by Sex, Race/Ethnicity, and Nativity in the United States, 1989-2005." *Paper to be presented to the annual meetings of the Population Association of America*.

Finch B. K., Frank R., and Vega W. A. (2004). "Acculturation and Acculturation Stress: A Social-Epidemiological Approach to Mexican Migrant Farmworkers' Health." *International Migration Review* 38:236-262.

Finch B. K., Hummer R. A., Reindel M., and Vega W. A. (2002). "Validity of Self-Rated Health among Latino(a)S." *American Journal of Epidemiology* 155:755-759.

Franzini L. and Fernandez-Esquer M. E. (2004). "Socioeconomic, Cultural, and Personal Influences on Health Outcomes in Low Income Mexican-Origin Indiviudals in Texas." *Social Science and Medicine* 59:1629-1646.

Gelman A. and Hill J. (2007). *Data Analysis Using Regression and Multilevel/Hierarchical Models*. New York: Cambridge University Press.

Gilbert M. J. (1991). "Acculturation and Changes in Drinking Patterns among Mexican-American Women." *Alcohol Health and Research World* 15:234-238.

Glick J. E. (1999). "Economic Support from and to Extended Kin: A Comparison of Mexican Americans and Mexican Immigrants." *International Migration Review* 33:745-765.

—. (2000). "Nativity, Duration of Residence and the Life Course Pattern of Extended Family Living in the USA." *Population Research and Policy Review* 19:179-198.

González H. M., Haan M. N., and Hinton L. (2001). "Acculturation and the Prevalence of Depression in Older Mexican Americans: Baseline Results of the Sacramento Area Latino Study on Aging." *Journal of the American Geriatrics Society* 49:948-953.

Gorman B. K. and Read J. G. (2006). "Gender Disparities in Adult Health: An Examination of Three Measures of Morbidity." *Journal of Health and Social Behavior* 47:95-110.

—. (2007). "Why Men Die Younger Than Women." *Geriatrics and Aging* 10:179-181.

Harker K. (2001). "Immigrant Generation, Assimilation, and Adolescent Psychological Well-Being." *Social Forces* 79:969-1004.

Hill K. and Wong R. (2005). "Mexico-US Migration: Views from Both Sides of the Border." *Population and Development Review* 31:1-18.

Hondagneu-Sotelo P. (1994). *Gendered Transitions: Mexican Experience of Immigration*. Berkeley, CA: University of California Press.

—. (1999). "Gender and Immigration: A Retrospective and Introduction." Pp. 3-19 in *Gender and U.S. Immigration: Contemporary Trends*, edited by P. Hondagneu-Sotelo. Berkeley, CA: University of California Press.

—. (2001). *Doméstica: Immigrant Workers Cleaning and Caring in the Shadows of Affluence*. Berkeley, CA: University of California Press.

Hondagneu-Sotelo P. and Cranford C. (1999). "Gender and Migration." Pp. 105-126 in *Handbook of the Sociology of Gender*, edited by J. S. Chafetz. New York: Klewer Academic/Plenum Publishers.

Iannotta J. G. (2002). "Emerging Issues in Hispanic Health: Summary of a Workshop. National Research Council: Committee on Population, Division of Behavioral and Social Sciences and Education. ." Washington, DC: The National Academies Press.

Jasso G., Massey D. S., Rozenzweig M. R., and Smith J. P. (2004). "Immigrant Health: Selectivity and Acculturation." Pp. 227-266 in *Critical Perspectives on Racial and Ethnic Differences in Health in Later Life*, edited by N. B. Anderson, R. A. Baulatao, and B. Cohen. Washington DC: National Academies Press.

Jonnalagadda S. S. and Diwan S. (2005). "Health Behaviors, Chronic Disease Prevalence and Self-Rated Health of Older Asian Indian Immigrants in the U.S." *Journal of Immigrant Health* 7:75-83.

Kanaiaupuni S. M. (2000). "Reframing the Migration Question: An Analysis of Men, Women, and Gender in Mexico." *Social Forces* 78:1311-1347.

Kessler R. C., Andrews G., Colpe L. J., Hiripi E., Mroczek D. K., Normand S. L. T., Walters E. E., and Zaslavsky A. M. (2002). "Short Screening Scales to Monitor Population Prevalences and Trends in Non-Specific Psychological Distress." *Psychological Medicine* 32:959-976.

Keyes C. L. M. and Goodman S. H. (2006). "Women and Depression: A Handbook for the Social, Behavioral, and Biomedical Sciences." New York: Cambridge University Press.

Korn E. L. and Graubard B. I. (1999). *Analysis of Health Surveys*. New York: Wiley.

Kritz M. M. and Gurak D. T. (2004). *Immigration and a Changing America*. New York: Russell Sage Foundation and Population Reference Bureau.

Ku L. and Matani S. (2001). "Left Out: Immigrants' Access to Health Care and Insurance." *Health Affairs* 20:247-256.

Larsen L. (2004). "The Foreign-Born Population in the United States: 2003."Current Population Reports, U.S. Bureau of the Census.

Link B. G. and Phelan J. (1995). "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior* Extra Issue:80-94.

Lopez-Gonzalez L., Aravena V. C., and Hummer R. A. (2005). "Immigrant Acculturation, Gender, and Health Behavior: A Research Note." *Social Forces* 48:581-593.

Markides K. S. and Coreil J. (1986). "The Health of Southwestern Hispanics: An Epidemiological Paradox." *Public Health Reports* 101:253-265.

Markides K. S. and Eschbach K. (2005). "Aging, Migration, and Mortality: Current Status of Research on the Hispanic Paradox." *Journals of Gerontology: Social Sciences* 60B:S68-75.

Markides K. S., Ray L. A., Stroup-Benham C. A., and Trevino F. (1990). "Acculturation and Alcohol Consumption in the Mexican American Population of the Southwestern United States: Findings from HHANES 1982-84." *American Journal of Public Health* 80:42-46.

Martin P. and Midgeley E. (2006). "Immigration: Shaping and Reshaping America. Revised and Updated 2nd Edition." *Population Bulletin* 61.

Miller A. M., Sorokin O., Wang E., Feetham S., Choi M., and Wilbur J. (2006). "Acculturation, Social Alienation, and Depressed Mood in Midlife Women from the Former Soviet Union." *Research in Nursing and Health* 29:134-146.

Mirowsky J. and Ross C. E. (2003). *Education, Social Status, and Health*. Hawthorne, NY: Aldine De Gruyter.

National Center for Health Statistics. (2007), "2006 National Health Interview Survey (NHIS) Public Use Data Release, NHIS Survey Description"*,* Retrieved December, 13 2007 from (ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NHIS/2006/srvydesc.pdf)

—. (various years). *1985-2006 National Health Interview Surveys: Core Data*. Hyattsville, MD: US Department of Health and Human Services.

Nee V. and Sanders J. M. (2001). "Understanding the Diversity of Immigrant Incorporation: A Forms-of-Capital Model." *Ethnic and Racial Studies* 24:386-411.

Nee V., Sanders J. M., and Sernau S. (1994). "Job Transitions in an Immigrant Metropolis: Ethnic Boundaries and the Mixed Economy." *American Sociological Review* 59:849-872.

Palloni A. and Arias E. (2004). "Paradox Lost: Explaining the Hispanic Adult Mortality Advantage." *Demography* 41:385-415.

Parrado E. A. and Flippen C. A. (2005). "Migration and Gender among Mexican Women." *American Sociological Review* 70:606-632.

Pessar P. R. (1999a). "Engendering Migration Studies: The Case of New Immigrants in the United States." Pp. 20-42 in *Gender and U.S. Immigration: Contemporary Trends*, edited by P. Hondagneu-Sotelo. Berkeley, CA: University of California Press.

—. (1999b). "The Role of Gender, Households, and Social Networks in the Migration Process: A Review and Appraisal." Pp. 53-70 in *The Handbook of International Migration: The American Experience*, edited by C. Hirschman, J. Dewind, and P. Kasinitz. Washington DC: Russell Sage Foundation.

Ramirez R. R. and de la Cruz G. P. (2003). "The Hispanic Population in the United States: March 2002." *Current Population Reports* P20-545:U.S. Census Bureau.

Read J. G. and Gorman B. K. (2006). "Gender Inequalities in U.S. Adult Health: The Interplay of Race and Ethnicity." *Social Science & Medicine* 62:1045-1065.

Riedel R. L. (1998). "Access to Health Care." Pp. 101-124 in *Handbook of Immigrant Health*, edited by S. Luoe. New York: Springer.

Rieker P. P. and Bird C. E. (2000). "Sociological Explanations of Gender Differences in Mental and Physical Health." in *Handbook of Medical Sociology*, edited by C. E. Bird, P. Conrad, and A. M. Fremont. Upper Saddle River, NJ: Prentice Hall.

Rogers R. G., Hummer R. A., and Nam C. (2000). *Living and Dying in the USA: Behavioral, Health, and Social Differentials of Adult Mortality*. New York: Academic.

Rogler L. H. (1994). "International Migration: A Framework for Directing Research." *American Psychologist* 49:701-708.

Rogler L. H., Cortes D. E., and Malgady R. G. (1991). "Acculturation and Mental Health Status among Hispanics." *American Psychologist* 46:585-597.

Rosenfeld S. (1999). "Gender, the Self, and Mental Health." Pp. 209-224 in *Handbook of the Sociology of Mental Health*, edited by C. S. Aneshensel and J. C. Phelan. New York: Klewer Academic/Plenum Publishers.

Sanez R. (2004). *Latinos and the Changing Face of America*. New York: Russell Sage Foundation and the Population Reference Bureau.

Shen B.-J. and Takeuchi D. T. (2001). "A Structural Model of Acculturation and Mental Health Status among Chinese Americans." *American Journal of Community Psychology* 29:387-418.

Shetterly S. M., Baxter J., Manson L. D., and Hamman R. F. (1996). "Self-Rated Health among Hispanic Vs. Non-Hispanic White Adults: The San Luis Valley Health and Aging Study." *American Journal of Public Health* 86:1798-1801.

StataCorp. (2007). *Stata Statistical Software: Release 10.0*. College Station, TX: Stata Press.

Umberson D. (1987). "Family Status and Health Behaviors: Social Control as a Dimension of Social Integration." *Journal of Health and Social Behavior* 28:306-319.

Vega W. A., Alderete E., Kolody B., and Aquilar-Gaxiola S. (1998). "Illicit Drug Use among Mexicans and Mexican Americans in California: The Effects of Gender and Acculturation." *Addiction* 93:1839-1850.

Verbrugge L. M. (1985). "Gender and Health: An Update on Hypotheses and Evidence." *Journal of Health and Social Behavior* 26:156-182.

Waite L. J. (2006). "Marriage and Family." Pp. 87-108 in *Handbook of Population*, edited by D. L. Poston and M. Micklin. New York: Springer.

World Health Organization. (1995). *Physical Status: The Use and Interpretation of Anthropometry [Who Technical Report Series 854]*. Geneva, Switzerland: World Health Organization.

Table 1. Weighted percentages and means (standard deviations) of sample covariates, by gender, for Mexican Americans living in the U.S., 1998-2006.

	Women (n = 12,612)	Men (n = 10,406)
Acculturation Status, %*		
Fborn, <10 years, non-citizen, any Spanish	14.7	15.9
Fborn, <10 years, non-citizen, only English	3.0	3.8
Fborn, <10 years, citizen	0.9	0.7
Fborn, 10+ years, non-citizen, any Spanish	15.8	16.8
Fborn, 10+ years, non-citizen, only English	4.9	8.0
Fborn, 10+ years, citizen, any Spanish	6.4	5.9
Fborn, 10+ years, citizen, only English	6.7	7.1
US Born	47.6	41.8
Age, mean***	38.9 (20.0)	37.6 (16.3)
Family Characteristics		
Marital status, % ***		
Married, spouse in home	58.9	58.1
Married, spouse not in home	1.4	4.1
Cohabiting	6.6	6.8
Divorced or separated	11.1	6.2
Widowed	5.1	1.1
Never married	16.8	23.8
Any children under age 5, %***	35.2	29.6
Any seniors aged 65 and older, %***	13.1	9.7
Socioeconomic Status		
Employment status, %***		
Currently working, low status occupation	34.3	61.6
Currently working, high status occupation	17.1	14.9
Currently working, dangerous occupation	1.6	8.5
Homemaker	31.6	0.7
Student	3.1	2.4
Retired	5.7	5.5
Not working, unable to work	5.0	4.6
Not working, other reason	1.7	1.7
Education level, mean	11.2 (5.9)	11.1 (5.2)
Poverty, %***	19.8	15.8
Medical Care		
Access to medical care, %***		
Insured with a usual place for care	57.3	46.4
Not insured or no usual place for care	24.2	24.5
Not insured and no usual place for care	18.5	29.1
Any financial barriers to medical care, %***	18.4	12.7
1+ years since last doctor visit, %***	22.4	44.2
Health Behaviors		
Smoking status, %***		
Never smoked	80.9	60.4
Current smoker, every day	6.1	12.4
Current smoker, some days	3.9	9.3
Former smoker	9.1	18.0

Table 1. Weighted percentages and means (standard deviations) of sample covariates, by gender, for Mexican Americans living in the U.S., 1998-2006.

	Women (n = 12,612)	Men (n = 10,406)
Alcohol use, %***		
Lifetime abstainer	49.9	20.5
Former drinker	11.9	12.6
Current drinker, 1-2 per occasion	26.3	28.6
Current drinker, 3-4 per occasion	8.3	18.5
Current drinker, 5+ per occasion	3.5	19.8
Body Mass Index, %***		
Underweight	1.6	0.6
Normal weight	36.0	27.9
Overweight	33.2	46.4
Obese	29.2	25.1
Frequency of exercise, mean***	1.7 (1.2)	1.9 (1.3)
Mental Health		
Psychological Distress, mean***	1.4 (0.9)	1.3 (0.6)
Medical Conditions[a]		
Number of medical conditions, mean***	0.5 (1.1)	0.4 (0.8)
Hypertension, %***	18.4	13.8
Heart Disease, %***	5.7	4.2
Diabetes, %**	7.8	6.5

[a]Sample size for medical conditions is slightly reduced due to missing cases (see Tables 2-5 for exact numbers).

**p ≤ .01, ***p ≤ .001. Wald tests provide the tests of significance while adjusting for the complex sampling frame and population weights used by the NHIS.

Table 2. Rate ratios from negative binomial regression for the number of medical conditions, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Acculturation Status						
Acculturation (ref: US born)						
Fborn, <10 years, non-citizen, any Spanish	.60***	.36***		.83*	.66***	
Fborn, <10 years, non-citizen, only English	.38***	.33***		.54**	.51**	
Fborn, <10 years, citizen	.34***	.47	.003	.46*	.66	.006
Fborn, 10+ years, non-citizen, any Spanish	.81***	.60***		.92	.79***	
Fborn, 10+ years, non-citizen, only English	.64***	.56***		.75***	.74**	
Fborn, 10+ years, citizen, any Spanish	.87*	.68***		.91	.81**	
Fborn, 10+ years, citizen, only English	.71***	.63***		.78***	.77*	
Age	1.04***	1.04***	.000	1.03***	1.03***	.875
Family Characteristics						
Marital status (ref: Married, spouse in home)						
Married, spouse not in home				1.25	.97	
Cohabiting				1.12	1.15	.656
Divorced or separated				1.00	1.00	
Widowed				.85**	.87	
Never married				.95	.98	
Any children under age 5				.93	.84**	.141
Any seniors aged 65 and older				.96	.86*	.570
Socioeconomic Status						
Employment status (ref: Working, low status occup)						
Currently working, high status occupation				1.09	1.15	
Currently working, dangerous occupation				.76	1.03	
Homemaker				.98	1.23	.546
Student				1.25	.88	
Retired				1.14*	1.36***	
Not working, unable to work				1.51***	1.51***	
Not working, other reason				1.21	1.23	
Education level				.99*	1.01*	.000
Poverty				1.02	1.09	.724
Medical Care						
Access to medical care (ref: Insured w/usual place)						
Not insured or no usual place for care				.91*	.93	.243
Not insured and no usual place for care				.70***	.73***	
Any financial barriers to medical care				1.45***	1.34***	.360
1+ years since last doctor visit				.57***	.50***	.033
Health Behaviors						
Smoking status (ref: Never smoked)						
Current smoker, every day				1.13*	1.06	
Current smoker, some days				1.14	1.02	.879
Former smoker				1.21***	1.15**	

Table 2. Rate ratios from negative binomial regression for the number of medical conditions, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Alcohol use (ref: Lifetime abstainer)						
Former drinker				1.08	1.32***	
Current drinker, 1-2 per occasion				1.02	1.05	.184
Current drinker, 3-4 per occasion				.99	1.07	
Current drinker, 5+ per occasion				1.05	1.12	
Body Mass Index (ref: Normal weight)						
Underweight				.84	1.35	
Overweight				1.16***	1.08	.123
Obese				1.58***	1.62***	
Frequency of exercise				1.01	.96*	.555
Mental Health						
Psychological Distress				1.27***	1.31***	.466
Pseudo R^2	.11	.12		.17	.19	

Note: All models control for survey year. Sample size: Women = 12,542; Men = 10,359.

*p ≤ .05, **p ≤ .01, ***p ≤ .001 (2-tailed tests). P-values for variables with multiple categories are adjusted with the Holm method to adjust for the increased probability of Type I errors when conducting multiple significance tests simultaneously.

[a]P-values for differences in coefficients across models for men and women come from models that pool men and women, and test for interactions between sex and the variable of interest.

Table 3. Odds ratios from logistic regression models for hypertension, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Acculturation Status						
Acculturation (ref: US born)						
Fborn, <10 years, non-citizen, any Spanish	.89	.33***		1.10	.83	
Fborn, <10 years, non-citizen, only English	.56*	.29***		.79	.58	
Fborn, <10 years, citizen	.48	.30	.000	.57	.51	.000
Fborn, 10+ years, non-citizen, any Spanish	.96	.49***		.95	.75*	
Fborn, 10+ years, non-citizen, only English	.89	.57***		.98	.81	
Fborn, 10+ years, citizen, any Spanish	.99	.57***		.97	.76	
Fborn, 10+ years, citizen, only English	.60***	.64**		.64***	.79	
Age	1.07***	1.07***	.487	1.07***	1.07***	.035
Family Characteristics						
Marital status (ref: Married, spouse in home)						
Married, spouse not in home				1.25	.90	
Cohabiting				1.22	.93	.014
Divorced or separated				.87	1.16	
Widowed				.73**	.80	
Never married				.76*	1.08	
Any children under age 5				1.07	.86	.104
Any seniors aged 65 and older				1.04	.78	.005
Work Characteristics						
Employment (ref: Working, low status)						
Currently working, high status occup				.94	1.14	
Currently working, dangerous occup				.70	.92	
Homemaker				1.06	1.17	.047
Student				.73	.64	
Retired				1.11	1.11	
Not working, unable to work				1.78***	1.53**	
Not working, other reason				1.45	1.60	
Socioeconomic Status						
Education level				.99	1.02*	.000
Poverty				.98	.97	.118
Medical Care						
Access to care (ref: Insured w/usual place)						
Not insured or no usual place for care				.87	.81	.124
Not insured and no usual place for care				.63***	.61***	
Any financial barriers to medical care				1.64***	1.50***	.686
1+ years since last doctor visit				.60***	.42***	.002
Health Behaviors						
Smoking status (ref: Never smoked)						
Current smoker, every day				.95	.86	
Current smoker, some days				1.00	.93	.996
Former smoker				1.16	1.14	

Table 3. Odds ratios from logistic regression models for hypertension, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Alcohol use (ref: Lifetime abstainer)						
Former drinker				1.03	1.21	
Current drinker, 1-2 per occasion				.98	1.03	.107
Current drinker, 3-4 per occasion				.93	1.31	
Current drinker, 5+ per occasion				1.25	1.25	
Body Mass Index (ref: Normal weight)						
Underweight				.73	.99	
Overweight				1.67***	1.38**	.001
Obese				2.66***	3.24***	
Frequency of exercise				1.03	.91*	.830
Mental Health						
Psychological Distress				1.33***	1.55***	.035
Pseudo R^2	.19	,17		.24	.26	

Note: All models control for survey year. Women = 12,598; Men = 10,389

*p ≤ .05, **p ≤ .01, ***p ≤ .001 (2-tailed tests). P-values for variables with multiple categories are adjusted with the Holm method to adjust for the increased probability of Type I errors when conducting multiple significance tests simultaneously.

[a]P-values for differences in coefficients across models for men and women come from models that pool men and women, and test for interactions between sex and the variable of interest.

Table 4. Odds ratios from logistic regression models for heart disease, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Acculturation Status						
Acculturation (ref: US born)						
Fborn, <10 years, non-citizen, any Spanish	.84	.51**		1.33	.99	
Fborn, <10 years, non-citizen, only English	.18*	.59		.25	.94	
Fborn, <10 years, citizen	.28	---	.001	.39	---	.002
Fborn, 10+ years, non-citizen, any Spanish	1.07	.48***		1.45**	.74	
Fborn, 10+ years, non-citizen, only English	.50*	.50**		.57*	.77	
Fborn, 10+ years, citizen, any Spanish	1.06	.74		1.19	.98	
Fborn, 10+ years, citizen, only English	.77	.50**		.83	.64	
Age	1.05***	1.06***	.057	1.04***	1.04***	.984
Family Characteristics						
Marital status (ref: Married, spouse in home)						
Married, spouse not in home				2.09*	1.12	
Cohabiting				1.19	1.43	
Divorced or separated				1.13	1.01	.456
Widowed				.87	.74	
Never married				1.02	1.41*	
Any children under age 5				1.01	.88	.313
Any seniors aged 65 and older				.93	.73	.944
Work Characteristics						
Employment (ref: Working, low status)						
Currently working, high status occup				1.52*	1.07	
Currently working, dangerous occup				.10**	1.30	
Homemaker				.91	.19	.021
Student				.89	1.16	
Retired				1.41	2.56***	
Not working, unable to work				2.27***	2.23***	
Not working, other reason				1.38	1.85	
Education level				.99	1.04*	.004
Poverty				1.12	1.13	.496
Medical Care						
Access to care (ref: Insured w/usual place)						
Not insured or no usual place for care				.90	.77	.220
Not insured and no usual place for care				.53**	.76	
Any financial barriers to medical care				1.25	1.41*	.670
1+ years since last doctor visit				.53**	.59***	.262
Health Behaviors						
Smoking status (ref: Never smoked)						
Current smoker, every day				1.06	1.14	
Current smoker, some days				.70	1.23	.165
Former smoker				1.34*	1.65***	

Table 4. Odds ratios from logistic regression models for heart disease, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Alcohol use (ref: Lifetime abstainer)						
Former drinker				1.08	1.51*	
Current drinker, 1-2 per occasion				1.20	1.19	.118
Current drinker, 3-4 per occasion				.66	1.16	
Current drinker, 5+ per occasion				.82	1.20	
Body Mass Index (ref: Normal weight)						
Underweight				1.60	5.97**	
Overweight				.82	.97	.237
Obese				.99	1.25	
Frequency of exercise				.99	.99	.314
Mental Health						
Psychological Distress				1.57***	1.52***	.969
Pseudo R^2	.10	.12		.15	.18	

Note: All models control for survey year. Women = 12,597; Men = 10,327

*p ≤ .05, **p ≤ .01, ***p ≤ .001 (2-tailed tests). P-values for variables with multiple categories are adjusted with the Holm method to adjust for the increased probability of Type I errors when conducting multiple significance tests simultaneously.

[a]P-values for differences in coefficients across models for men and women come from models that pool men and women, and test for interactions between sex and the variable of interest.

Table 5. Odds ratios from logistic regression models for diabetes, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Acculturation Status						
Acculturation (ref: US born)						
Fborn, <10 years, non-citizen, any Spanish	.61**	.23***		.80	.45*	
Fborn, <10 years, non-citizen, only English	.43	.24**		.72	.41	
Fborn, <10 years, citizen	.53	.79		.59	.99	
Fborn, 10+ years, non-citizen, any Spanish	1.11	.91	.042	1.05	1.10	.292
Fborn, 10+ years, non-citizen, only English	.64	.75		.70	.92	
Fborn, 10+ years, citizen, any Spanish	1.19	.74		1.10	.77	
Fborn, 10+ years, citizen, only English	.74	.79		.76	.93	
Age	1.07***	1.07***	.109	1.07***	1.06***	.154
Family Characteristics						
Marital status (ref: Married, spouse in home)						
Married, spouse not in home				1.32	1.41	
Cohabiting				1.32	1.22	
Divorced or separated				.87	.86	.923
Widowed				.65**	.93	
Never married				.67*	.74	
Any children under age 5				.80	.69*	.796
Any seniors aged 65 and older				.63**	.61*	.406
Socioeconomic Status						
Employment (ref: Working, low status)						
Currently working, high status occup				1.32	1.11	
Currently working, dangerous occup				1.14	1.08	
Homemaker				1.10	.68	
Student				.54	.19	.959
Retired				1.00	1.31	
Not working, unable to work				1.79**	1.74**	
Not working, other reason				1.36	1.12	
Education level				.97	1.01	.027
Poverty				.99	1.20	.629
Medical Care						
Access to care (ref: Insured w/usual place)						
Not insured or no usual place for care				.91	1.05	.650
Not insured and no usual place for care				.58**	.82	
Any financial barriers to medical care				2.10***	1.64***	.363
1+ years since last doctor visit				.26***	.25***	.779
Health Behaviors						
Smoking status (ref: Never smoked)						
Current smoker, every day				.88	1.28	
Current smoker, some days				1.48	.93	.008
Former smoker				1.57***	1.09	

Table 5. Odds ratios from logistic regression models for diabetes, by gender, for Mexican Americans living in the U.S., 1998-2006

	Age-Adjusted Models			Fully-Adjusted Models		
	Women	Men	P-Value[a]	Women	Men	P-Value[a]
Alcohol use (ref: Lifetime abstainer)						
Former drinker				.98	1.94***	
Current drinker, 1-2 per occasion				.64**	.91	.139
Current drinker, 3-4 per occasion				.74	.95	
Current drinker, 5+ per occasion				.60	.84	
Body Mass Index (ref: Normal weight)						
Underweight				.37	.44	
Overweight				1.33*	1.28	.282
Obese				3.10***	2.25***	
Frequency of exercise				.99	.86**	.251
Mental Health						
Psychological Distress				1.21***	1.26**	.797
Pseudo R^2	.17	.17		.27	.27	

Note: All models control for survey year. Women = 12,599; Men = 10,400

*p ≤ .05, **p ≤ .01, ***p ≤ .001 (2-tailed tests). P-values for variables with multiple categories are adjusted with the Holm method to adjust for the increased probability of Type I errors when conducting multiple significance tests simultaneously.

[a]P-values for differences in coefficients across models for men and women come from models that pool men and women, and test for interactions between sex and the variable of interest.