2012

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Recommended Citation

Campbell, Kelly; Garcia, Donna M.; Granillo, Christina V.; and Chavez, David V., "Exploring the Latino Paradox: How Economic and Citizenship Status Impact Health" (2012). *Psychology Faculty Publications*. 8.
https://scholarworks.lib.csusb.edu/psychology-publications/8

Exploring the Latino Paradox: How Economic and Citizenship Status Impact Health

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Exploring the Latino Paradox: How Economic and Citizenship Status Impact Health

Abstract

We examined the contributions of economic status (ES) and citizenship status to health differences between European Americans, Latino Americans, and non-citizen Latinos. The investigation was framed using social identity and comparison theories. Southern California residents (N = 2164) were randomly selected to complete a telephone interview. Increases in ES predicted health improvements for European Americans across ES levels. For Latino citizens and non-citizens, ES improvements had no effect on objective health. For subjective health, the Latino paradox existed at the lowest ES level for Latino Americans, and did not exist for non-citizens. For objective health, the paradox existed in both Latino groups at low ES, and additionally for Latino Americans at mid ES. Our findings suggest that compared to Latinos, improvements in ES have a stronger positive impact on the health of European Americans, which is likely due to the social comparisons being made by each cultural group.

Keywords: Latino paradox, economic status, citizenship status, health, ethnicity

Exploring the Latino Paradox: How Economic and Citizenship Status Impact Health

Introduction

As part of the 2020 Developing Healthy People Initiative, the US Department of Health and Human Services (HHS, 2009) has a primary objective of eliminating health disparities. Health disparities pertain to discrepant health outcomes and access to healthcare across groups based on economic status (ES), ethnicity, and other demographic factors. ES and ethnicity overlap such that some ethnicities are overrepresented at lower or higher levels of ES, which exaggerates health disparities (Williams & Collins, 2002). Individuals with the poorest health tend to be from low income, ethnic minority groups, whereas individuals with the best health tend to be from high income, European American groups. Paradoxical findings, however, emerge for Latinos, who seem to fare better than European Americans on a variety of health outcomes (Abraıdo-Lanza, Chao, & Florez, 2005; Alegria et al., 2008). In this paper, we explore the Latino paradox by considering the effects of ES, ethnicity, and citizenship status on health outcomes. Our investigation utilizes social identity and comparison theories to explain the paradox as evidenced in epidemiological data collected in the Coachella Valley of Southern California.

ES, Ethnicity, and Health Disparities

Economic status is typically conceptualized in terms of education level, income, and occupation type (Schneiderman, 2004). The contributions of these indicators toward health behaviors, illness behaviors, health indicators, and health status have been demonstrated in prior work, however, the predictive ability of each indicator varies across studies (Adler & Rehkopf, 2008; Braveman, 2006). Several reasons could explain the inconsistency in findings, including variations in how the indicators are measured and failure to account for factors that modify the

impact of an indicator. For example, researchers often overlook family size in their assessments

of household income, which is an important variable to consider because families at lower levels

of the ES gradient include an over-representation of ethnic minority families, and typically have

more dependents in the home (e.g., Nepomnyaschy, 2009). A more meaningful way to account

for cultural variation is to use calculations based on the Federal Poverty Level that allow for a

poverty threshold to be identified and adjusted according to the number of household members

(US Department of Health and Human Services, 2007). Researchers should therefore consider

the meaning of ES for the particular populations under investigation, particularly when

examining health disparities.

In addition to ES, health disparities researchers focus on ethnicity because it too has

consequences for health (e.g., Braveman, 2006). Compared to European Americans, ethnic

minorities have higher death rates, higher infant mortality rates, lower birth weights, greater

incidence of hypertension, greater incidence of diabetes, lower life expectancy rates, higher rates

of drug and alcohol abuse, and higher rates of obesity (Williams & Collins, 2002). In general,

ethnicity-based health disparities are reduced when researchers control for ES, but they do not

disappear (Ruel, Reither, Robert, & Lantz, 2010).

The overlap between ethnicity and ES suggests that a more complete investigation of

health disparities would be one that examines the combined contributions of income level and

ethnicity (Braveman, 2006). It is possible that because some ethnic groups are more prone to

discrimination and feelings of social devaluation than others, increases in ES will not bring equal

health benefits across all individuals. Rather, within the current US social hierarchy, the ethnic

majority derive greater benefits from high income, whereas ethnic minorities might especially be

harmed by low income due to their differential social valuation (Stewart, Dean, Gregorich,

Brawarsky, & Haas, 2007). From both objective (material) and subjective (social) aspects then, the multiplicative negative consequences of ES and ethnicity could place ethnic minorities at greater risk for high stress and poor health. Thus, one goal of the current paper is to examine the interaction of ES and ethnicity on two ethnic groups in the US: those with European and those with Latino heritage.

The Latino Paradox: Citizenship Status Effects

The current influx of Latin American immigrants is changing the ethnic diversity of the US and, in particular, of California (Passel & Suro, 2005). Latinos are now one of the largest ethnic groups in the US. They comprise 12% of the total population, and approximately 40% are foreign born (Greico, 2009). Most Latinos in the US are Mexican nationals or of Mexican descent (64%) and as such, the research reported herein pertains mostly to Mexican individuals.

Beyond their growing numbers, the immigrant Latino population is of interest because there is evidence they tend to experience better health than US born individuals. As noted, the Latino paradox refers to a phenomenon whereby Latinos fare better than European Americans in terms of health. This finding is paradoxical because overall, Latinos have a lower ES compared to European Americans and would therefore be expected to experience worse health (Marger, 2011). However, researchers have found inconsistent support for this paradox with some reporting that compared to European Americans, Latinos are in better health (Alegria et al., 2008; Abraıdo-Lanza et al., 2005), and others reporting that they are in poorer health (Centers for Disease Control and Prevention 2004; Ogden, Carroll, Curtin, McDowell, Tabak, & Flegal, 2006).

This inconsistency has been explained by a number of factors including immigration or citizenship status. Oza-Frank and Narayan (2010) found that Latino immigrants tended to be in

better health than their US born counterparts, and suggested that the Latino paradox might more accurately be referred to as a Latino immigrant paradox (Acevedo-Garcia et al., 2007). One explanation for the health protection of immigrant status points to acculturation. Immigrants who are less acculturated to the US are less likely to be obese (i.e., have a lower Body Mass Index), have a higher fruit and vegetable intake, and are less likely to smoke and consume alcohol (Pérez-Escamilla & Putnik, 2007). Moreover, adult immigrants with higher levels of acculturation tend to be at greater risk for mental health disorders (Alegria et al., 2008; Burnam Hough, Karno, Escobar, & Telles, 1987).

Social Identity and Social Comparison Theories

Two theories, social identity (Tajfel & Turner, 1986) and social comparison (Suls, Martin, & Wheeler, 2002) can be used to elaborate on the Latino paradox literature and explain why Latinos and European Americans may experience differential health outcomes. Social identity theorists propose that the self-concept is derived from group memberships (i.e., ethnicity), rather than solely personal attributes. People's self-evaluations are influenced by their perceptions of how they measure relative to other ingroup members (e.g., those who share the same ethnicity) and how their ingroup measures relative to important outgroups (e.g., other salient ethnic groups).

This focus on the importance of relative experience is consistent with social comparison theory. According to this theory, because objective criteria for evaluation are often unavailable, individuals draw comparisons between themselves and similar others in order to assess their experiences and determine their well-being and worth (Suls et al., 2002). The subjective interpretations that arise from these social comparisons can have objective consequences, including physiological stress (e.g., Cohen, Alper, Doyle, Adler, Treanor, & Turner, 2008),

which in turn have significant implications for health (Kudielka, Schommer, Hellhammer, &

Kirschbaum, 2004). Whether people experience stress or satisfaction can depend upon the

nature of the comparisons they make. Upward intergroup comparisons can be made in which

individuals who are lower in the hierarchy (i.e., low income, ethnic minorities) compare

themselves to people who are higher in the hierarchy (i.e., high income, ethnic majority) because

they aspire to have the same resources and attributes as the dominant group (Suls et al., 2002).

The more distant individuals feel from achieving dominant group standards, the more likely they

will experience feelings of devaluation, which can be stressful and adversely affect health.

Downward or lateral intragroup comparisons involve evaluating oneself against people who are

lower or at the same level in the social hierarchy, which can reduce stress and serve to bolster or

protect self-esteem and health.

Using social identity and comparison theories, we predict that the Latino paradox may be

a phenomenon existing at primarily the lowest ES level. This prediction is expected because the

health of European Americans may be especially harmed by low ES *and* because low ES Latinos

may be advantaged relative to their European American counterparts, as suggested by prior work

(Alegria et al., 2008; Abraido-Lanza et al., 2005). Therefore, it is both the *negative* effects

experienced by low ES European Americans, as well as the *positive* effects experienced by low

ES Latinos that may account for the paradox. We expand upon these ideas in the following

paragraphs.

European Americans may be especially harmed by low ES because as members of the

ethnic majority, they should theoretically be able to achieve the "American Dream" (i.e.,

economic success). Given that they have no ethnic-based reason for occupying low ES, this

status should be particularly harmful to feelings of devaluation and health. Their position at the

bottom of the economic ladder is reinforced by negative cultural stereotypes such as "poor White trash." Low ES may be harmful to this group for other reasons as well. For one, compared to Latinos, they lack cohesiveness within their ethnic group because they have been encouraged to blend in with the mainstream (i.e., disassociate from their country of origin) in order to receive the benefits of being "white" (Marger, 2011). Their low ES additionally exposes them to a culture of poverty that may be distinct from the experience of low ES Latinos, particularly if Latinos draw downward or lateral comparisons to individuals in their home country (Wolf Acevedo-Garcia, Subramanian, Weber, & Kawachi, 2010). The US "culture of poverty" includes factors such as devalued status, consumption of unhealthy (e.g., high fat, processed) foods, and limited access to healthcare (Pérez-Escamilla & Putnik, 2007). Taken together, these elements make low ES European Americans especially prone to poor subjective and objective health.

The Latino paradox can also be explained according to the buffering effects Latinos experience in the low ES category. In the US, both Latino Americans and non-citizen Latinos are over-represented in the low ES category. Social comparison theory predicts that individuals draw the most salient and relevant group comparisons (Suls et al., 2002), which makes it likely that Latinos are using lateral or intragroup comparisons for their evaluations. These social comparisons are expected to buffer or bolster the self-esteem and health of Latinos in the US. Relative to low ES European Americans, Latinos also tend to be more embedded in their community, which has benefits in terms of increased social support, reduced stress, and improved health (Almeida, Molnar, Kawachi, & Subramanian, 2009; Denner, Kirby, Coyle, & Brindis, 2001). Latinos may be less likely to internalize the US "culture of poverty" in terms of internalizing a devalued status because of their intra-ethnic group comparisons, and they may be

more likely to consume healthier, traditional foods because of stronger ties to their cultural

group.

Social identity and comparison theories can further be used to predict health outcomes for

non-citizen Latinos. As noted, a large segment of the Latino population is foreign born, and

compared to other ethnic minority groups (i.e., African and Indigenous Americans), Latinos are

overall more recently immigrated (Greico, 2009; Marger, 2011). People who are foreign born

and/or recently immigrated may not compare themselves to the American ethnic majority, and

may instead make downward comparisons to people from their countries of origin (Wolf et al.,

2010). The close proximity of the US to Mexico would make such comparisons particularly

salient for Latinos, especially those living in California, who may regularly cross the border and

have frequent communication with their friends and family in Mexico (Hayes-Bautista, 2004).

Immigrant or non-citizen Latinos would then experience better health outcomes for a number of

reasons. First, comparable to Latino Americans, they are likely to make intragroup (lateral),

rather than intergroup (upward) comparisons (Garcia et al., 2006; Major, 1994). Such

comparisons may cause them to not be fully aware of or concerned about their devalued status in

the US. Second, similar to other immigrant groups, they primarily come to the US for improved

economic opportunities, and tend to be doing better than friends and family in their home

countries (Marger, 2011). These downward comparisons would enhance their self-esteem, lower

their stress, and help maintain good health. Finally, non-citizen Latinos may not have fully

acculturated into the poor health patterns of the dominant American culture.

Social identity and comparison theories also provide predictions for health outcomes

across ES and cultural groups. We expect that compared to Latinos, European Americans will

experience greater health improvements as a result of increasing ES. This finding is expected

not only because high ES is associated with access to resources (e.g., information, nutritional

foods, healthcare), but also because European Americans would experience substantial boosts in

social valuation at increased levels of ES. Although Latinos would also experience benefits from

higher ES in terms of greater access to resources, they may begin to make intergroup (upward)

comparisons, rather than intragroup (lateral) comparisons with improved ES. Such upward

comparisons would result in feelings of devaluation, increased stress, and poor health outcomes,

particularly if racism is also experienced. Latinos in higher ES groups may additionally lose

some of their community embeddedness due to increased time at work, moving into new

neighborhoods, and changing social networks. So although they benefit from increased access to

resources, these gains are neutralized by losses resulting from their social comparisons to

European Americans.

Current Study

The inconsistent findings regarding the Latino paradox indicate that more work needs to

be done to identify how acculturation influences Latino health. Social identity and comparison

theories provide a guiding framework for our study because they explain why Latinos might fare

better than European Americans and why Latinos may experience different outcomes depending

on their citizenship status. Based on our empirical and theoretical review, we developed the

following hypotheses:

H1: The positive association between ES and health will be stronger for European

Americans than for Latinos.

H2: Consistent with prior work on the Latino paradox, Latinos will report better

subjective and objective health relative to European Americans.

H3: The Latino paradox will be stronger at low levels of ES and be especially accounted for by non-citizen Latinos.

Methods

Participants

Survey respondents were adults who self-identified as European American citizens (n = 1370) or Latino (n = 239). European Americans (716 women, 654 men) ranged in age from 18 to 96 years (Median = 65 years). The Latino Americans (88 women, 83 men) ranged in age from 18 to 83 years (Median = 45 years). The non-citizen Latinos (38 women, 30 men) ranged in age from 20 to 73 (Median = 42 years).

Procedure

Participants who were living in the Eastern Riverside Country of Southern California were contacted for a telephone interview using random digit dialing (RDD). This method ensured that all telephone-equipped households were included in the sample. Computer assisted telephone interviewing (CATI) software was utilized to administer the survey. The data were originally collected by the Health Assessment Resource Center (HARC), and the authors obtained permission to use the data for the current study. Complete information about the methods used for data collection is available at http://www.harcdata.org. Only the measures used for the present investigation are described below. IRB approval for this study was obtained from the authors' university committee.

Measures: Predictor Variables

Participants responded to questions about their demographic characteristics including income level, ethnic group, citizen status, age, and gender. These demographic items were used to create the predictor variables or as covariates in the analyses.

Cultural group. To test our specific hypotheses, we created three groups of participants based on their ethnic group (i.e., European American or Latino) and citizenship status (citizen or non-citizen). In order to assess citizenship status, participants were told: "The following question is on citizenship and immigration. Your answer is confidential and will not be reported to any government agency. Are you a citizen of the United States?" Response options included "yes" or "no." For this measure, we extracted only European Americans who responded "yes" and Latino respondents who answered this "yes" (n = 171) or "no" (n = 68). This measure served to allow comparisons among European Americans (citizens), Latino Americans (citizens), and non-citizen Latinos.

Economic status (ES). The income categories in the data set began with 1= less than $10,000, and then increased by $5,000.00 increments, capping at 20 = $100,000.00 or more. The survey providers, HARC, used the 2007 Federal Poverty Guidelines furnished by the Department of Health and Human Services (HHS, 2007) to calculate federal poverty level (FPL) based on household income and household size (see below). They categorized each participant's score as: At or below 100% of the Federal Poverty Level; at or below 200% of the Federal Poverty Level; at or below 250% of the Federal Poverty Level; at or below 300% of the Federal Poverty Level (coded as 4), and, at or above 300% of the Federal Poverty Level (coded as 5). California has a high cost of living relative to most other US states. In 2007, cost of living adjustments show that Californians at 200% of the FPL are worse off than similar individuals in other states, regardless of city size (Harbage, Ryan, & Chen, 2007). We took this information into consideration and adjusted the FPL levels in the HARC data to reflect this consideration. Thus, we collapsed together FPL 1 and 2 (coded as 1 = low ES) to reflect the category at or below poverty line in California and FPL 3 and 4 (coded as 2 = mid ES) to reflect the category at or just above poverty

level in California. FPL 5 was left alone to reflect above poverty level in California (coded as 3

= high ES). We used the adjusted Federal Poverty Level (FPL) as a measure of ES.

Covariates. We included responses to questions about participants' age, gender, and

Body Mass Index (BMI) as covariates in the analyses because each is related to health (Franks,

Gold, & Fiscella, 2003; Ruel et al., 2010; Wang & Beydoun 2007). Of particular concern was

the age difference between European American and Latino respondents. The younger age of the

Latinos could account for any health advantage they may show. BMI was calculated by dividing

participants' self-reported weight by their self-reported height. Although there is evidence that

BMI is not the best gauge of weight status, it is one of the more common mechanisms for

assessing obesity and an established correlate of illness (Wang & Beydoun, 2007).

Subjective health. In order to assess subjective health, participants responded to the

following question "Would you say, in general, that your health is: Excellent (1), Very Good (2),

Good (3), Fair (4), or Poor (5)?" Self-rated health assessments have been shown to provide

accurate estimations of health status (Jylha, 2009). However, the correlation between subjective

and objective health may differ across cultural groups, with European Americans being most

likely to evaluate their subjective health according to US standards of objective health. Because

prior work on the Latino paradox has demonstrated different health patterns depending on

whether subjective or objective measures are used, both types of assessments are examined in

this study, and the correlation between the two will be reported for each cultural group.

Objective health. Participants were provided with a list of illness outcomes and asked

whether a health care professional had ever diagnosed them with one or more conditions. The

list included: severe headache, joint pain, trouble breathing, chest pain, blurred vision, dental

pain, high blood pressure/hypertension, high blood cholesterol, heart disease, cancer, a stroke,

respiratory disease such as emphysema, liver disease/cirrhosis, bone disease/osteoporosis,

arthritis, asthma, tuberculosis, obesity, diabetes, heart attack, depressive disorder (major or

chronic, or mild depression), bipolar disorder, schizophrenia, panic disorder, obsessive

compulsive disorder (OCD), post-traumatic stress disorder (PTSD), generalized anxiety disorder

(GAD), and phobia. Responses were coded as "yes" (1) or "no" (0), and summed to develop a

composite objective illness outcome score for each respondent.

Results

The hypotheses were examined using two-tailed tests with significance levels set at .05.

Variations in degrees of freedom across analyses reflect differences in the number of participants

who responded to each measure, as well as the manner in which citizenship status was coded.

Given that many Latinos did not respond to the citizenship question, the second set of analyses

had fewer degrees of freedom.

Main Analyses

We hypothesized that ES and cultural group would jointly influence respondents'

subjective and objective health. To test our hypotheses, we conducted 3(Cultural Group:

European American, Latino Americans, and non-citizen Latinos) x 3(ES: low, middle, or high)

ANCOVAs on subjective and objective health. The means (adjusted for the covariates) and

standard errors for the 3 x 3 analyses on both outcome measures are reported in Table 1.

INSERT TABLE 1 HERE

Subjective health. We conducted the first ANCOVA with subjective health (coded such

that lower scores equaled better health) as the outcome measure. In these analyses, age, $F(1,$

$1593) = 11.54, p = .001, \eta^2 = .01$, and BMI, $F(1, 1593) = 34.32, p < .001, \eta^2 = .02$, were

significant covariates, but gender was only marginally significant, $F(1, 1593) = 2.78, p = .096, \eta^2$

< .01. Although these analyses did not produce a main effect of cultural group, $F(2, 1593) =$ 0.97, $p = .381$, they did reveal a significant main effect of ES, $F(2, 1593) = 8.98$, $p < .001$, $\eta^2 =$ .01. This main effect indicated that across cultural groups, those at low ES ($M_{adjusted} = 2.95$, $SE =$ .08) reported worse outcomes than did those both at mid ES ($M_{adjusted} = 2.81$, $SE = .14$), $t(1602) =$ 4.99, $p < .001$, $r = .12$, and at high ES ($M_{adjusted} = 2.29$, $SE = .14$), $t(1602) = 11.58$, $p < .001$, $r =$ .28. Those at mid ES also reported worse health relative to those at high ES, $t(1602) = 5.05$, $p <$ .001, $r = .13$.

Of central interest was the significant cultural Group x ES interaction, $F(4, 1593) = 2.38$, $p = .050$, $\eta^2 = .01$. To interpret this interaction, we first examined simple effects between each level of ES, within each cultural group (see Table 1), continuing to control for the covariates. These analyses indicated that European American respondents reported worse health at low ES relative to mid ES, $t(1596) = 5.71$, $p < .001$, $r = .14$, and high ES, $t(1596) = 10.88$, $p < .001$, $r =$ .26, and worse health at mid ES relative to high ES $t(1596) = 3.87$, $p < .001$, $r = .10$. Latino American respondents reported worse health at low ES, $t(1596) = 2.71$, $p = .007$, $r = .07$, and mid ES, $t(1596) = 3.30$, $p = .022$, $r = .06$, relative to high ES. For European Americans, low and mid ES did not differ, $p = .725$. Non-citizen Latinos showed no differences in subjective health as a function of ES, all $ps > .14$. We next examined simple effects across cultural groups at each level of ES. These analyses showed that relative to Latino Americans, European Americans reported worse health at low ES, $t(1596) = 1.99$, $p = .047$, $r = .05$. There was also a marginal tendency at mid ES for European Americans to report better health than non-citizen Latinos, $t(1596) = -1.74$, $p = .082$, $r = .04$. There were no other cultural differences in reported health as a function of ES, $ps > 16$.

Objective health. As in the analyses for subjective health, the 3x3 ANCOVA on objective health revealed that, age, $F(1, 1597) = 98.09$, $p < .001$, $\eta^2 = .06$, and BMI, $F(1, 1597) = 64.24$, $p < .001$, $\eta^2 = .04$, were significant covariates, and gender was only a marginally significant covariate, $F(1, 1597) = 2.69$, $p = .101$. In contrast to the results for subjective health, both main effects were significant for objective health. The main effect of cultural group, $F(2, 1597) = 16.15$, $p < .001$, $\eta^2 = .02$, indicated that European Americans ($M_{adjusted} = 2.66$ $SE = .06$) reported more diagnosed illnesses than did both Latino Americans ($M_{adjusted} = 1.78$, $SE = .15$), $t(1606) = 2.81$, $p = .005$, $r = .05$, and non-citizen Latinos ($M_{adjusted} = 1.89$, $SE = .31$), $t(1606) = 1.69$, $p = .092$, $r = .04$, though the latter effect was only marginally significant. Among Latinos, Americans and non-citizens did not differ in the number of diagnosed illnesses they reported, $t(1606) = 0.13$, $p = .899$. The main effect of ES was such that objective health was better at high ES ($M_{adjusted} = 1.66$, $SE = .23$), relative to both low ES ($M_{adjusted} = 2.38$, $SE = .13$), $t(1606) = 4.24$, $p < .001$, $r = .11$, and mid ES ($M_{adjusted} = 2.29$, $SE = .22$), $t(1606) = 7.96$, $p < .001$, $r = .20$. Objective health was also worse at middle ES relative to high ES, $t(1606) = -2.48$, $p = .013$, $r = .06$.

Of central issue was the significant cultural group x ES interaction, $F(4, 1597) = 6.10$, $p < .001$, $\eta^2 = .02$. To decompose this interaction, we examined the simple main effects of ES within each cultural group, controlling for the three covariates. For the European American respondents, objective health was worse at the lowest ES relative to middle ES, $t(1600) = 6.53$, $p < .001$, $p < .001$, $r = .16$, and high ES, $t(1600) = 10.78$, $p < .001$, $r = .26$, and worse at mid ES relative to high ES, $t(1600) = 2.69$, $p = .007$, $r = .07$. For the Latino Americans and non-citizen Latinos, objective health did not differ as a function of ES, all ps $>.11$. We next examined simple main effects within cultural group. At low ES, European Americans reported worse

objective health relative to both Latino Americans, $t(1600) = 5.84$, $p < .001$, $r = .14$, and non-citizen Latinos, $t(1600) = 6.13$, $p < .001$, $r = .15$. Latino Americans and non-citizens did not differ at low ES, $p = .732$. The only other effect was that at mid ES, European Americans tended to report worse objective health than did Latino Americans, $t(1600) = 1.74$, $p = .082$, $r = .04$, all other $ps > .16$.

Secondary Analyses

As a final set of analyses, we examined the relationship between each of the outcome variables and the covariates within each of the three cultural groups (European American citizens, Latino Americans, and non-citizen Latinos). We then compared the magnitude of correlations between each cultural group, again setting significance at $p > .05$, two tailed. Gender was not significantly correlated with subjective or objective health for any of the cultural groups, all $ps > .12$, so it is not reported below.

INSERT TABLE 2 HERE

The correlations between subjective and objective health provided some insight into why the pattern of means for the two health measures differed across cultural groups. We found that for European Americans, subjective health was a moderately strong indicator of objective health $r(1366) = .51$, $p < .001$. The correlation between subjective and objective health was also significant for Latino Americans, $r(171) = .35$, $p < .001$, and marginally significant (due to the low n) for non-citizen Latinos, $r(68) = .24$, $p = .053$. The magnitude of these correlations was statistically larger for European Americans than it was for both Latino Americans, $z = 2.39$, $p = .008$, and non-citizen Latinos, $z = 2.47$, $p = .007$. The relationship for Latino Americans and non-citizen Latinos did not significantly differ between the two cultural groups, $z = 0.84$, $p = .401$. The overall pattern of correlations between the two health measures suggests that

compared to Latinos, European Americans' evaluations of their subjective health are more strongly influenced by their objective health, or by US standards of objective health.

We next looked at the relationship between age and both health outcomes. An interesting pattern emerged suggesting that the relationship between age and poor health was less apparent for European Americans than it was for either Latino group. For European Americans, the relationship between age and both subjective health, $r(1366) = .06$, $p = .033$, and objective health was smaller, $r(1370) = .21$, $p < .001$ than it was for Latino Americans, $r(171) = .21$, $p < .001$, $z = -1.92$, $p = .055$, and $r(171) = .39$, $p < .001$, $z = -2.45$, $p = .014$. Although relative to Latino Americans, the correlations for non-citizen Latinos appeared similar in magnitude for both subjective $r(68) = .20$, $p = .102$, and objective health, $r(68) = .36$, $p = .003$, these correlations did not differ from European Americans, $z = -1.14$, $p = .254$, and $z = 1.29$, $p = .197$, respectively.

In terms of the relationship between BMI and the health outcomes, it appeared that BMI was similarly related to subjective health for all three cultural groups: European Americans, $r(1266) = .15$, $p < .001$; Latino Americans, $r(171) = .13$, $p = .098$; and non-citizen Latinos, $r(68) = .23$, $p = .065$. The relationship between BMI and objective health, however, was more applicable to European Americans, $r(1370) = .20$, $p < .001$, because the same relationship was not significant for Latino Americans, $r(171) = .11$, $p = .169$, or non-citizen Latinos, $r(68) = .10$, $p = .403$. Despite these differences across cultural groups, the correlations were significantly equal in magnitude, all zs < 1.10, and ps > .13.

Discussion

In this study, we examined the influence of economic status (ES), ethnicity, and citizenship status on subjective and objective health for Latinos and European Americans. In support of our hypothesis, we found that the buffering effects of ES on health differed across

cultural groups, with European Americans' health benefiting the most from increases in ES, and

non-citizen Latinos benefiting the least. For subjective health, European Americans reported

improvements with each increasing level of ES, which is consistent with prior research on the

protective factors associated with ES (Wang & Beydoun, 2007). Latino Americans however,

only reported improved subjective health at the highest ES level, and non-citizen Latinos did not

experience any subjective health improvements as a result of ES.

Overall, we found support for the Latino paradox in that compared to European

Americans, Latinos evidenced better subjective and objective health. We expected the paradox to

be stronger at low ES and be especially accounted for by non-citizen Latinos. With respect to

subjective health, this hypothesis was partially supported. Compared to Latino Americans but not

non-citizen Latinos, European Americans experienced worse subjective health at the lowest ES.

One reason for the discrepant outcomes across Latino groups may be that subjective health is

differentially evaluated by Americans and non-citizens (Johnson, Carroll, Fulda, Cardarelli, &

Cardarelli, 2010). This proposition is reinforced by our finding that subjective and objective

health correlations differed in strength across cultural groups; which we discuss in greater depth

below. For objective health, European Americans again demonstrated improved health at each

ES level. Latino Americans and non-citizen Latinos did not experience any significant health

benefits as a function of ES. In building on our findings for subjective health, we found

evidence for the paradox in both Latino groups. That is, compared to European Americans,

Latino Americans *and* non-citizen Latinos reported fewer illness outcomes at low ES; Latino

Americans also reported better health than European Americans at mid ES.

Social identity and social comparison theories may be used to inform our paradox

findings (Tajfel & Turner, 1986; Suls et al., 2002). Recall that according to these theories,

evaluations of well-being are derived from salient group comparisons. For subjective health, we found that the paradox existed for Latino Americans at the lowest ES level, and was not evidenced by non-citizen Latinos. It is possible that with the large number of Latinos living in California, Latino Americans in the lowest ES group are comparing themselves to non-citizens, or other low ES Latinos in their communities (i.e., making lateral or downward comparisons), and consequently evaluate themselves as doing well. However, as Latino Americans move up in ES, they may shift their comparison group to European Americans (i.e., making upward comparisons), which would cause more negative evaluations of well-being and health, particularly if they experience discrimination or barriers to success. We found no differences in subjective health for non-citizen Latinos, which as noted above, may result from the differential criteria being used to evaluate health. Another explanation is that the salience of citizenship status to non-citizens' identity causes them to draw lateral or intragroup comparisons with other non-citizens, rather than people still living in their country of origin.

Our findings regarding objective health were as expected, except that the paradox extended beyond low ES groups to include Latino Americans at mid ES. We predicted that low ES Latinos would be advantaged relative to European Americans because of the social comparisons being made by each cultural group. European Americans with low ES were expected to be drawing upward comparisons with European Americans of higher ES, which would result in feelings of devaluation and poor health. Latino Americans and non-citizen Latinos, on the other hand, were expected to make lateral or downward comparisons to other low ES Latinos and/or to family and friends in their home country. Such comparisons would positively influence self-esteem and health. In sum, these predictions were supported. Our finding that *mid* ES Latino Americans experienced better health than their European Americans

counterparts suggests that Latino Americans may not begin comparing themselves to European

Americans until they reach the highest ES category, which ultimately serves to bolster health.

An unexpected and interesting finding was that non-citizen Latinos experienced the worst

subjective and objective health outcomes at mid ES. There are a variety of explanations for this

effect. It is possible that as Latino immigrants acquire resources and move into the mid ES

category, they begin identifying with US norms and standards, rather than those of their own

cultural group, which could adversely affect health. For example, Latinos whose ES is

improving may feel pressure from aiming to achieve European American markers of success,

especially if opportunities are not as readily available to them. This realization, coupled with

increased time spent at work and resulting stress may also cause them to engage in unhealthy

coping behaviors such as smoking cigarettes or drinking alcohol. With time in the US, they may

also begin to consume less traditional and more processed or fast foods, which would negatively

impact health (Pérez-Escamilla & Putnik, 2007). It is noteworthy that non-citizens reported the

best objective health across cultural groups at high ES, suggesting that irrespective of US

acculturation, they have the resources and flexibility to manage stress and maintain a healthy

lifestyle. Due to the small cell sizes for non-citizen Latinos in the high ES group, however, this

latter finding should be interpreted with some caution.

In our secondary analyses, we examined the correlation between objective and subjective

health for European Americans, Latino Americans, and non-citizen Latinos. The health

assessments were significantly positively correlated across all groups; however, the correlation

was strongest for European Americans, less so for Latino Americans, and weakest for non-

citizen Latinos. Thus, evaluations of subjective health were more strongly influenced by

objective health for European Americans than for Latinos. Taken together with the finding that

BMI was a stronger indicator of subjective health for European Americans than it was for Latinos, our results suggest that perceptions of health are culturally influenced. Latinos' ratings of subjective health are likely influenced by factors external to the dominant US cultural meaning of objective health. It is therefore important for researchers to employ culturally relevant measures of health when studying or working with culturally distinct populations.

We also examined the role of our covariates in predicting different health outcomes across cultural groups. Gender was not significantly associated with health for any cultural group, however age and BMI demonstrated noteworthy patterns. Compared to both Latino groups, age exhibited a weaker association with objective health for European Americans. One explanation for this finding is that relative to Latinos living in the US, European Americans have access to more or better resources that buffer the effects of age. Plausibly, access to age-buffering resources is based on family economics, which in the US is distributed disparately between the two ethnic groups. Indeed, in our sample, European Americans were over-represented in high ES (70.7%), compared to Latino Americans and non-citizen Latinos (31.4%).

Consistent with prior work (Ogden, Flegal, Carroll, & Johnson, 2010), BMI was higher for Latinos relative to European Americans, and for low relative to high income groups. Of particular note, although BMI is well-established as a significant contributor to poor illness outcomes (The California Center for Public Health Advocacy, 2009; Wang & Beydoun, 2007), BMI predicted health outcomes for European American but not Latino respondents. An explanation for this finding may be that Latino respondents, especially the immigrants, are a self selected group, who need to be in strong physical and mental health to make the journey from their home countries. They additionally must meet standards of health outlined by the US Citizenship and Immigration Services before they are granted visas. This initial good physical

and mental health may buffer the effects of increased weight gain. Another explanation is that

overall, Latinos have strong family values and tend to reside in ethnic enclaves within the US,

both of which enhance levels of actual and perceived social support (Almeida et al., 2009;

Denner et al., 2001). This strong support network may buffer the negative effects of low ES and

associated factors such as BMI on health.   Our western standards of BMI do not apply to all

groups and it is the types of food consumed that contribute to increase BMI that matters.

Although our study contributes valuable insight toward the Latino paradox literature,

some limitations should be noted. The data were collected by a third party and as such, the

researchers did not have complete control over the measures used. For example, the income

information would have been more useful if it had been collected in a continuous, rather than

categorical format. We additionally used citizenship status as a measure of immigration status,

and did not have information regarding the length of time Latinos had been living in the US,

which is important because protective factors tend to erode after a period of time in the country.

Other limitations pertained to the self-report nature of the study. For example, BMI was

calculated by dividing self-reported weight by self-reported height. Although some researchers

have found such reports to be reliable (Kuczmarski, Kuczmarski, & Najjar, 2001), other have

found them less reliable (e.g., Taylor, Dal Grande, Gill, Chittleborough, Wilson, & Grant, 2006).

Our health outcome measures were similarly self-reported, but research has demonstrated a

significant association between self-rated and objective health assessments (Jylha, 2009). A final

limitation relates to the small cell sizes for non-citizen Latinos, particularly in the highest income

group. Future research is needed to examine the role of immigration status in understanding the

Latino paradox, particularly in terms of how ES interacts with length of time in the US to predict

health outcomes.

References

Abraido-Lanza, A. F., Chao, M. T., & Florez, K. R. (2008). Do healthy behaviors decline with greater acculturation?: Implications for the Latino mortality paradox. *Social Science and Medicine, 61*, 1243–1255.

Acevedo-Garcia, D., Soobader, M.-J., & Berkman, L. F. (2007). Low birthweight among Hispanic/Latino subgroups: The effect of maternal foreign-born status and education. *Social Science and Medicine, 65,* 2503–2516.

Adler, N. F., & Rehkoph, D. H. (2008). U.S. disparities in health: Descriptions, causes, and mechanisms. *Annual Review of Public Health, 29,* 235–252.

Alegria, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., Torres, M., Chen, C-N., & Meng, X-L. (2008). Prevalence of mental illness in immigrant and non-immigrant US Latino groups. *American Journal of Psychiatry, 165,* 359–369.

Almeida, J., Molnar, B.E., Kawachi, I., & Subramanian, S.V. (2009). Ethnicity and nativity status as determinants of perceived social support: Testing the concept of familism. *Social Science and Medicine*, *68*, 1852-1858.

Braveman, P. (2006). Health disparities and health equity: Concepts and measurement. *Annual Review of Public Health 2006, 2*,167-194.

Burnam, M. A., Hough, R. L., Karno, M., Escobar, J. I. & Telles, C. A. (1987). Acculturation and lifetime prevalence of psychiatric disorders among Mexican Americans in Los Angeles. *Journal of Health and Social Behavior, 28*, 89-102.

Centers for Disease Control and Prevention. (2004). *The burden of chronic diseases and their risk factors: National and state perspectives 2004*. Atlanta: US Department of Health and Human Services; 2004. Available at: http://www.cdc.gov/nccdphp/burdenbook2004.

Cohen, S., Alper, C. M., Doyle, W. J., Adler, N., Treanor, J. J., & Turner, R. B. (2008).

Objective and subjective socioeconomic status and susceptibility to the common cold. *Health Psychology, 27,* 268-274.

Denner, J., Kirby, D., Coyle, K., & Brindis, C. (2001). The protective of social capital and cultural norms in Latino communities: A study of adolescent births. *Hispanic Journal of Behavioral Sciences*, *23*, 3-21.

Franks, P., Gold, M. R., & Fiscella, K. (1982). Sociodemographics, self-rated health, and mortality in the US. *Social Science & Medicine*, *56* (12), 2505-2514.

Garcia, D. M., Branscombe, N. R., Desmarais, S., & Gee, S. S. (2006). The effects of social comparisons and policy experience on attitudes toward redistributive social policies. In S. Guimond (Ed.), *Social comparison and social psychology: Understanding cognition, intergroup relations and culture* (pp. 151-173). Cambridge, UK: Cambridge University Press.

Greico, E. M. (2009). Race and Hispanic origin of the foreign-born population in the United States: 2007. *American Community Survey Reports, ACS-11*, US Census Bureau, Washington, D.C.

Harbage, P., Ryan, J., & Chen, L. (2007, July). *The future of California's SCHIP program: Analyzing the proposed federal legislation*. California HealthCare Foundation. Retrieved from http://www.mrmib.ca.gov/mrmib/HFP/TheFutureOfCAsSCHIPProgramFinal.pdf

Hayes-Bautista, D. (2004). *La nueva California: Latinos in the golden state*. Los Angeles, CA: University of California Press.

Johnson, K. L., Carroll, J. F., Fulda, K. G., Cardarelli, K., & Cardarelli, R. (2010). Acculturation

and self-reported health among Hispanics using a socio-behavioral model: The North

Texas Healthy Heart Study. *BMC Public Health, 53*, 53-61.

Jylha, M. (2009). What is self-rated health and why does it predict mortality? Towards a unified

conceptual model. *Social Science & Medicine, 69,* 307-316.

Kuczmarski, M.F., Kuczmarski, R. J., & Najjar, M. (2001). Effects of age on validity of self-

reported height, weight, and body mass index: Findings from the Third National Health

and Nutrition Examination Survey, 1988–1994. *Journal of the American Diet*

Association, 101, 28–34.

Kudielka, B. M., Schommer, N.C., Hellhammer, D.H., Kirschbaum, C. (2004). Acute HPA axis

responses, heart rate, and mood changes to psychosocial stress (TSST) in humans at

different times of day. *Psychoneuroendocrinology 29*(8), 983-992.

Major, B. (1994). From social inequality to personal entitlement: The role of social

comparisons, legitimacy appraisals, and group membership. In M. P. Zanna (Ed.),

Advances in experimental social psychology (pp. 293-355). New York: Academic Press.

Marger, M. N. (2011). *Race and ethnic relations: American and global perspectives* (9th

ed.). Belmont, CA: Wadsworth.

Nepomnyaschy, L. (2009). Socioeconomic gradients in infant health across race and ethnicity.

Maternal Child Health Journal, 13, 720-731.

Ogden, C. L., Carroll, M. D., Curtin, C. L., McDowell, M. A., Tabak, C. J. & Flegal, K. M.

(2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal*

of the American Medical Association, 13, 1549-1555.

Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2010). Prevalence and trends

in overweight among US   children and adolescents, 1999-2000. *Journal of the American

Medical Association, 14,* 1728-1732.

Oza-Frank, R., & Narayan, K. M. V. (2010). Overweight and diabetes prevalence among US

immigrants. *American Journal of Public Health, 100, 6*61-668.

Passel, J. S. & Suro, R. (2005). Rise, peak, and decline: Trends in US immigration 1992-2004.

Pew Hispanic Center, Washington, D.C.

Pérez-Escamilla R, & Putnik P. (2007). The role of acculturation in nutrition, lifestyle, and

incidence of Type 2 diabetes among Latinos. *Journal of Nutrition, 137,* 860-870.

Ruel, E., Reither, E. N., Robert, S. A., & Lantz, P. M. (2010). Neighborhood effects on BMI

trends: Examining BMI trajectories for Black and White women. *Health & Place, 16,*

191-198.

Schneiderman, N. (2004). Psychosocial, Behavioral, and biological aspects of chronic diseases.

Current Directions in Psychological Science, *318,* 247-252.

Stewart, A. L., Dean, M. L., Gregorich, S. E., Brawarsky, P., & Haas, J. S. (2007).

Race/ethnicity, socioeconomic status and the health of pregnant women. *Journal of

Health Psychology*, 12, 285-300.

Suls, J., Martin, R., & Wheeler, L. (2002). Social Comparison: Why, with whom and with what

effect? *Current Directions in Psychological Science*, 11(5), 159-163.

Tajfel, H., & Turner, J. C. (1986). The social identity theory of inter-group behavior. In S.

Worchel and L. W. Austin (eds.), *Psychology of Intergroup Relations*. Chicago:

Nelson-Hall.

Taylor, A. W., Dal Grande, E., Gill, T. K., Chittleborough, C. R., Wilson, D. H., Grant, J. F., et al. (2006). How valid are self- reported height and weight? A comparison between CATI self-report and clinic measurements using a large cohort study. *Australian and New Zealand Journal of Public Health, 30 (3)*, 238–246.

The California Center for Public Health Advocacy (2009). *The economic costs of overweight, obesity, and physical inactivity among California adults—2006*. New Bern, NC: Chenoweth & Associates.

US Department of Health and Human Services (2009). *Proposed healthy people 2020 objectives*. Retrieved December 09, 2010, from Healthy People 2010: Official Site Web site: http://www.healthypeople.gov/HP2020.

US Department of Health and Human Services (2007). *The 2007 federal poverty guidelines*. Retrieved December 27, 2010, from US Department of Health and Human Services Poverty Guidelines, Research, and Measurement web site: http://aspe.hhs.gov/poverty/07poverty.shtml

Wang, Y., & Beydoun, M. A. (2007). The obesity epidemic in the United States – gender, age, socioeconomic, racial/ethnic, and geographic characteristics: A systematic review and meta-regression analysis. *Epidemiologic Reviews, 29,* 6-28.

Williams, D. R., & Collins, C. (2003). The color of health in the United States. In T. A. LaVeist (Ed.), *Race, ethnicity and health: A public health reader.* (pp. 69-79). San Francisco, CA: Jossey-Bass.

Wolf, L. S., Acevedo-Garcia, D., Subramanian, S. V., Weber, D., & Kawachi, I. (2010). Subjective social status, a new measure in health disparities research? Do race/ethnicity and choice of referent group matter? *Journal of Health Psychology, 15,* 560-574.

Table 1 Health Outcomes as a Function of Respondent Ethnicity and Economic Status (ES)

	European American Respondents			Latino American Respondents			Non-Citizen Latino Respondents		
	ES: Low	ES: Mid	ES: High	ES: Low	ES: Mid	ES: High	ES: Low	ES: Mid	ES: High
Subjective Health	3.10_a (0.08)	2.49_b (0.08)	2.16_c (0.04)	2.82_d (0.15)	2.75_{bd} (0.16)	2.28_c (0.14)	2.93_{ad} (0.16)	3.18_{de} (0.37)	2.43_{ce} (0.39)
Objective Health	3.56_a (0.13)	2.39_b (0.12)	2.02_c (0.06)	1.86_c (0.25)	1.80_c (0.26)	1.69_c (0.22)	1.72_d (0.26)	2.68_{bc} (0.60)	1.26_{cd} (0.64)

Note: Means are adjusted for covariates of age, gender, and BMI. Numbers in parentheses are standard errors. Means in the same row with different subscripts differ at $p < .09$; Cell sizes range from $N = 9$ (Non-Citizen Latino respondents at High ES) to $N = 969$ (European American respondents at High ES).

Table 2 Correlation Matrix for Within-Cell Outcome Measures and Covariates

	Subjective Health			Objective Health			BMI		
	EA	LA	NC	EA	LA	NC	EA	LA	NC
Objective Health	.51**	.35**	.24*						
BMI	.15*	.13†	.23†	.20**	.11	.10			
Age	.06*	.21**	.20†	.21**	.39**	.36**	-.04	.07	-.03

Note: EA = European American; LA = Latino American; NC= Non-Citizen Latinos. * indicates $p < .05$; ** indicates $p < .001$; † indicates $p < .10$. Cell sizes range from $N = 9$ (Non-Citizen Latino respondents at High ES) to $N = 955$ (European American respondents at High ES).