Published in final edited form as:

Hisp J Behav Sci. 2011 May ; 33(2): 204–220. doi:10.1177/0739986311406068.

Ethnic Pride and Cardiovascular Health Among Mexican American Adults Along the U.S.-Mexico Border

Hendrik de Heer, PhD, MPH[Postdoctoral Fellow],

NHGRI SBRB, Affiliation(s) at the time of the presented research: University of Texas at El Paso, Department of Psychology, University of Texas at Houston, Health Science Center, El Paso Campus

Hector G Balcazar, PhD[Regional Dean],

University of Texas at Houston Health Science Center, El Paso satellite campus, 1101 N Stanton, El Paso, Texas, 79902, Phone: 915-747-8507

Victor Cardenas, MD, PhD, MPH[Assistant Professor],

Division of Epidemiology, University of Texas at Houston Health Science Center, El Paso satellite campus, 1101 N Stanton, El Paso, Texas, 79902, Phone: 915-747-8503

Lee Rosenthal, PhD, MPH[Assistant Professor], and

University of Texas at Houston Health Science Center, El Paso satellite campus, 1101 N Campbell, El Paso, Texas, 79902, Phone: 915-747-8233

Leslie O Schulz, PhD[Executive Dean College of Health and Human Services]

Northern Arizona University, 208 E. Pine Knoll Drive, PO Box 15015, Building 66/Room 118, Flagstaff, AZ 86011-5015, Phone: (928) 523-4331

Hector G Balcazar: hector.g.balcazar@uth.tmc.edu; Victor Cardenas: Victor.Cardenas@uth.tmc.edu; Lee Rosenthal: elrosenthal@utep.edu

Abstract

This study addressed the association between items from the General Acculturation Index (GAI) and cardiovascular health. Specifically, we assessed whether ethnic pride was associated with health outcomes after controlling for items regarding language, place where the childhood was spent and ethnic interaction. The study was a cross sectional analysis of demographic and clinical data from a border population of Mexican American adults (n=316) at risk for cardiovascular disease (CVD). Outcomes included smoking and diabetes status, Framingham risk, and metabolic syndrome. Ethnic pride was associated with lower diabetes prevalence, lower Framingham risk, and fewer risk factors for metabolic syndrome, but was not associated with smoking status. Ethnic pride was not associated with the other acculturation items of the GAI. Among an at-risk border population, ethnic pride functioned independently of other acculturation indicators. Ethnic pride may act as a protective factor for diabetes, metabolic syndrome and CVD risk status.

Keywords

ethnic pride; diabetes; cardiovascular; metabolic syndrome; Hispanic; acculturation

Correspondence to: Hendrik de Heer.

Current Affiliation:

National Institutes of Health Human Genome Lab (NHGRI) Social and Behavioral Research Branch (SBRB), Address: Building 31, Rm. B1B37, 31 Center Drive, MSC 2073, Bethesda, MD, 20892-2073, dirk.de.heer@nih.gov Phone: 480-414-3993

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Introduction

Cardiovascular disease (CVD) risk factors have been found to be influenced by behavioral, cultural, and societal factors. Among Hispanic (including Mexican-origin) populations in the United States, studies have associated cardiovascular health with several factors including language, place of birth (Dixon, Sundquist & Winkleby, 2000; Sundquist & Winkleby, 1999), length of residence in the United States (Kaplan, Huguet, Newsom & McFarland, 2004; Singh & Siahpush, 2002), and acculturation (Lutsey et al., 2008; Steffen, Smith, Larson & Butler, 2006).

Several studies argue that for Hispanic/ Mexican American (MA) immigrants, the native culture can serve as a protective factor for CVD development. The “healthy migrant effect” (Sorlie, Backlund, Jonhson & Rogot, 1993), documented that recent Mexican American migrants show lower all-cause mortality, CVD mortality, and cancer mortality compared to the U.S.-born Mexican American population (Sorlie et al., 1993). Among Mexican Americans, increased acculturation has further been associated with less leisure time physical activity (Crespo, Smit, Carter-Pokras et al., 2001), worsened dietary practices (Otero Sabogal, Sabogal, Perez-Stable & Hiatt, 1995), increased body mass index and obesity (Kaplan et al., 2004), higher blood pressure (Vaeth & Willet, 2005), and increased substance abuse including smoking (Wilkinson, Spitz & Strom, 2005). On the other hand, higher acculturation has been associated with increased access to care including increased likelihood to be insured (De la Torre, Friis, Hunter & Garcia, 1996) and improved screening practices (Amaro & De la Torre, 2002).

A challenge in health research is, however, that the construct of acculturation has often been vaguely defined (Hunt, Schneider & Comer, 2004) and many studies have used proxy measures of acculturation. A recent systematic review of defining and measuring acculturation in public health studies with Hispanic populations in the U.S. (Thomson & Goetz, 2009), indicated that the one common factor among all acculturation scales was the use of language as an indicator. To capture the full extent of the acculturation construct, several scales have been developed and evaluated (Balcazar, Castro & Krull, 1995; Burman, Telles, Hough & Escobar, 1987; Cuellar, Arnold & Maldonado, 1995; Cuellar, Harris, Jasso, 1980; Deyo, Diehl, Hazuda & Stern, 1985; Hazuda, Stern. & Haffner, 1988; Marin, Sabogal, Vanoss Marin, Otero-Sabogal & Perez-Stable, 1987; Olmedo & Padilla, 1978) that capture additional aspects assumed to be associated with acculturation. Thomson and Goetz (2009) indicated that the most frequently used acculturation scale was the Acculturation Rating Scale for Mexican Americans (ARSMA and ARSMA-II) (Cuellar et al., 1980, 1995). In addition to language, the ARSMA (20 items) and ARSMA-II (48 items) include items assessing ethnic identity, ethnic classification, cultural heritage, ethnic behaviors and interactions.

A much shorter scale called the General Acculturation Index (GAI; 5 items) was developed by Balcazar et al. (1995). The GAI includes five items assessing language, time spent in the U.S. as well as ethnic interaction and *ethnic pride* (Balcazar et al., 1995). The GAI instrument thus presents an opportunity for a rapid assessment that also includes several important aspects of acculturation. In addition, while concepts of ethnic identity (Coronado, Thompson, Kopesell, McLerran & Schwartz, 2005; Cuellar et al., 1980, 1995), ethnic interaction (Caetano, 1987; Marin et al., 1987), (ethnic) values and beliefs (Anderson, Datnio, Himmelgreen et al., 2004; Hazuda et al., 1988) have been used in research using the major acculturation scales, the GAI uniquely includes ethnic (or cultural) pride as an indicator of acculturation.

Ethnic pride can be described as a confirmation of dignity and self-respect toward an individual's perceived ethnicity or cultural heritage. Ethnic pride represents the attitudes towards one's ethnic group, asked by questions as: "How much pride do you feel towards [your own group]?" (Phinney, 1989). According to Castro, Stein and Bentler (2009), ethnic pride is a cognitive-emotional construct in which a group member expresses his or her affiliation with their perceived ethnic or cultural group, along with positive affection and respect for the group. This results in a positive self-concept, contributing to well-being, which could potentially contribute to positive health outcomes. While only limited research is available, recent evidence has documented protective effects of ethnic pride on health outcomes. For example, among Latino middle school students in the southwestern part of the United States, ethnic pride was directly associated with less cigarette and alcohol use (for girls) and indirectly through self-efficacy and endorsement of less benefits of substance abuse (for boys and girls; Castro et al., 2009). Furthermore, Dinh, Castro, Tein and Kim (2009) indicated that, among 561 Mexican American women, ethnic pride was directly related to less (reported) physical problems. Moreover, among other (minority) populations, ethnic pride has been associated with fewer depressive symptoms (Mossakowski, 2003), higher academic achievement (Smith, Atkins & Connell, 2003), less drug use and exposure (Marsiglia, Kulis & Hecht, 2001) and less exposure to and involvement in violence (Austin, 2004). To date, however, little is known regarding the association between ethnic pride and CVD outcomes among Hispanic populations.

Using baseline data of a randomized group intervention trial of a CVD health education program targeted at high-risk individuals of Mexican American descent conducted along the U.S.-Mexico border, the primary aim of the study was to evaluate the association between ethnic pride (and other acculturation indicators) and CVD risk factors independently for all indicators of the GAI acculturation scale (language, nativity, ethnic interaction and ethnic pride). Through these analyses, we assessed if the items regarding ethnic pride had any incremental predictive value for cardiovascular health above and beyond the other acculturation items. It was hypothesized that higher ethnic pride would be associated with improved health outcomes, independently from the other acculturation items.

Method

Study Setting

El Paso is located at the U.S.-Mexico border in Texas and with Ciudad Juarez, Chihuahua, and forms a large community of over 2.5 million residents. The population in El Paso has lower per capita income (\$13,421) compared with Texas and the United States (Texas Department of State Health Services [DSHS] Chronic Disease Prevention Branch/Health Promotion Unit, 2007) and has one of the highest proportion of uninsured residents (33.2%) of any major city in the United States (Strayhorn, 2005), resulting in less access to preventive services. Further, diabetes mortality (34.9) was higher than national (24.5) and state (26.5) averages (Texas DSHS, 2007). The study took place in the Lower Valley of El Paso, an area characterized by a lower median age, lower estimated median household income and higher percentage of Mexican American residents compared with El Paso as a whole (Texas DSHS, 2007).

Study Design

This article presents the results of a cross-sectional study of the association between acculturation and CVD risk factors of study participants. The study area was selected with community input in preparation for a randomized community trial of the Health for your Heart (*Salud Para su Corazón*) education program (Balcazar et al., 2006) delivered by community health workers (*Promotores de Salud*) conducted among Hispanic adults aged 30

through 75 with at least one CVD risk factor (overweight, hypertension, diabetes, high cholesterol, or smoking status) and who gave informed consent to participate. Recruitment took place through a door-to-door household survey among randomly selected households. Of the 1,395 individuals asked to answer the screening questions, 993 agreed. Of these, 568 were eligible for the study, 407 agreed to participate and 316 (232 females) completed baseline measurements. The University of Texas at El Paso Institutional Review Board approved all study procedures.

Measurements

An interview was conducted by a bilingual interviewer of Mexican American descent during a visit to a clinic where height, weight and waist circumference were collected following the National Health and Nutrition Examinations Survey procedures. A fasting venous blood sample was collected to measure blood glucose, glycosylated hemoglobin (HbA1c), total cholesterol and high density lipoprotein (HDL). The Framingham risk percentage and metabolic syndrome risk factors were calculated using standard protocols by the American Heart Association. The Framingham risk score is based on age, sex, total and HDL cholesterol, smoking status, and systolic blood pressure and converted to a percentage, estimating the risk of developing coronary heart disease (CHD) over the next 10 years. Metabolic syndrome is based on five risk factors: waist circumference, triglycerides, HDL cholesterol, blood pressure, and fasting glucose. Prevalence of three or more of the risk factors is indicative of presence of metabolic syndrome.

Questionnaire items assessed age, birthplace, language, acculturation, insurance status ("Do you have health insurance?") and educational attainment (What is the last grade in school that you completed?), medication intake (e.g. "Do you currently take medication for high cholesterol?") and information on lifestyle factors such as smoking ("Do you smoke?").

Five items from the GAI (Balcazar et al., 1995) included (a) spoken and (b) written language, ranging from "only Spanish" to "only English", (c) the place where most of the childhood was spent, ranging from "just in Mexico" to "just in the U.S.," (d) circle of friends, ranging from "only Hispanics from Mexico" to "only Americans from the United States," and (e) ethnic pride, ranging from "very proud" to "not proud at all."

Analyses

Before analyzing the associations between the GAI and health outcomes, the psychometric properties of the GAI were assessed (Balcazar et al., 1995). This included assessment of the internal consistency of the scale and evaluation of the correlations among each of the items. We also assessed the proportion explained variability in the GAI scale by each of the five items.

Descriptive statistics, independent samples t-tests and chi-square analyses were used to examine baseline differences on sociodemographic characteristics using SPSS 16.0 (SPSS Inc., 2007). Multiple linear regression analyses were conducted for continuous outcome variables: Framingham risk and metabolic syndrome. All regression analyses controlled for the effects of age, gender and education because prior studies have found these to be associated with CVD outcomes (Sundquist & Winkleby, 1999) or because they had been found to be influential variables in the development of the GAI (Balcazar et al., 1995). The acculturation indicators were entered in three steps: language and nativity indicators were entered in the first step, ethnic interaction was added in the second step, and ethnic pride was added in the final step.

Correlations indicated that Items 1, 2 and 3 (language spoken, language read and place where most of the childhood was spent) were very highly correlated ($r > 0.80$). To prevent

problems of multicollinearity, we included the first three items as a cluster (summed, then averaged) in the subsequent regression analyses. This indicator was treated as a continuous predictor in all analyses.

Multiple logistic regression analyses were conducted using the dichotomous outcome variables smoking status (self reported yes/ no) and diabetes (yes/ no). Diabetes was operationalized as self-reported diabetes (indicated on screening questionnaire), *or* having an HbA1c >7.0 mg/dL, *or* blood glucose > 126 mg/dL (American Diabetes Association, 2007). The ethnic interaction and ethnic pride items were included as categorical predictors.

Results

Demographics

Selected demographic characteristics of the participants separated by birthplace (54.4% were born in Mexico) are described in Table 1. Participants born in Mexico were older, more likely to be female ($p=.018$), less likely to be insured ($p=.001$) and had lower mean educational attainment ($p<.001$). As expected, their GAI score was lower ($p<.001$), and they were more likely to speak Spanish compared with participants born in the United States ($p=.025$). Most participants endorsed either *very proud* or *proud* on the Ethnic Pride Scale, whereas none of the participants endorsed *not proud at all*. Following standards proposed by Balcazar and colleagues (1995), 48.3% of participants were classified as low in acculturation (GAI lower than 2.40) and 51.7% as high in acculturation (GAI 2.40 or higher).

Properties of the GAI

As mentioned, items 1, 2 and 3 were very highly correlated ($r > 0.80$), but ethnic pride was not correlated with the other four items. Consistent with prior research, language predicted large proportions of the variability in acculturation (87.8%). Ethnic pride predicted 3.8% of the variability, and ethnic interaction (circle of friends) 2.6%. Furthermore, while the internal consistency was adequate for the scale as a whole (Cronbach's $\alpha = .76$), without the fifth item ("ethnic pride") the Cronbach's alpha would have been .84.

Linear Regression Analyses

Continuous dependent variables were Framingham risk percentage and number of risk factors for metabolic syndrome (ranging from 0 through 5). For Framingham 10-year risk for CHD, older participants and men were at higher risk for CHD. Of the acculturation predictors, only ethnic pride was a significant predictor of 10-year CHD risk, $b = -1.858$, $t = -2.594$, $p = .010$ (see Table 2). Participants with higher ethnic pride had a lower Framingham risk percentage. In other words, a one unit higher ethnic pride score (e.g. from "little pride" to "somewhat proud" of my ethnic background) was associated with a 1.86 percentage lower percentage risk for 10 year coronary heart disease.

Participants with higher ethnic pride also had a lower average number of risk factors for metabolic syndrome, $b = -.235$, $t = -2.132$, $p = .034$ (see Table 3). A one unit higher ethnic pride was associated with a 0.235 lower number of risk factors for metabolic syndrome. For example, the average number of risk factors for those who endorsed "proud" were 2.56 ($SD = 1.20$), whereas for those who endorsed "very proud", the average number of risk factors was 2.33 ($SD = 1.19$).

Logistic Regression Analyses

Of all participants, 32.4% could be classified as having diabetes and 27.9% reported to smoke. Controlling for age, gender and education, we examined the association between

language, nativity, and smoking and diabetes, and added the predictors of ethnic interaction and ethnic pride in the final steps of the analyses. Neither the acculturation indicators nor ethnic pride were predictive of smoking status.

Of the acculturation indicators, only ethnic pride was a significant predictor of diabetes status (see Table 4). Those who endorsed “proud” were significantly more likely to have diabetes (39.1% of them had diabetes) compared with those who endorsed “very proud” (22.9% of them had diabetes at baseline, odds ratio = 1.993, 95% confidence interval = [1.13, 3.51]). The other two categories are not indicated in the table as the small number of people who endorsed “little proud” and “somewhat proud” (and large confidence intervals) limits our ability to draw meaningful conclusions.

Discussion

This study evaluated the association between ethnic pride and acculturation indicators with diabetes, smoking, risk for CVD, and metabolic syndrome for a population of at-risk Mexican American adults. The indicators consisted of items of the GAI (Balcazar et al., 1995) and included participant language, place where the childhood was spent, the ethnicity of the participants’ circle of friends, and ethnic pride. Ethnic pride was not correlated with the items pertaining language, nativity, or ethnic interaction. When controlling for the effects of the other acculturation indicators, ethnic pride was associated with lower risk for diabetes status, Framingham risk and metabolic syndrome, but not associated with smoking status.

First, for the current population, ethnic pride appeared to function as a separate construct as it was not associated with the other acculturation items. This is consistent with prior research by Keefe and Padilla (1987), who reported that *ethnic pride and affiliation* was a unique factor explaining 14% of the variability in a broader (four-factor) variable called “ethnic loyalty.” This factor was separate from factors describing language (74%) cultural identification (7%) and ethnic social orientation (6%), suggesting that ethnic pride may be a separate concept. Moreover, recently, Dinh and colleagues (2009) included acculturation and ethnic pride as separate predictors of mental and physical health. A consequence is that when assessing the association between an acculturation scale such as the GAI and health outcomes, one must be careful in collapsing items that likely represent different concepts. Similar to the definition by Beck, Froman and Bernal (2005) regarding acculturation and ethnic identity, strong ethnic pride can likely be maintained even during the process of cultural adaptation:

“Acculturation is not, however, a linear process, because it does not necessarily lead to assimilation and loss of a person’s ethnic identity”(p.300).

Further, we found evidence for the potential protective effect of ethnic pride on diabetes prevalence, risk for CVD, and metabolic syndrome (but not on smoking). While we can only hypothesize why this would have occurred, several theoretical approaches can inform us about potential ways in which increased ethnic pride could act as a protective factor for health outcomes independently of acculturation status.

Following the literature on ethnic identification, there are two paths in which ethnic pride could affect health outcomes. On the one hand, a strong cultural pride could be associated with a stronger feeling of pride for one’s perceived in-group, a stronger sense of belonging, and more ethnic involvement, resulting in a more positive self-concept and favorable comparisons of one’s in-group to an out-group (see, for example, Tajfel Turner, 1986). This positive self-concept can be beneficial to health outcomes through serving as a buffer

against the detrimental impact of negative stressors associated with being a minority group (such as discrimination; (Phinney, 1991; Phinney and Chavira 1992).

On the other hand, stronger ethnic pride could intensify the potential stress of being a minority or adapting to a new culture by making one's difference from the dominant culture more salient (Phinney 1991). In the current study, however, the Hispanic population is actually the majority in their area of residence. As a result, differences from the dominant non-Hispanic culture may not have been salient. Thus, a stronger feeling of ethnic pride within this population could result in a more positive social identity, and the negative stressors associated with being a minority group may be limited among this population.

Phinney (1990) described the development of ethnic identity as similar to formation of ego identity (Erikson, 1968; Marcia, 1966) in three stages: (a) unexamined ethnic identity; (b) exploration of one's ethnicity, possibly due to an event that made ethnicity more salient, (c) achieved ethnic identity, characterized by a deeper understanding and appreciation of one's ethnicity. Here, if ethnic pride can be thought to reflect the result of ethnic identity development and achievement, ethnic pride can serve as a skill or competency that can empower to engage in protective behaviors, or aid in resisting social pressures to engage in unhealthy behaviors. Ethnic pride may act as an enhancer of *adaptive acculturation* and facilitate retention of links with the cultural heritage while integrating into the new culture.

Several variables could potentially mediate the association between ethnic pride and cardiovascular health outcomes. For example, Castro and colleagues (2009) found that self-efficacy and perceived benefits were mediators of the association between ethnic pride and smoking and alcohol use. However, their participants were adolescents and as indicated by Phinney (1990), they may still be in the process of developing their ethnic identity and ethnic pride. Other potentially important variables could be family or social support, which was found to be a mediator of the association between ethnic pride and mental (but not physical) health outcomes (Dinh et al., 2009). Future research evaluating the association between ethnic pride and cardiovascular outcomes, and these mediators could provide insight into how to develop (culturally sensitive) interventions that can maintain the potential beneficial aspects of acculturation (access to care, education), while potential negative health consequences of acculturation can be minimized.

A limitation of the current study was that the findings may not easily be generalized to other settings or other populations. Even though many border areas have a large Mexican American population, the study setting in a large metropolitan area at the border presents a unique situation for health promotion activities. Items such as ethnic interaction may function differently in different populations. For example, about 80% of the population in the area is of Hispanic descent, thereby limiting the opportunities for social interaction with members of other ethnic backgrounds.

In conclusion, this study explored the association between ethnic pride, language, nativity, and ethnic interaction and risk factors for diabetes, smoking, CVD, and metabolic syndrome in an at-risk border population of Mexican American adults. In the current population, ethnic pride was associated with lower prevalence of diabetes, lower risk for CHD, and metabolic syndrome, above and beyond the effects of other acculturation indicators. Future studies could focus on the association between different aspects of ethnic identity and ethnic pride and health outcomes among Hispanic populations, and the potential effects of meditational variables such as social support.

Acknowledgments

The authors would like to acknowledge Leticia Flores, Flor Puentes, Melissa Aguirre, and Esperanza Vasquez for their invaluable contributions.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This research was supported by National Institutes of Health/National Center for Minority Health Disparities Grant No. R24MD0001785-01.

References

- Amaro H, de la Torre A. Public health needs and scientific opportunities in research on Latinas. *American Journal of Public Health*. 2002; 92(4):525–529. [PubMed: 11919044]
- American Diabetes Association (ADA). Nutrition Recommendations and Interventions for Diabetes: a position statement of the American Diabetes Association. *Diabetes Care*. 2007; 30(Suppl 1):S48–65. [PubMed: 17192379]
- Anderson AK, Datnio G, Himmelgreen DA, Peng YK, Segura-Perez S, Perez-Escamilla R. Social capital, acculturation, and breastfeeding initiation among Puerto Rican women in the United States. *Journal of Human Lactation*. 2004; 20(1):39–45. [PubMed: 14974699]
- Austin AA. Alcohol, tobacco, other drug use, and violent behavior among Native Hawaiians: Ethnic pride and resilience. *Substance Use and Misuse*. 2004; 39(5):721–746. [PubMed: 15202806]
- Balcazar H, Alvarado M, Hollen ML, Gonzalez-Cruz Y, Hughes O, Vazquez E, Lykens K. Salud Para Su Corazón-NCLR: A Comprehensive Promotora Outreach Program to Promote Heart-Healthy Behaviors Among Hispanics. *Health Promotion Practice*. 2006; 7(1):68–77. [PubMed: 16410422]
- Balcazar H, Castro FG, Krull JL. Cancer risk reduction in Mexican American women: the role of acculturation, education and health risk factors. *Health Education Quarterly*. 1995; 22:61–84. [PubMed: 7721602]
- Beck CT, Froman RD, Bernal H. Acculturation level and postpartum depression in Hispanic mothers. *MCN: American Journal of Maternal/Child Nursing*. 2005; 30(5):299–304.
- Burman M, Telles C, Hough R, Escobar J. Measurement of acculturation in a community population of Mexican-Americans. *Hispanic Journal of Behavioral Sciences*. 1987; 9(2):105–130.
- Caetano R. Acculturation and drinking patterns among U.S. Hispanics. *British Journal of Addiction*. 1987; 82(7):789–799. [PubMed: 3311103]
- Castro FG, Stein JA, Bentler PM. Ethnic Pride, Traditional Family Values, and Acculturation in Early Cigarette and Alcohol Use Among Latino Adolescents. *Journal of Primary Prevention*. 2009; 30(3–4):265–292. [PubMed: 19415497]
- Coronado GD, Thompson B, Koepsell TD, McLerran D, Schwartz SM. Short acculturation scale for Mexican American populations. *Ethnicity & Disease*. 2005; 15(1):53–62. [PubMed: 15720049]
- Crespo CJ, Smit E, Carter-Pokras O, et al. Acculturation and leisure time physical inactivity in Mexican American adults: results from NHANES III, 1988–1994. *American Journal of Public Health*. 2001; 91(8):1254–1257. [PubMed: 11499114]
- Cuellar I, Arnold B, Maldonado R. Acculturation rating scale for Mexican Americans II. *Hispanic Journal of Behavioral Sciences*. 1995; 17(3):275–304.
- Cuellar I, Harris L, Jasso R. An acculturation scale for Mexican American normal and clinical populations. *Hispanic Journal of Behavioral Sciences*. 1980; 21:99–217.
- De la Torre A, Friis R, Hunter RH, Garcia L. The Health Insurance Status of U.S. Latino Women: A Profile from the 1982–1984 HHANES. *American Journal of Public Health*. 1996; 86:533–537. [PubMed: 8604785]
- Deyo RA, Diehl AK, Hazuda H, Stern MP. A Simple Language-based Acculturation Scale for Mexican Americans: Validation and Application to Health Care Research. *American Journal of Public Health*. 1985; 75(1):51–55. [PubMed: 3966599]

- Dinh KT, Castro FG, Tein J-Y, Kim Y. Cultural Predictors of Physical and Mental Health Status among Mexican American Women: A Mediation Model. *American Journal of Community Psychology*. 2009; 43:35–48. [PubMed: 19130212]
- Dixon LB, Sundquist J, Winkleby MA. Differences in energy, nutrient, and food intakes in a U.S. sample of Mexican-American women and men: findings from the Third National Health and Nutrition Examination Survey, 1988–1994. *American Journal of Epidemiology*. 2000; 152(6): 548–57. [PubMed: 10997545]
- Erikson, E. *Youth and crisis*. New York: Norton; 1968. Identity.
- Hazuda HP, Stern MP, Haffner SM. Acculturation and assimilation among Mexican Americans: scales and population-based data. *Social Science Quarterly*. 1988; 69:687–706.
- Hunt LM, Schneider S, Comer B. Should “acculturation” be a variable in health research? A critical review of research on US Hispanics. *Social Science and Medicine*. 2004; 59:973–986. [PubMed: 15186898]
- Kaplan MS, Huguet N, Newsom JT, McFarland BH. The association between length of residence and obesity among Hispanic immigrants. *American Journal of Preventive Medicine*. 2004; 27(4):323–326. [PubMed: 15488363]
- Keefe, SE.; Padilla, AM. *Chicano Ethnicity*. Albuquerque: University of New Mexico; 1987.
- Lutsey PM, Diez Roux AV, Jacobs DR Jr, et al. Associations of Acculturation and Socioeconomic Status With Subclinical Cardiovascular Disease in the Multi-Ethnic Study of Atherosclerosis. *American Journal of Public Health*. 2008; 98(11):1963–1970. [PubMed: 18511718]
- Marcia J. Development and validation of ego-identity status. *Journal of Personality and Social Psychology*. 3:551–558. [PubMed: 5939604]
- Marin G, Sabogal F, Vanoss Marin B, Otero-Sabogal R, Perez-Stable EJ. Development of a Short Acculturation Scale for Hispanics. *Hispanic Journal of Behavioral Sciences*. 1987; 9(2):183–205.
- Marsiglia FF, Kulis S, Hecht M. Ethnic labels and ethnic identity as predictors of drug use among middle school students in the Southwest. *Journal of Research on Adolescence*. 2001; 11:21–48.
- Mossakowski KN. Coping with perceived discrimination: does ethnic identity protect mental health? *Journal of Health and Social Behavior*. 2003; 44:318–31. [PubMed: 14582311]
- Olmedo EL, Padilla AM. Empirical and construct validation of a measurement of acculturation for Mexican Americans. *Journal of Social Psychology*. 1978; 105:179–187.
- Otero Sabogal R, Sabogal F, Perez-Stable EJ, Hiatt RA. Dietary practices, alcohol consumption and smoking behavior: ethnic, sex and acculturation differences. *Journal of the National Cancer Institute Monographs*. 1995; 18:73–82. [PubMed: 8562225]
- Phinney J. Stages of ethnic identity in minority group adolescents. *Journal of Early Adolescence*. 1989; 9:34–49.
- Phinney JS. Ethnic identity in adolescents and adults: Review and research. *Psychological Bulletin*. 1990; 108:499–514. [PubMed: 2270238]
- Phinney JS. Ethnic Identity and Self-esteem: A Review and Integration. *Hispanic Journal of Behavioral Sciences*. 1991; 13:193–208.
- Phinney JS, Chavira V. Ethnic Identity and Self-esteem: An Exploratory Longitudinal Study. *Journal of Adolescence*. 1992; 15:271–81. [PubMed: 1447413]
- Singh GK, Siahpush M. Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the United States: an analysis of two national databases. *Human Biology*. 2002; 74:83–109. [PubMed: 11931581]
- Smith EP, Atkins J, Connell CM. Family, school, and community factors and relationships to racial-ethnic attitudes and academic achievement. *American Journal of Community Psychology*. 2003; 32:159–173. [PubMed: 14570444]
- Sorlie PD, Backlund E, Johnson NJ, Rogot E. Mortality by Hispanic status in the United States. *JAMA*. 1993; 24, 270(20):2464–8. [PubMed: 8031341]
- SPSS Inc. *SPSS for Windows, 16.0* [Computer Software]. Chicago, IL: Author; 2007.
- Steffen PR, Smith TB, Larson M, Butler L. Acculturation to Western Society as a Risk Factor for High Blood Pressure: A Meta-Analytic Review. *Psychosomatic Medicine*. 2006; 68:386–397. [PubMed: 16738069]

- Sundquist J, Winkleby MA. Cardiovascular risk factors in Mexican American adults: a transcultural analysis of NHANES III, 1988–1994. *American Journal of Public Health*. 1999; 89(5):723–30. [PubMed: 10224985]
- Tajfel, H.; Turner, JC. The social identity theory of inter-group behavior. In: Worchel, S.; Austin, LW., editors. *Psychology of Intergroup Relations*. Chicago: Nelson-Hall; 1986.
- Texas Department of State Health Services (DSHS) Chronic Disease Prevention Branch/Health Promotion Unit. Cardiovascular Disease in Texas: A Surveillance Report -August 2007. 2007. Retrieved October 20th 2008, available from: <http://www.dshs.state.tx.us/wellness/data.shtm>
- Thomson MD, Goetz LF. Defining and Measuring Acculturation: A systematic review of public health studies with Hispanic populations in the United States. *Social Science and Medicine*. 2009; 69:983–991. [PubMed: 19525050]
- Vaeth PAC, Willet DL. Level of Acculturation and Hypertension among Dallas County Hispanics: Findings from the Dallas Heart Study. *Annals of Epidemiology*. 2005; 15:373–380. [PubMed: 15840551]
- Wilkinson AV, Spitz MR, Strom SS. Effects of Nativity, Age at Migration, and Acculturation on Smoking Among Adult Houston Residents of Mexican Descent. *American Journal of Public Health*. 2005; 95(6):1043–1049. [PubMed: 15914831]

Biographies

Hendrick Dirk de Heer came to El Paso, Texas in 2001 from the Netherlands. His work in the border area has predominantly focused on intervention projects aimed at reducing risk for cardiovascular disease and type 2 diabetes among minority populations. He currently works as a postdoctoral fellow at the National Human Genome Research Institute Social and Behavioral Research Branch in Bethesda, Maryland.

Victor M. Cardenas is associate professor of epidemiology at the University of Texas Health Science Center at Houston School of Public Health at El Paso campus. He is engaged in epidemiologic research of diseases, many of them of infectious origin, that disproportionately affect Mexican Americans.

Hector G. Balcazar is the regional dean of public health at the University of Texas Health Science Center, Houston School of Public Health, El Paso Regional Campus. He is also a professor of health promotion and behavioral sciences. He serves as the codirector of the Hispanic Health Disparities Research Center, an NIH-funded initiative in collaboration with the College of Health Sciences and School of Nursing of the University of Texas at El Paso.

E. Lee Rosenthal serves as a faculty member in the Department of Public Health Sciences at the University of Texas at El Paso. She works on an array of local and national community health and public health policy initiatives with a focus on the role of community health workers/promotores in advancing access to information and services as well as diminishing health disparities. She is a coinvestigator on the National Institutes of Health's National Center on Minority Health and Health Disparities-funded study (2005-2013) in which community health worker and community partners are working to establish a supportive environment to promote healthy lifestyles in the lower valley of El Paso, Texas.

Leslie O. Schulz was the principal investigator on the NIH-funded project HEART at the time the current research was conducted. She is currently the executive dean of the College of Health and Human Services at Northern Arizona University. She is most well known for her work among Native American Pima populations genetically susceptible for type 2 diabetes in Arizona and Mexico.

Table 1

Demographic Characteristics by Birth Place

Variable	Mexican-Born (n = 172)	US-Born (n = 134)	p-value ^{a,b}
Gender	78.4	64.6	.018*
Language			
Spanish	86.0	6.9	<.001**
English	1.7	38.9	
Both	12.2	54.2	
Age	55.0 ±13.0	51.8 ±13.4	.025*
Acculturation status (GAI)	1.7 ±0.6	3.1 ±0.5	<.001**
Years in the United States	29.5 ±16.6	51.3 ±13.5	<.001**
Ethnic Pride			
Very Proud	44.2	51.4	.101
Proud	47.7	45.8	
Somewhat Proud	5.2	0.7	
Little Pride	2.9	2.1	
Educational Attainment (years) ^c	8.6 ±3.4	11.9 ±2.6	<.001**
No Health Insurance (%)	49.4	31.2	.001**
Family History of Diabetes (%)	63.9	70.9	.326
Family History of CVD (%)	42.3	53.3	.174
Currently taking diabetes medication (%)	25.5	28.3	.597
Currently taking hypertensive medication (%)	42.3	38.5	.471
Cholesterol medication (%)	30.4	24.8	.313
Framingham percentage	14.0 ±11.9	13.3 ±10.4	.638
Hypertension (%) ^d	49.4	43.0	.453
Diabetes (%) ^e	29.9	34.4	.414
Smoking (%)	23.8	32.2	.100
Metabolic syndrome (number of risk factors)	2.38 ±1.19	2.54 ±1.26	.270

Note: GAI—General Acculturation Index; CVD = cardiovascular disease.

^aComputed through independent samples t-tests for continuous variables.

^b Computed through chi-square calculations for categorical variables.

^c Last grade in school completed.

^d Defined as either systolic blood pressure 140mm/Hg and/or diastolic BP 90 mm/Hg.

^e Defined as either self-report at baseline or glycosylated hemoglobin 7.0 mg/dL or fasting glucose 126 mg/dL.

Table 2

Framingham Percentage Predicted From Acculturation Variables

	<i>b</i>	SE	t-ratio	p-value
Step 1				
Constant	12.830	4.786	2.681	.008**
Gender	-8.655	1.046	-8.273	<.001**
Age	.513	.036	14.148	<.001**
Education	-.258	.161	-1.601	.111
Step 2				
Language, nativity ^a	.158	.417	.378	.706
Step 3				
Circle of Friends	-.748	.526	-1.422	.156
Step 4				
Ethnic Pride ^b	-1.858	.716	-2.594	.010**

Note: *b*= unstandardized regression coefficient

^a Acculturation items are coded so that a higher score means more acculturated.

^b Ethnic pride was coded so that a higher score means higher ethnic pride.

* $p < .05$,

** $p < .01$.

Table 3

Metabolic Syndrome Risk Predicted from Acculturation Variables

	<i>b</i>	SE	t ratio	p value
Step 1				
Intercept	3.091	.744	4.153	<.000**
Gender	.039	.166	.234	.815
Age	.001	.006	.143	.886
Education	.034	.026	1.290	.198
Step 2				
Language, nativity ^a	.052	.068	.767	.444
Step 3				
Circle of Friends	-.090	.086	-1.045	.297
Step 4				
Ethnic Pride ^b	-.235	.110	-2.132	.034*

Note: *b*= unstandardized regression coefficient.^a Acculturation items are coded so that a higher score means more acculturated.^b Ethnic pride was coded so that a higher score means higher ethnic pride.* $p < .05$,** $p < .01$

Table 4

Diabetes Predicted From Acculturation Variables

	<i>b</i>	SE	χ^2	df	p value	OddsRatio (95% CI)
Step 1						
Constant	-3.281	1.169	7.878	1	.005**	0.038
Gender	-.418	.313	1.774	1	.183	0.659 [0.356, 1.218]
Age	.047	.012	15.447	1	<.001**	1.048 [1.024, 1.073]
Education	.000	.049	.000	1	.999	1.000 [0.909, 1.100]
Step 2						
Language, nativity ^a	.143	.131	1.183	1	.277	1.153 [0.892, 1.492]
Step 3						
Circle of Friends ^b			1.021	4	.907	
Almost all Hispanics vs.						
Mostly Hispanics	-.369	.366	1.018	1	.313	0.692 [0.338, 1.416]
Equally Hispanics and non-Hispanics	-.158	.344	.212	1	.645	0.853 [0.435, 1.675]
Mostly non-Hispanics	-.112	1.555	.005	1	.942	0.894 [0.042, 18.812]
Step 4						
Ethnic Pride ^{b,c}			10.28	3	.016*	
Very proud vs. proud	.689	.289	5.673	1	.017*	1.993 [1.130, 3.514]

Note: *b*= unstandardized regression coefficient; CI = confidence interval.

^a Acculturation items are coded so that a higher score means more acculturated.

^b Categorical item, overall test is shown, unless specific comparisons are indicated.

^c Ethnic pride was coded so that a higher score means higher ethnic pride.

* $p < .05$,

** $p < .01$.