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Clashing paradigms: an empirical examination of cultural proxies and socioeconomic condition shaping Latino health

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ABSTRACT

Objective: Much debate exists regarding the role of culture versus socioeconomic position in shaping the health of Latino populations. We propose that *both* may matter for health and explicitly test their independent and joint effects on smoking and physical activity.

Methods: We used the 2010 National Health Interview Survey, a population-based survey of the U.S. population, to estimate the prevalence of smoking and physical activity by language use (cultural proxy) and education among Latino adults ($n = 4929$). We fit log binomial regression models to estimate prevalence ratios and test for interaction.

Results: English-language use and educational attainment were each independently associated with smoking and physical activity. Joint effect models showed that individuals with both greater use of the English language and low levels of education were nearly three times more likely to smoke (prevalence ratio, 2.59; 95% confidence interval, 1.83–3.65) than those with low English language use and high education (referent group); high acculturation and high education were jointly associated with increased activity (prevalence ratio 2.24, 95% confidence interval, 1.79–2.81).

Conclusions: Cultural proxies such as language use and educational attainment are both important determinants of health among Latinos. Their joint effect suggests the need to simultaneously consider Latinos' socioeconomic position and their increased risk of adopting health-damaging behaviors while addressing culturally-specific factors that may mitigate risk.

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Introduction

Previous research suggests that for some health outcomes, Latino populations appear to have a health advantage relative to non-Latino white individuals born in the United States [1–3], despite Latinos' overall lower socioeconomic position (SEP). One of the central explanations proposed for these findings has been the potential role of greater retention of cultural factors presumed to be health protective. Specifically, acculturation has gained much attention in the literature as one of the processes explaining the health patterns observed among Latinos. Acculturation is generally defined as the process by which immigrants adopt the attitudes, values, customs, beliefs, and behaviors of a new culture [4–6] and has been associated with a wide range of health outcomes [7–14].

In recent years, however, the role of acculturation in explaining Latino health patterns has increasingly come into question. Broadly

construed, the debates can be characterized into two broad perspectives, one highly critical of acculturation measures and the other supporting this construct. Some scholars argue that the widespread popularity and focus on acculturation has failed to consider how socioeconomic condition, racialization processes, neighborhood deprivation, residential segregation, or other axes of social location in the United States shape the lives of Latino populations [15–19]. In fact, it has been suggested that the concept of acculturation is so flawed that it should be abandoned altogether [20]. Moreover, the expansive literature documenting the association between social inequalities and health suggests that acculturation/cultural factors alone are unlikely to explain the profound role of social disadvantage on health [21–23].

A second perspective is that, although imperfectly measured, acculturation remains crucial for understanding the health of racially and ethnically diverse populations. These scholars argue that to move the field forward what is needed is a better articulation of the theory/concept being tested, consideration of the dynamic process of acculturation over the life course, explicitly measuring “culture” as the underlying phenomenon suggested by

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acculturation measures and how this relates to health, and modeling the complex interplay of how social conditions produce and reinforce the adoption of particular forms of cultural norms, values, and practices [4,15,16,24,25]. Moreover, in some social science disciplines there has been a revival of cultural frameworks that articulate the intersection of poverty and culture and suggest that both can shape group identity formation and lead to the adoption of health behaviors, and ultimately health outcomes [26].

The issue that has received less attention in the public health literature is the extent to which these seemingly opposing areas of scholarship can be conceptually and empirically integrated. We suggest that both of these factors matter for Latino health and propose that one approach to addressing this debate is to test for interaction or joint effects, where culture and SEP jointly operate to increase risk of disease. Using a population-based sample of U.S. Latinos, we examined how language use, a commonly applied proxy measure of acculturation, and education, as a marker of SEP, are associated with two pressing public health problems: smoking and leisure-time physical activity. The prevalence of obesity has reached a crisis in the United States; Latino are disproportionately overweight/obese compared with white individuals [27,28] and have low levels of physical activity. Similarly, although the prevalence of smoking has significantly decreased in recent years, several studies have shown increased smoking among Latinos [29]. These health behaviors also allow us to examine diverging associations between acculturation and health since lower acculturation generally has been associated with lower smoking (i.e., health-enhancing), but lower acculturation has generally been associated with lower physical activity (i.e., health-damaging). On the basis of previous findings, we hypothesized that more frequent English language use and greater levels of education would be significantly and independently associated with physical activity, whereas the prevalence of smoking would be greater among those with more frequent use of English language and low levels of education. Further, we hypothesized that their joint effects would be significant, demonstrating the need to consider both of these factors as determinants of health in Latino populations.

Methods

We used cross-sectional data from the 2010 National Health Interview Survey (NHIS) to answer our study questions. The 2010 NHIS interview sample consisted of 34,329 interviewed households designed to be a nationally representative sample of the civilian, noninstitutionalized U.S. population. In all, 27,157 adults and 11,277 children were interviewed with a total household response rate close to 80%. The sample for this analysis was restricted to adults, 18 years and older who self-identified as Hispanic/Latino (herein Latino). We did not include non-Latino white or black populations in the analysis because our main interest was in exploring the role of acculturation, as measured by language use, on health, and very few white or black subjects in the sample had limited English proficiency.

Our main independent and dependent variables were dichotomized to ease subsequent testing of interaction. Our main independent variables are language use (herein interchangeably labeled “acculturation”) and educational attainment. Participants were asked to rate the “language they most often use,” and we classified those as having high levels of acculturation if they spoke English only or most of the time and the rest as having low levels of acculturation. Educational attainment was our marker of SEP, and subjects were classified as having high levels of education if they had some college education or more and were otherwise classified as having low education. The dependent variables in the present study are smoking and leisure-time physical activity. Participants

were coded as current smokers if they said yes to ever smoking at least 100 cigarettes in their lifetime and were currently smoking and otherwise classified as nonsmokers.

Participation in leisure-time physical activity was based on intensity, duration, and frequency of activity per week. As suggested in the NHIS documentation, we used the 2008 physical activity guidelines for adults to classify individuals as meeting physical activity guidelines for both aerobic and strengthening, either one, or neither. We classified people as physically active if they met criteria for both aerobic and strengthening activities, and inactive if they only met one or neither criterion. We adjusted for age (18 to <25 years, 25 to <45 years, 45 to <65 years, and 65 or greater), family income as a percent of the federal poverty level (up to 200% vs. 200% or greater) and gender in all analyses.

Statistical analyses

The Latino sample in the 2010 NHIS included a total of 5158 participants, of whom 4929 were included in our final analytic sample. Individuals were excluded if they were missing data on smoking ($n = 39$), physical activity ($n = 49$), education ($n = 32$), and language use ($n = 109$). Percent distributions and means were estimated for the total population and by acculturation status and educational level. We fit a series of sequential regression models that examined the independent association between acculturation and education and smoking and physical activity (Models 1–2) and then adjusted for both acculturation and education as well as age, gender, family income, and nativity/length of stay in the United States (Models 3–7). The number of records retained in these models varied depending on the covariates included. Furthermore, we estimated prevalence ratios as functions of average marginal predictions within a complex survey design setting [30] in an effort to reduce the potential of overestimating associations with odds ratios [31] and to more accurately detect the presence (or absence) of interaction, as described below.

To test for interaction between acculturation and education on smoking and physical activity, we applied the research methods illustrated by Knol and VanderWeele [32] and VanderWeele [33]. These authors suggest the use of categories with the lowest risk as the referent [34]. Thus, we created two coding schemes for educational attainment wherein for smoking models the high education group was assigned the referent category to reflect the lowest risk of smoking, whereas low education was the referent category in physical activity models because the probability of meeting recommended levels of physical activity was found to be the lowest in this group. For the acculturation variable, the low acculturation category served as the referent for both smoking and physical activity models because low-acculturated individuals were the least likely to smoke or meet guidelines for physical activity. We then created a four-level combined acculturation and education variable to model the joint effects of these exposures, where the combined group with the lowest risk was used as the referent. These models were adjusted for age, gender, family income, and nativity/length of stay in the United States. Data management was conducted in SAS version 9.2 (SAS Institute, Cary, NC), and statistical analyses were performed in SAS-callable SUDAAN to generate weighted prevalence estimates, and weighted crude and model-adjusted prevalence ratios.

Results

The characteristics of the study population are presented in Table 1. Sixty-percent of the study population was younger than 45 years of age, and slightly more than half was female. Most participants only achieved a high school education or less, 38% spoke

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