



Religion and Health Among Hispanics: Exploring Variations by Age

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Abstract

The purpose of this study is to see whether there are age differences in the relationship between church-based social ties and Epstein–Barr virus (EBV) antibodies among Hispanics (250) and non-Hispanic Whites ($N=602$). The data indicate that emotional support that is received from fellow church members is associated with lower EBV values among Hispanics of all ages, but not among Whites of all ages. In contrast, emotional support that is received outside religious institutions failed to provide similar protective effects for Hispanics. No age differences emerged from the data.

Keywords Hispanic paradox · Religion · Epstein–Barr virus

Background and Objectives

The Hispanic health paradox has puzzled social and behavioral scientists for decades (for reviews of this research see Ruiz et al. 2016; Shor et al. 2017). The Hispanic health paradox holds that even though Hispanics experience a number of psychosocial and physical challenges (e.g., high rates of poverty, neighborhood segregation, discrimination, poor healthcare access), they nevertheless have better physical health and lower mortality rates than non-Hispanic Whites (Ruiz et al. 2016). A wide range of explanatory factors have been evoked to explain these curious findings. For example, some investigators maintain that these health differentials arise from selective international migration practices whereby more healthy Hispanics are thought to migrate to the USA, thereby elevating the health of the US Hispanic population (Vang et al. 2017). In contrast, other researchers argue that the Hispanic health paradox is a reflection of genetic racial resistance factors (Abraido-Lanza et al. 1999), and yet others suggest that it may be attributed to better dietary and

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nutrition practices among Hispanics (Perez-Escamilla and Putnik 2007). In a closely related vein, some scholars suggest that Hispanics may have better health practices than members of the majority (e.g., avoiding the use of tobacco and drugs) (Kimbrow 2009). And somewhat surprisingly, there is even some evidence that Mexican-born US immigrants tend to have better sleep patterns than non-Hispanic Whites (Seicean et al. 2011).

Of all the perspectives that have been offered to explain the Hispanic health paradox, one of the most culturally oriented and more theoretically sophisticated views has to do with race/ethnic differences in social networks and social support systems. As Ruiz and his colleagues maintain, Hispanic culture places a strong emphasis on the values of collectivism, family ties, and interpersonal harmony (Ruiz et al. 2016). As a result, Hispanics are thought to experience higher levels of social integration and they are more likely to receive support from their social network members than non-Hispanic Whites. These observations are noteworthy because a considerable number of empirical studies indicate that individuals with strong social support systems tend to enjoy better physical and mental health than people who are more socially isolated (Roy 2011).

The purpose of the current study is to contribute to the Hispanic health paradox literature in three potentially important ways. First, an effort is made to expand the scope of the social support perspective by focusing on a source of support that has not been examined previously in the Hispanic health paradox literature—social support that is provided in religious institutions. Second, rather than rely on self-reports of health, the analyses that are provided below focus on an important biomarker of health that was obtained from the analysis of blood samples provided by study participants—Epstein–Barr virus (EBV) antibodies. The emphasis on biomarkers is noteworthy because the wide majority of studies on the Hispanic health paradox are based on self-reports of health. Third, an effort is made to bring issues involving aging to the foreground. The goal here is to see if the presumed benefits of Hispanic culture become more evident with advancing age. These potential contributions are examined in greater detail below.

The Social Support Explanation

Literally thousands of studies indicate that people who are involved in religion tend to have better physical and mental health than individuals who are not involved in religion (Koenig et al. 2012). Although many facets of religious life have been identified to explain these findings, a convincing body of research suggests that the potential health-related benefits of religion may arise from the social relationships that people maintain in the places where they worship (Krause 2008). The focus on church-based social relationships is well justified. Ever since the social sciences first began to emerge, researchers have gone to great lengths to highlight the social nature of religious life. Take, for example, the work of James Mark Baldwin, who was one of the first presidents of the American Psychological Association. He maintained that, "... the fact is constantly recognized that religion is a social phenomena. No man is religious by himself, nor does he choose his god, nor devise his offering, nor enjoy his blessings alone" (Baldwin

1902, p. 325). More recently, the centrality of social relationships in the church has been underscored by two prominent sources. The first is Berger's (1967) widely cited theory on religion. He maintains that religious world views are socially constructed and maintained by ongoing interaction among the faithful. The second source of justification for focusing on informal support in the church is found in the work of Stark and Finke (2000). These investigators propose that the individual's confidence in religious principles is strengthened when religious others express their confidence in them.

Perhaps the most compelling reason for focusing on social relationships in the church is found in a study by Krause (2006). His work indicates that social relationships that are formed inside religious institutions may be more effective coping resources than interpersonal ties that are found in the secular world.

A good deal has been written about differences in social support among members of different racial and ethnic groups (e.g., Lee and Rispoli 2017). Moreover, there is some evidence that levels of social support vary by race/ethnicity within the church, as well (Krause and Bastida 2011). However, it is important to reflect on what this research reveals and what is required to explain the Hispanic health paradox. When researchers say, for example, that Hispanics receive more social support than non-Hispanic Whites, they are typically referring to mean differences in social support across the two groups. But these mean differences in support reveal relatively little about the *relationship* between social support and health across groups even though this is what is called for to test the Hispanic health paradox. In order to properly evaluate the Hispanic health paradox, researchers should assess race/ethnic differences in the relationship between social support and health. Rather than focusing on mean levels of social support, the latter set of estimates are best captured by regression coefficients. It is this strategy which followed in the analyses that are provided below.

In order to highlight the importance of church-based social support per se, an additional set of analyses are performed in the current study. These analyses involve assessing whether support received outside the church is also significantly associated with EBV. If the church-based support measure is significantly associated with EBV but the measure of support outside the church is not, then there would be some evidence that there is something unique about social relationships that arise in religious settings. However, if support outside and inside the church are both associated with EBV, then these findings would be more consistent with the notion that all social relationships, regardless of where they arise, are important correlates of EBV. Based on the findings from work by Krause (2006) that was discussed above, it is hypothesized that support outside the church will not be associated with EBV values for either Hispanics or non-Hispanic Whites, while support inside the church will be a more decisive factor.

EBV and the Hispanic Health Paradox

EBV is a measure of immune system functioning. Almost everyone has these antibody titers, but they remain in a latent state until they are activated by a stressor whereupon the level of antibody titers tends to increase. High levels of antibody

titers to EBV have been linked to a wide range of physical and mental health problems including multiple sclerosis (Krone and Grange 2015), Parkinson's disease (Woulfe et al. 2014), primary central nervous system lymphomas (Sugita et al. 2015), and acute psychotic experiences (Khandaker et al. 2014).

Assuming that the Hispanic health paradox exists, it is important to determine how it will be manifested when EBV is the study outcome measure. If this paradox is present, then mean levels of EBV should be lower among Hispanics than among non-Hispanic Whites.

Given the emphasis on stress in research on EBV, it is important to reflect on how stress is conceptualized in the current study. Evidence in favor of the social support explanation for the Hispanic health paradox would be present if the relationship between church-based social support and EBV is stronger for Hispanics than for non-Hispanic Whites. These findings would suggest that a one-unit increase in social support will be associated with a greater decline in EBV for Hispanics. But by the same token, a one-unit decrease in social support should be associated with a greater increase in EBV among Hispanics than among non-Hispanic Whites. This makes sense because receiving relatively less support in a highly collectivist culture should be more stressful than receiving relatively less social support in an individualistic culture. Simply put, while social support can be a greater asset in Hispanic culture, it can also be a greater liability if it proves to be inadequate.

Bringing Issues Involving Aging to the Foreground

The emphasis in this study on social support makes it possible to draw on three well-known perspectives in the gerontological literature. The first is the theory of selective optimization with compensation (Baltes and Smith 1999). According to this view, as people grow older, they tend to lose vitally important resources. For example, an extensive body of research reveals that cognitive functioning tends to decline precipitously with advancing age (Shirbeek et al. 2012). As a result, older adults devise a number of ways to compensate for these losses. One way they may do so is by relying more heavily upon their social support systems. In fact, there is some evidence that becoming more socially engaged may actually reduce cognitive decline in late life (Bourassa et al. 2017). If the social support systems of Hispanics are more well developed than those of non-Hispanic Whites, then perhaps older Hispanics will be more likely to rely on significant others than their non-Hispanic counterparts. Another issue comes into play at this juncture, as well. Non-Hispanic Whites have greater economic resources at their disposal, and as a result, they are better situated to take advantage of formal sources of support, such as physicians, lawyers, and therapists than their Hispanic counterparts. Consequently, informal sources of support may be relatively less important to non-Hispanic Whites.

The second highly cited perspective in gerontology that is relevant for the current study is Carstensen's (1992) socioemotional selectivity theory. According to this view, as people grow older, they become increasingly aware that they have relatively little time left to live. This awareness promotes a re-evaluation of their social relationships. More specifically, as people get older, they place a greater emphasis

on social relationships that are close emotionally while disregarding social ties that are more peripheral in this respect. If social relationships are associated with better health, and if the social networks of older Hispanics are more fully developed than those of non-Hispanic Whites, then it follows that the benefits predicted by socio-emotional selectivity should be more evident among older Hispanics.

The third gerontological perspective that has a bearing on studies that deal with social relationships and aging is more general in nature. Although the issue is far from resolved, research indicates that people may become more deeply involved in religion as they grow older (see Krause 2008, for a review of this research). So if the research that was presented earlier is valid, and social relationships lie at the heart of religion and if people become more religious as they grow older, then the potential benefits of church-based social ties should become more evident with advancing age. It follows from this that if Hispanics are more adept than non-Hispanic Whites at developing and maintaining social relationships, then the presumed advantages of close social ties in the church should be more evident with age in Hispanic groups.

Core Study Hypotheses

The discussion that has been provided up to this point leads to the following study hypotheses:

H₁ If the Hispanic health paradox is a universal phenomenon, then Hispanics should have lower levels of EBV than non-Hispanic Whites.

H₂ The relationship between church-based social support and EBV should be more evident among Hispanics than among non-Hispanic Whites.

H₃ Social support that is received outside religious settings will not be significantly associated with EBV in either race/ethnic group.

H₄ The gap between Hispanics and non-Hispanic Whites in the potential benefits that are derived from social relationships in the church and EBV should become more pronounced with advancing age.

Research Design and Methods

Sample

The data for this study come from the Landmark Spirituality and Health Survey (LSHS), which is a nationwide face-to-face survey of adults age 18 and older who reside in the coterminous USA (i.e., residents of Alaska and Hawaii were excluded). This survey, which was completed in 2014, was conducted by the National Opinion Research Center (NORC) in Chicago. The NORC 2010 National Sampling Frame

served as the basis for the sampling procedures. This sampling frame is based on two sources. First, the bulk of this database comes from postal address lists that are compiled by the United States Postal Service (USPS). Second, field employees were sent to enumerate all houses in areas where USPS address lists were unavailable. Sampling was done in three stages. First, National Frame Areas (NFAs) were constructed. In essence, NFAs are formed from pooling counties and metropolitan areas into blocks of designated sizes. A total of 44 NFAs were selected with probabilities proportional to size. Then, in the second stage, NFAs were partitioned into segments consisting of Census tracts and block groups. Segments were selected with probabilities proportional to size. In the third stage, housing units were sampled with equal probabilities of selection within each segment and the occupants of these dwellings were recruited for the interviews.

The response rate for the study was 50%. The total number of completed interviews was 3010. The sample was broken down into three age groups: 18–40 ($N=1000$), 41–64 ($N=1002$), and age 65 and older ($N=1008$).

There are four reasons why the analyses that are presented below are based on a subset of participants in the LSHS interviews. First, when the questionnaire for this study was developed, the members of the research team felt it did not make sense to ask questions about receiving social support from fellow church members if a study participant either never attends worship services or if they go to church only one or two times a year. Consequently, 1215 low-church attenders were excluded from the analyses presented below. Second, as noted earlier, blood samples were taken to assess EBV levels. As in any study, some participants declined to give a sample of their blood ($N=1291$). This refusal rate is comparable to the refusal rates for other major surveys, such as the widely cited Health and Retirement Survey (http://hrsonline.isr.umich.edu/modules/meta/tracker/desc/PMWeight2004_Description_public.pdf). Third, questions on receiving social support at church were not administered to study participants who self-identified as atheists ($N=78$). Fourth, the goal of the present study was to compare Hispanics with non-Hispanic Whites. As a result, members of other racial/ethnic groups (e.g., Blacks and Asians) were excluded ($N=484$). Consequently, after using listwise deletion to deal with groups that are no relevant for this study, complete data were available for 852 individuals. The exclusion criteria that discussed above are not mutually exclusive (e.g., some people who refused to give a blood sample also did not attend church often). As a result, subtracting the sum of the cases in all four exclusion criteria from the original sample size does not equal 852.

Preliminary analyses revealed that the average age of the study participants in the subsample of cases that is assessed below is 46.8 years ($SD=17.6$), approximately 37% are men and the average level of education was 13.5 years ($SD=3.3$ years). These descriptive data as well as the findings that are provided below are based on data that have been weighted.

Measures

Table 1 contains the core measures that were used in this study. The procedures used to code these indicators are provided in the footnotes of this table.

Epstein–Barr Virus Antibodies

At the end of the interviews, a blood sample was collected via a capillary finger stick with a disposable lancet. Between three and five blood spots were applied to filter paper and shipped to the Department of Laboratory Medicine at the University of Washington for analysis. Preliminary analysis revealed that the EBV values were skewed. Consequently, a log transformation (to the base 10) was used to smooth out the distribution ($M = 1.582$; $SD = .530$; $range = -.74$ and 2.82).

Emotional Support Received from Fellow Church Members

Measures that assess how often study participants receive emotional support from fellow church members were taken from the work of Krause (2008). A high score on these items represents study participants who receive emotional support from

Table 1 Core study measures

1. Epstein–Barr virus antibodies
Measure taken from blood samples that were given by study participants
2. Emotional support received at church ^a
A. Other than you minister, pastor or priest, how often does someone in your congregation let you know they love and care for you?
B. How often does someone in your congregation talk with you about your private problems and concerns?
C. How often does someone in your congregation express interest and concern in your well-being?
3. Emotion support received outside of church ^a
A. Not counting your minister or fellow church members, how often do your family and friends let you know they love and care for you?
B. Not counting your minister or fellow church members, how often do your family and friends talk with you about your private problems and concerns?
C. Not counting your minister or fellow church members, how often do your family and friends express interest or concern in your well-being?
4. Church attendance ^b
How often do you attend religious services?
5. Private prayer ^c
How often do you pray by yourself?
6. Evangelical Christian
Computed variable contrasting Evangelical Christians (scored 1) with other (scored 0).

^aThese items were scored in the following manner (coding in parenthesis): never (1), once in a while (2), fairly often (3), very often (4)

^bThis item was scored in the following manner (coding in parentheses): several times a year (4), about once a month (5), 2 to 3 times a month (6), nearly every week (7), every week (8), several times a week (9)

^cThis item was scored in the following manner: never (1), less than once a month (2), once a month (3), a few times a month (4), once a week (5), a few times a week (6), once a day (7), several times a day (8)

coreligionists more frequently ($M=7.623$; $SD=2.510$; range=3–12). The estimate of Cronbach's alpha for this brief composite is .849.

Emotional Support Received Outside Church

As shown in Table 1, virtually identical measures were used to assess how often study participants receive emotional support from social network members who do not worship with them. These items were taken from work by Krause (2006). The question stems are the same with the exception that respondents were instructed to think about assistance they obtained outside of church. A high score means study participants received emotional support outside of church more often ($M=9.206$; $SD=2.226$; range=3–12; $\alpha=.861$).

Hispanic Ethnicity

A binary measure was created to contrast Hispanics (scored 1) with non-Hispanic Whites (scored 0). Preliminary analyses indicate that 29.3% of the study participants self-identified as Hispanic while 70.7% self-identified as non-Hispanic White.

Religion Control Variables

The relationships among EBV, social support received, and race/ethnicity were estimated after the effects of three religion control variables were included in the analyses: church attendance, the frequency of private prayer, and religious preference. These control variables were included in the study model to help insure that the observed effects were due to support received from others at church and not some other facet of religion that might be correlated with it.

The measure of church attendance was taken from the work of the Fetzer Institute/National Institute on Aging Working Group (1999). A high score denotes more frequent church attendance ($M=6.797$; $SD=1.715$; range=4–9).

Prayer was measured with a single item that was also taken from the Fetzer Institute/National Institute on Aging Working Group (1999). This indicator asks study participants how often they pray privately. A high score stands for more frequent private prayer ($M=6.889$; $SD=1.567$; range=1–8).

Religious preference was classified with a modified version of the scheme proposed by Steensland and his colleagues (2000—praying for others). These researchers drew a distinction between Evangelical Protestants and Black Protestants on the grounds that even though these groups are doctrinally similar, their political views differ significantly. However, the current study is not concerned with either political views or with African Americans in general. Consequently, the Black Protestant designation was dropped in the current study resulting in a simply binary measure that contrasts Evangelicals with all others. Approximately 49% of the study participants indicated they affiliate with an Evangelical denomination.

Demographic Control Variables

The relationships among the core study measures were assessed after the influence of age, sex, and education was controlled statistically. Age and education were coded in a continuous format, while sex was represented with a binary variable (1 = men; 0 = women).

Data Analysis Strategy

According to the theoretical rationale that was developed earlier, the relationship between church-based social support and EBV values should be stronger among Hispanics than among non-Hispanic Whites. This specification calls for a statistical interaction effect between social support in the church and race/ethnicity on EBV levels. The proposed interactions were evaluated with ordinary least squares multiple regression. The procedures recommended by Aiken and West (1991) were followed in these analyses. First, all independent variables were centered on their means. Then, a multiplicative term was formed by multiplying the centered values of race/ethnicity by the centered values emotional support received at church. Following this, tests for the interaction effects were performed in two steps. The additive effects of the independent variables were entered into the equation first. Then the multiplicative term was added to the equation in step two.

Once the estimates described above been obtained, a formula provided by Aiken and West (1991, p. 12) was used to determine if the interaction effects are in the predicated direction. The formula provided by Aiken and West (1991) produces two estimates of the relationship between church-based social support and EBV values: The first reflects this relationship in the Hispanic subgroup, whereas the second reflects this relationship between church-based support and EBV in the non-Hispanic White subgroup. Once these estimates have been calculated, tests of statistical significance are computed with an additional formula provided by Aiken and West (1991).

Following this, the analyses were repeated after the measure of support received outside of church was substituted in place of the church-based social support measure. The same analytic steps were followed when estimating the effects of this secular social support measure.

A third set of analyses were conducted to examine the influence of age in the relationship between race/ethnicity, social support, and EBV values. This is a more complex set of analyses because it calls for a three-way interaction effect between age, race/ethnicity, and social support on EBV. The procedures described by Aiken and West (1991) were used to evaluate this complex interaction effect. All of the independent variables were once again centered on their means. Following this three multiplicative terms were created to capture the influence of all possible two-way interactions (i.e., age \times race/ethnicity; age \times social support; race/ethnicity \times social support). Then, a higher-order multiplicative term was developed to assess the proposed three-way interaction (i.e., age \times race/ethnicity \times social support). These

measures were entered into the regression equation in three steps. First, the additive effects of all the independent variables were added to the equation. Second, the three lower-order interactions were included in the model. Third, the high-order three-way multiplicative term was entered into the model. Aiken and West (1991) provide a series of complex formulas that can be used to illustrate the nature of the three-way interaction effect if it is statistical significant.

Results

The results from this study are presented below in four sections. These sections correspond to the study hypotheses that were developed earlier.

The Hispanic Health Paradox and EBV Values

Hypothesis 1 states that if the Hispanic health paradox is a universal phenomenon, then EBV values should be lower among Hispanics than among non-Hispanic Whites. This hypothesis was evaluated with a simple *t* test that was designed to see if mean EBV values correspond to this pattern. The findings indicate that the mean EBV value for non-Hispanic Whites (1.590) is not significantly different from the mean EBV value for Hispanics (1.568) ($p = .559$; ns.). Consequently, Hypothesis 1 must be rejected.

Race/Ethnicity, Church-Based Social Support, and EBV Values

Hypothesis 2 calls for a two-way interaction effect between race/ethnicity and social support that is received in church on EBV scores. The findings from the two-step analysis that was designed to evaluate this hypothesis are presented in Table 2.

The data in the first column of Table 2 (see Model 1) reflect the findings that were derived when the additive effects of the study measures were included in the model. Two of these results are noteworthy. First, the data suggest that taken for the sample as a whole, emotional support that is provided by fellow church members is not significantly associated with EBV values ($\beta = -.002$; ns.). Second, consistent with the results from the *t* test that are reported above, there are not race/ethnic differences in EBV scores even when the effects of the other study measures are taken into account ($\beta = .030$; ns.).

The data in the second column of Table 2 (see Model 2) are of far greater interest because they reflect the direct test of Hypothesis 2. These data suggest that the interaction term between race/ethnicity and support received at church on EBV values is statistically significant ($b = -.038$; $p < .01$; unstandardized regression coefficients are discussed when evaluating interaction effects because standardized estimates have no inherent meaning in this context).

The additional computations that are recommended by Aiken and West (1991) were performed to see if the interaction is in the proposed direct. These results (not shown in Table 2) indicate that Hispanics who receive more emotional support from

Table 2 Race/ethnicity, support received at church, and EBV ($N = 852$)

	Model 1	Model 2
Age	.211 ^a *** (.006) ^b	.220*** (.007)
Sex	-.062 (-.067)	-.060 (-.065)
Education	-.046 (-.007)	-.045 (-.007)
Evangelical Christian	.040 (.042)	.040 (.042)
Church attendance	-.003 (-.001)	-.012 (-.004)
Private prayer	.013 (.004)	.016 (.005)
Hispanic	.030 (.035)	.025 (.029)
Emotional support received at church	-.002 (-.001)	.017 (.004)
(Hispanic \times emotional support received at church)	–	(-.038)**
Multiple R^2	.050	.058

^aStandardized regression coefficient

^bMetric (unstandardized) regression coefficient

** $p < .01$; *** $p < .001$

coreligionists tend to have lower EBV scores than Hispanics who receive less support at church ($\beta = -.108$; $b = -.023$; $p < .05$). In contrast, the additional calculations reveal that support received from significant others at church is not associated with EBV values among non-Hispanic Whites ($\beta = .072$; $b = .015$; ns.). Taken as a whole, the data provided in this section provide support for Hypothesis 2.

Race/Ethnicity, Social Support Outside Church, and EBV Values

According to Hypothesis 3, emotional support that is received outside religious settings will not be associated with EBV values for Hispanics as well as non-Hispanic Whites. The findings from the test of Hypothesis 3 are provided in Table 3.

Two important results emerge from the data in Table 3. First, as the data in the first column (Model 1) show, emotional support that is received outside the church is not significantly associated with EBV values ($\beta = .014$; ns.). Second, as the findings in column 2 (Model 2) indicate, the interaction between support received outside the church and race/ethnicity is not statistically significant ($b = -.026$; ns.). This result suggests that emotional support from people outside religious settings is not significantly associated with EBV values for either Hispanics or non-Hispanic Whites. Taken together, the findings in this section tend to support Hypothesis 3.

Exploring Variations by Age

Hypothesis 4 is the most complex of the hypotheses to be evaluated in this study because, as discussed above, it involves a proposed three-way interaction effect between age, race/ethnicity, and social support received in church on EBV values. Rather than work through each of the three steps in this analysis, only the findings

Table 3 Race/ethnicity, support received outside church, and EBV ($N = 858$)

	Model 1	Model 2
Age	.206 ^a *** (.006) ^b	.204*** (.006)
Sex	-.055 (-.061)	-.054 (-.059)
Education	-.048 (-.008)	-.048 (-.008)
Evangelical Christian	.039 (.041)	.036 (.038)
Church attendance	.001 (.001)	.008 (.003)
Private prayer	.016 (.005)	.017 (.006)
Hispanic	.027 (.032)	.027 (.031)
Emotional support received outside church	.014 (.003)	.019 (.004)
(Hispanic × emotional support received outside church)	–	(-.026)
Multiple R^2	.049	.051

^aStandardized regression coefficient

^bMetric (unstandardized) regression coefficient

*** $p < .001$

that emerged in the third step are reviewed here. The data (not shown here) indicate that the three-way multiplicative term that was computed to evaluate Hypothesis 4 is not statistically significant ($b = .001$; $p = .827$; ns.). Viewed in more general terms, these data indicate that the two-way interaction between race/ethnicity and church-based social support does not vary by age. Based on these results Hypothesis 4 must be rejected.

Conclusions

The analyses in this study were designed to evaluate four hypotheses that may potentially shed some light on the Hispanic health paradox: Two were supported by the data and two were not supported by the data. Even so, these results must be examined with care in order to fully appreciate what the findings reveal.

The first hypothesis is the simplest. It serves as an entry point into the field because it focuses on whether Hispanics have a health advantage over non-Hispanic Whites. Findings from the simple t test that was performed to evaluate this issue failed to reveal significant differences in EBV by race/ethnicity. Nevertheless, it is important to carefully reflect on what these data are capable of revealing. The Hispanic health paradox is based on the assumption that Hispanics enjoy a health advantage relatively to non-Hispanic Whites. But this perspective goes on to specify that this advantage is due to the fact that Hispanics possess some special source(s) of resilience. This, in turn, suggests that the test of the premise upon which the paradox rests cannot be fully evaluated unless the source of resilience is also explicitly brought into the picture. This is an especially important consideration because the source of resilience that is the focal point of the current study (i.e., church-based

social support) is not equally dispersed across the Hispanic subgroup. Instead, as the descriptive statistics for the measure of church-based social support reveal, some Hispanics receive more support at church than other Hispanics. To the extent this is true, the health advantage that are the platform of the Hispanic health paradox should hold only for some Hispanics, but not uniformly across the entire Hispanic population. The fact that the mean EBV values do not differ for Hispanics and non-Hispanic Whites is likely to have been influenced by this issue.

The test of the second hypothesis comes closer to embracing the complex issues that are involved in evaluating the Hispanic health paradox. According to this view, two important psychosocial dimensions must be taken into account. Given the emphasis on collectivity in Hispanic culture, coupled with the social orientation of religious life (i.e., an emphasis on compassion, forgiveness, and altruism—see Krause 2008), one would expect to find that social support in religious institutions should have a more substantial relationship with EBV among Hispanics than among non-Hispanic Whites. The data from this study are consistent with this view.

The third hypothesis was designed to bring Hypothesis 2 into sharper focus. If there is something relatively unique about social support that is exchanged in religious institutions, then social support that is received outside the context of religion should be less influential. This is what the data suggest.

The test of Hypothesis 4 must be interpreted with special care. The data suggest that the relationships among race/ethnicity, church-based support, and EBV do not vary by age. Researchers often treat findings that are not statistically significant as inconsequential and ripe for dismissal. However, as gerontologists have recognized recently, the inability to find significant age differences may provide substantively useful insights into life course issues (Lakens et al. 2018). Cast within the context of the present study, the findings suggest that close social ties in places of worship seem to benefit Hispanics regardless of age (i.e., across the entire life course). This conclusion is much more useful than treating nonsignificant findings as something that is of little value and therefore should be case aside.

As the tests of the four hypotheses reveal, the current study contributes to the Hispanic health paradox literature in three potentially important ways. First, the often evoked view that the paradox can be explained by social ties in Hispanic culture has not received sufficient empirical attention in the literature. This perspective was evaluated empirically in the current study with data from a recent nationwide survey. Second, and more importantly, the fact that social relationships in religious institutions may play an especially important role in this respect has not been examined by other investigators. Third, relying on a biomarker of health (i.e., EBV) rather than self-reports adds much needed depth to the study of the Hispanic health paradox.

Even though the current study may have contributed to the literature, a considerable amount of research remains to be done. At least three issues are in need of greater study. First, although the data from this study suggest that social ties in the church may be consequential, an effort was not made to show how the potential benefits of these relationships arise. Several possibilities that are worthy of attention may be found in the literature. To begin with, strong social support networks may help people adapt and maintain beneficial health behaviors (Krause et al. 2011). In addition, social network members may also help support

recipients develop a deeper sense of meaning in life (Krause et al. 2013), which has been linked to better health. Moreover, there is some evidence that significant others may help people develop and maintain good mental health, which has been associated with better physical health (Cohen and Rodriguez 1995).

The second area that is need of further inquiry has to do with broad cultural issues. Differences in Hispanic and non-Hispanic White cultures have been cited as a prime reason for the Hispanic health paradox. Even so, there has been relatively little effort to evaluate these critical cultural factors empirically.

Third, as discussed earlier, a fairly wide range of factors have been evoked to explain the Hispanic paradox. Even so, there have been few efforts to compare and contrast the relative strengths of multiple explanations. Doing so is an important element in the development of a sound theory.

In the process of breaking new ground, researchers are encouraged to address the limitations in the current study. Two shortcomings are especially in need of attention. First, the data from this study are cross-sectional, and as a result, the direction of causality among key study constructs was based on theoretical considerations alone. Clearly, data that have been gathered at more than one point in time from the same study participants are needed to address this problem. Second, participants in the current study who come from diverse Hispanic backgrounds were combined into a single group for data analytic purposes. This strategy was employed because there were not enough participants in some categories (e.g., Cubans) to create a series of separate subgroup measures. Even so, research reveals that there are important health-related differences between different Hispanic subgroups (e.g., Krause and Goldenhar 1992). Studies are needed to explore the Hispanic health paradox within and across individuals from the full range of Hispanic cultures.

Although there are limitations in the current study, the emphasis that has been placed on studying social relationships within the context of the Hispanic health paradox is consistent with longstanding social psychological principles. The essence of this perspective was captured some time ago by Berger and Pullberg (1965): "... men together engage in constructing the world, which then becomes their dwelling. Indeed, since sociality is a necessary element of the human being, the process of world construction is necessarily a social one" (p. 201). Focusing on social ties in the church provides some evidence that this perspective may have merit in explaining the Hispanic health paradox. Hopefully, the results from the current study will motivate other investigators to probe more deeply into the social factors that give rise to the puzzling nature of the Hispanic health paradox.

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Compliance with Ethical Standards

Conflict of interest The author declares that he has no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in this study.

References

- Abraido-Lanza, A., Dohrenwend, B., Ng-Mak, D., & Turner, B. (1999). The Latino mortality paradox: A test of the “salmon bias” and healthy migration hypotheses. *American Journal of Public Health, 89*, 1543–1548.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Baldwin, J. M. (1902). *Fragments in philosophy and science of being: Collected essays and addresses*. New York: Charles Scribner’s Sons.
- Baltes, P. B., & Smith, J. (1999). Multilevel and systemic analysis of old age: Theoretical and empirical evidence for a fourth age. In V. L. Bengtson & K. W. Schaie (Eds.), *Handbook of theories of aging* (pp. 153–173). New York: Springer.
- Berger, P. L. (1967). *The sacred canopy: Elements of a sociological theory*. New York: Doubleday.
- Berger, P. L., & Pullberg, S. (1965). Reification and sociological critique of consciousness. *History and Theory, 4*, 196–211.
- Bourassa, K., Memel, M., Woolverton, C., & Sbarra, D. (2017). Social participation predicts cognitive functioning in aging adults over time: Comparisons with physical health, depression and physical activity. *Aging and Mental Health, 21*, 133–146.
- Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging, 7*, 331–338.
- Cohen, S., & Rodriguez, M. (1995). Pathways linking affective disturbances and physical disorders. *Health Psychology, 14*, 374–380.
- Fetzer Institute/National Institute on Aging Working Group. (1999). *Multidimensional measurement of religiousness/spirituality for use in health research*. Kalamazoo, MI: John E. Fetzer Institute.
- Khandaker, G. M., Stochi, J., Zammit, S., Lewis, G., & Jones, P. B. (2014). Childhood Epstein–Barr virus and subsequent risk of psychotic experiences in adolescence: A population based prospective serological study. *Schizophrenia Research, 158*, 19–24.
- Kimbro, R. T. (2009). Acculturation in context: Gender, age, and migration, neighborhood ethnicity, and health behaviors. *Social Science Quarterly, 90*, 1145–1166.
- Koenig, H. G., King, D. E., & Carson, V. B. (2012). *Handbook of religion and health* (2nd ed.). New York: Oxford University Press.
- Krause, N. (2006). Exploring the stress-buffering effects of church-based social support and secular social support on health in late life. *Journal of Gerontology: Social Sciences, 61B*, S35–S43.
- Krause, N. (2008). *Aging in the church: How social relationships affect health*. West Conshohocken, PA: Templeton Foundation Press.
- Krause, N., & Bastida, E. (2011). Social relationships in the church during late life: Assessing differences between African Americans, Whites, and Mexican Americans. *Review of Religious Research, 53*, 41–63.
- Krause, N., & Goldenhar, L. (1992). Acculturation and psychological distress in three groups of elderly Hispanics. *Journal of Gerontology, 47*, S279–S288.
- Krause, N., Hayward, R. D., Bruce, D., & Woolever, C. (2013). Church involvement, spiritual growth, meaning in life, and health. *Archive for the Psychology of Religion, 35*, 169–191.
- Krause, N., Shaw, B., & Liang, J. (2011). Social relationships in religious institutions and healthy lifestyles. *Health Education & Behavior, 38*, 25–38.
- Krone, B., & Grange, J. M. (2015). Vaccination, infection, and the risk of multiple sclerosis. *JAMA Neurology, 72*, 480.
- Lakens, D., McLatchie, N., Isager, P. M., Scheel, A. M., & Dienes, Z. (2018). Improving inferences about null effects with Bayes factors and equivalence tests. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*. <https://doi.org/10.1093/geronb/gby065>.
- Lee, K., & Rispoli, K. (2017). Racial disparities in perceived social support and social service use: Associations with maternal depression and Head Start participation. *Journal of Community Psychology, 45*, 1083–1093.

- Perez-Escamilla, R., & Putnik, P. (2007). The role of acculturation in nutrition, lifestyle, and the incidence of type 2 diabetes among Latinos. *Journal of Nutrition*, *137*, 860–870.
- Roy, R. (2011). *Social support, health, and illness: A complicated relationship*. Toronto: University of Toronto Press.
- Ruiz, J., Hamann, H., Mehl, M., & O'Connor, M. F. (2016). The Hispanic health paradox: From epidemiological phenomenon to contribution opportunities for psychological science. *Group Processes & Intergroup Relations*, *19*, 462–476.
- Seicean, S., Neuhauser, D., Strohl, K., & Redline, S. (2011). An exploration of differences in sleep characteristics between Mexico-born U.S. immigrants and other Americans to address the Hispanic paradox. *Journal of Sleep and Sleep Disorders*, *34*, 1021–1031.
- Shirbekk, V., Loichinger, E., & Weber, D. (2012). Variation in cognitive functioning as a refined approach to comparing aging across countries. *PNAS: Proceedings of the National Academy of Sciences of the United States of America*, *109*, 770–774.
- Shor, E., Roelfs, D., & Vang, Z. M. (2017). The “Hispanic mortality paradox” revisited: Meta-analysis meta-regression of life-course differentials in Latin American and Caribbean immigrants’ mortality. *Social Science and Medicine*, *186*, 20–33.
- Stark, R., & Finke, R. (2000). *Acts of faith: Explaining the human side of religion*. Berkeley, CA: University of California Press.
- Steensland, B., Park, J. Z., Regnerus, M. D., Robinson, L. S., Wilcox, W. B., & Woodberry, R. D. (2000). The measure of American religion: Toward improving the state of the art. *Social Forces*, *79*, 291–318.
- Sugita, Y., Muta, H., Ohshima, K., Morioka, M., Tsukamoto, Y., Takahashi, H., et al. (2015). Primary central nervous system lymphomas and related diseases: Pathological characteristics and discussion of the differential diagnosis. *Neuropathology*, *36*, 313–324.
- Vang, Z. M., Sigouin, J., Flenon, A., & Gagnon, A. (2017). Are immigrants healthier than native-born Canadians? A systematic review of the healthy immigrant effect in Canada. *Ethnicity and Health*, *22*, 209–241.
- Woulfe, J. M., Gray, M. T., Gray, D. A., Munoz, D. G., & Middeldorp, J. M. (2014). Hypothesis: A role for EBV-induced molecular mimicry in Parkinson’s disease. *Parkinsonism and Related Disorders*, *20*, 685–694.

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