Life Exposures to Traumatic Events and Chronic Strains: Health and Mortality among older Mexican-origin Individuals

INTRODUCTION

The older population of the United States has experienced unprecedented growth in the past several decades. Between 2000 and 2010, the number of individuals over the age of 65 increased by 15 percent, expanding from 35 million to 40.3 million (U.S. Census Bureau 2011). In 2010, Latinos represented 2.8 million (or 6.9 percent) of the older population and are projected to grow to over 17.5 million by 2060 (U.S. Census 2010). As these demographic trends indicate, there is an urgent need for research focused on the health of the elderly. While previous research has tried to understand the health of the elderly, less is known about the health of Latino elders, particularly Mexican Americans.

For instance, despite the growing numbers of Latinos in the United States and individuals of Mexican-origin in particular, there is little research that explores how exposure to stress and negative life events affects the physical health outcomes of Latinos (Aranda and Lincoln 2011; Angel, Frisco, Angel and Chiriboga 2003; Chiriboga, Black, Aranda, and Markides 2002). This is an important issue because minority status in general is associated with greater exposure to events that have been shown to adversely affect health in the general population (Franko, Striegel-Moore, Brown, Barton, McMahon et al. 2004; Golding, Potts, and Aneshensel 1991; Hatch and Dohrenwend 2007; Turner and Lloyd 2004; Turner and Avison 2003).

This research aims to examine the effects of lifetime exposure to major and potentially traumatic events and chronic strains on the health of the largest Latino group in the United States, namely, the Mexican-origin population. Specifically, this research is concerned with stressors that negatively influence the health and mortality of Mexican Americans and Mexican immigrants residing in a densely Mexican American populated region, the Rio Grande Valley area of Texas.

LITERATURE REVIEW AND THEORETICAL PERSPECTIVE

Background

Mexican-origin ethnicity is a social characteristic thought to be associated with exposure to life events and strains, partly due to the economic conditions of Latinos in the United States (Cervantes and Castro 1985; Cuellar and Roberts 1984; Golding et al. 1991). Previous research has demonstrated that individuals with lower socioeconomic status (i.e. low levels of education and income) are more likely to have high rates of morbidity, mortality, and mental disorder compared to individuals with higher socioeconomic status (Adler 1994; Elo and Preston 1996; Hayward, Crimmins, Miles and Yang 2000). Conversely, other researchers have found that Latinos on the average have better health despite their low socioeconomic status (Markides and Coreil 1986; Markides and Eschbach 2005).

It is well documented that Mexican-origin individuals have high poverty rates, the highest uninsured rates, and the lowest educational attainment rates of any other Latino subgroup in the United States (Angel and Angel 1996; Angel, Angel, and Markides 2002; Saenz and Rubio 2007; Telles and Ortiz 2007). Mexican Americans are also found to have lower socioeconomic status, and employment rates than whites (Cervantes and Castro 1985; Ramirez and de la Cruz 2003; Duncan, Hotz, and Trejo 2006). This may be partly due to the fact that significant portions (38 percent) of Mexican-origin individuals are foreign-born (U.S. Census Bureau 2009).

Latinos residing in the United States may face substantial adversity, given the stresses associated with immigration, low socioeconomic status, low income, poor educational and employment opportunities, and inadequate access to health care (Gallo, Penedo, de los Monteros, and Arguelles 2009). Indeed, Latinos have been found to experience more exposure to stressors than the general U.S. population (Blume, Resor, Villanueva, and Braddy 2009). Additionally, Golding et al. (1991) found Latinos were significantly more likely to report chronic life stressors,

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such as economic-strain, and were significantly less likely to report positive life events than their native-born whites. Furthermore, Cuellar, Bastida, and Braccio (2004), found immigration experiences among Latinos to be associated with stressors and challenges that may compound the risk associated with lower socioeconomic status. For instance, undocumented immigrants residing in the United States have been found to face additional adversity, such as severe economic and occupational hardship, fear of deportation, and residential instability (Perez-Smith, Spirito, and Boergers 2002). Finally, Sladkova (2007) found the process of unauthorized immigration to the United States to often be traumatic, frequently leading to injury, extortion, detention, or even death.

Given that the U.S. Latino population experiences adversity and stress across multiple domains, it is reasonable to expect that this group would exhibit poor physical health outcomes compared to more advantaged groups, such as non-Latino whites. Despite these disadvantages, Latinos residing in the United States often show equal or better physical health and mortality outcomes than their white counterparts, a phenomenon commonly referred to as the "Latino/Hispanic paradox" (Markides and Coreil 1986). This is a paradox because most Latinos in the United States are socioeconomically disadvantaged vis-a-vis whites, and previous research from the United States and elsewhere has shown a consistent association between low socioeconomic status and poor health outcomes (Markides and Eschbach 2005).

Foreign-born Latinos also tend to show better physical health and mortality outcomes than their native-born counterparts (Akresh and Frank 2008; Singh and Hyatt 2006; Hummer, Rogers, Nam, and LeClere 1999; Frisbie, Cho and Hummer 2001). However, this initial immigrant advantage tends to dissipate over time or successive generations (Rumbaut 1997). Indeed, evidence suggests that foreign-born Latinos are more likely to engage in negative health behaviors with increased length of residence in the United States (Rodriguez, Saenz and

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Menjivar 2008; Turra and Goldman 2007). Reaching definitive conclusions regarding relative health advantages and disadvantages of the U.S. Latino population has proven difficult. Markides and Eschbach (2005) state the Latino/Hispanic paradox is typically framed by drawing comparisons between Latinos and non-Latino whites. Markides and Coreil (1986) suggested the more appropriate comparisons should be made with African Americans for whom the differences in health are stark while socioeconomic differences are narrow.

Previous research regarding mortality rates (Markides and Coreil 1986; Palloni and Arias 2004), birth outcomes (Gonzalez-Quintero, Tolaymat, Luke, Gonzalez-Garcia, Duthely et al. 2006; Hummer, Powers, Pullum, Gossman, and Frisbie 2007), and mental disorders (Alegria, Canino, Shrout, Meghan, Naihua et al. 2008; Kessler, Berglund, Delmer, Jin, Merikangas et al. 2005) are supportive of the Latino health advantage. However, research examining other health outcomes such as cancer and cardiovascular disease are inconsistent. In contrast, Latinos have been found to be disproportionately vulnerable to certain health conditions such as diabetes, obesity, and infectious and parasitic diseases (Bastida and Pagan 2002; Mutchler and Angel 2000; Ostir, Markides, Black, and Goodwin 1998), and suffer significantly higher rates of disability compared to whites (Peek, Ottenbacher, Markides, and Ostir 2003; Zsembik, Peek, and Peek 2000; Angel and Angel 1998; Angel and Angel 1997).

Markides and Coreil (1986) suggested possible explanations for the Latino/Hispanic paradox, which included certain cultural practices, strong family support, and selective migration. Franzini, Ribble, and Keddie (2001) suggested other explanations may contribute to lower rates of mortality for Latinos. For instance, some evidence suggests that misclassification of ethnicity on death certificates may bias vital statistics data. In addition, selective migration, that is, disproportionate migration by individuals in good health compared with those in poor health into the United States, and selective migration back to the country of origin by Latinos

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experiencing declining health or a “salmon bias” may also lower the rates of mortality of those who remain. Conversely, in a study that tested the salmon bias theory, Abraido-Lanza, Dohrenwend, Ng-Mak, and Turner (1999), found that neither the salmon bias nor the healthy migrant hypothesis explained the discrepancies in mortality between Latinos and whites. They concluded other factors must be operating to produce the lower mortality rates among Latinos. Stress may be one such factor.

The literature on exposure to traumatic life events has primarily focused on mental health outcomes (Turner and Lloyd 1995; Turner and Avison 2003; Reynolds and Turner 2008; Wheaton 1990). These studies have linked risk for mental health problems with various social statuses that are believed to represent different social experiences (Aneshensel 1992). For example, Turner and Avison (2003) reported that women experience significantly higher levels of recent life events, such as events occurring to others and death events, while men experience more traumatic events, such as violence and more perceived discrimination. In addition, respondents in the lowest socioeconomic category tend to have a higher mean score of lifetime traumatic events than respondents in either the middle or upper socioeconomic categories.

Likewise, Breslau, Davis, Adreski, and Peterson (1991) found respondents with low levels of education and low levels of income experienced a higher prevalence of traumatic events when compared to respondents with higher education and higher income. Additionally, men were found to have more cumulative exposure to particular types of events such as injury/accident traumas, physical assault and witnessing someone injured or killed. In another study, Breslau, Kesslar, Chilcoat, Schultz, Davis et al.(1998) found that reports of all types of traumatic experiences peak during the 16-20 years old age period, such as the rates of a sudden death of a loved, though the probability of experiencing violence related to assault begins after age 20 and remains low through age 45. Furthermore, Norris (1992) found that lifetime exposure

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to traumatic events significantly decreases with increasing age. For instance, younger respondents had reported significantly higher rates of physical assaults and tragic deaths than middle aged and older aged respondents. Additionally, middle aged respondents were most likely to report property damage due to weather or disaster in the past year in comparison to the other two age groups.

While the literature on physical health outcomes is not as vast as that of mental health, epidemiological studies also have linked traumatic life events with a number of physical health outcomes, including mortality (Matthews and Gump 2002; Thoits 1995; Lantz et al.2005). For instance, Sable and Wilkinson (2000) found that stress increases the risk for low birth rates among women who experienced traumatic events. Likewise, Greenwood, Muir, Packham and Madeley (1996) showed that both life stress and a lack of social support significantly affect coronary heart disease incidence and mortality. Additionally, Cohen and Williamson (1991) reported stress induced by traumatic events increased the incidence of other infectious diseases**.** Finally, Lantz et al. (2005) found that a count of negative lifetime events was positively associated with the risk of mortality, and that a higher score on a financial stress scale was predictive of having moderate or severe functional impairment.

The epidemiology of traumatic events indicates that the numbers of such events to which individuals have been exposed over their lifetimes are greater in some strata than others (Chen 2007; Hatch and Dohrenwend 2007; Kahn and Pearlin 2006; Lantz et al. 2005; Pearlin et al. 2005; Thoits 2010). Though these associations may vary with the particular trauma at issue (Hatch and Dohrenwend 2007; Norris 1992; Thoits 2010), in general the numbers tend to be higher among those in lower socioeconomic class positions (Hatch and Dohrenwend 2007; Pearlin et al. 2005; Turner and Avison 2003). Given the evidence that early traumas tend to manifest many years after the trauma was experienced (Turner et sl. 1995; Rutter 1989;

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Wheaton, Roszell, and Hall 1997), traumatic events need to be considered as being among the stressors that contribute to health disparities across racial/ethnic and socioeconomic status groups (Pearlin et al. 2005).

For example, exposure to trauma may place individuals at risk for exposure to additional stressors. Research has shown that traumatic events and chronic strains often flow together in people's lives (Pearlin 1989). Pearlin et al. (2005) suggest that exposure to traumatic events may lead to secondary stressors such as chronic strain that exert their own harmful health consequences, either along with or in place of the initial event. For instance, traumatic events can create chronic strains. Likewise, chronic strains can precipitate traumatic events. This process is referred to as "stress proliferation," in which an initial stressor gives rise to additional stressors (Pearlin 1999; Pearlin et al 2005; Thoits 2010). Pearlin et al. (1981) suggest that the convergence of traumatic events and chronic strains can produce stress in two ways: 1) exposure to traumatic events may change the meaning of existing chronic strains and, 2) traumatic events may generate new or magnify existing chronic strains.

There is a vast array of research that has shown that reports of stressful life events, chronic and other forms of stress are related to a wide variety of mental, biological, and physical health outcomes. Stress has long been a major focus among researchers interested in studying environmental and psychosocial influences on health. Research has largely pursued three major types of stress: life events, chronic strains, and daily hassles (Thoits 1983; Kessler, Price, and Wortman 1985; Aneshensel 1992). Life events are described as discrete generally one-time occurrences (e.g. serious accident, injury or illness, death of a loved one) (Turner, Wheaton, and Lloyd 1995). Dohrenwend (1973) describes two distinct conceptions of the characteristic that makes life events stressful. The first is that the events are negative or undesirable in quality, and the second is that the occurrence of these events usually evokes or is associated with some

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adaptive or coping behavior. Pearlin (1989) describes the second major type of stressor, chronic strains, also known as chronic stress as involving relatively enduring problems, conflicts and threats that many individuals face in their daily lives. Chronic strains differ from life events in that these occurrences are persistent and prolonged over time, such as having a serious chronic illness, difficulties in job, marriage, and parenthood, living in poverty or residing in a crime ridden neighborhood (Wheaton 1990; Turner and Avison 2003). The last type of stress, daily hassles are described as relatively minor events arising out of day to day living such as everyday concerns of work, and commuting between work and home (Serido, Almeida, and Wethington 2004). Wheaton (1999) further defines daily hassles as small unexpected events that disrupt daily life, such as arguing with children, unexpected work deadlines, and a malfunctioning appliance.

This research aims to examine the health of individuals over time, simultaneously considering the impact of negative life events and chronic strains. In particular this research focuses on the effects of lifetime exposure to major and potentially traumatic events and chronic strains on the physical health and mortality of older Mexican-Americans and Mexican immigrants residing in a densely Mexican American populated region, the Rio Grande Valley area of, Texas. Thus, the aim of this research is to provide information on the impact of stress (lifetime traumas/events and chronic strains) on physical health outcomes for a Mexican-origin population that is about equally divided between foreign-born (45%) and native-born (55%) adults residing along the Texas/Mexico border.

Few studies have investigated the effects of traumatic life events and chronic strains on the physical health and mortality outcomes of Mexican-origin individuals residing in the United States, and those that do utilize national samples of Latinos with comparisons made to whites. At the time of this writing there has been no research that specifically compares native-born to foreign-born populations within a single ethnic group. This research adds to the literature on

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stress by extending the investigation of the Latino/Hispanic paradox to a local region which includes three counties (Cameron, Hidalgo, and Starr) along the Texas/Mexico border with a Mexican-origin population that exceeds 86 percent of the area's total population (U.S. Census 2008). It is no coincidence that the poverty levels in these counties are also among the highest in the country (34.0%, 35.2%, and 38.5%, respectively) (U.S. Census 2008). Regionalizing the study to an ethnic population with high proportions of Mexican-origin individuals living in poverty affords the opportunity to evaluate the relevance of the Latino/Hispanic paradox for native-born and foreign-born individuals and determine whether in fact a paradox exists within a singular ethnic group. Hence, this study seeks to explore whether the paradox is generalizable to local/regional populations. These findings seek to contribute to a better understanding of the Latino/Hispanic paradox between native-born and foreign-born Mexican-origin individuals with regards to the effects of traumatic life events and chronic strains on physical health and mortality outcomes.

Theoretical Perspective

The theoretical framework for this study has it's foundations in sociological stress theory. Researchers have established that stress can be caused by social psychological and structural sources such as emotionally negative experiences, chronic strains, and traumatic life evens (Aneshensel et al. 1991; Aneshensel 1992). Sociologists have also established that structural elements such as minority status, SES, and social environmental variables can also impact stress related individual and overall group health (Thoits 2010). The environmental perspective in stress theory emphasizes assessment of environmental situations or experiences that are objectively related to substantial adaptive demands (Cohen et al. 1995). In terms of the present study, the perspective will be applied to analyze how respondents characterize environmental factors (traumatic events/chronic strains) that may influence the onset or progression of disease.

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For instance, a traumatic life event, such as a death of a loved one or an accident may trigger behavioral or biological processes that contribute to the onset of a disease process (Cohen et al.1995).

In addition, the theoretical frame for this study also takes into consideration how stress exposure and responsive options can be affected by an individual's social location in existing social structures (Pearlin 1999). Variations in responses could also be influenced by structural and, by extension of Pearlin et al. (2005) assertions, geographical (i.e., regional) considerations as these may also constrain access to stress mediating mechanisms (e.g. social and mental health treatment institutions) that could reduce negative health outcomes. Furthermore, structural based everyday stressors such as insufficient income to pay monthly bills, work-family conflict, caring for a disabled child or frail parent, troubled relationships with coworkers, and living in a dangerous neighborhood can aggravate poor physical health and reduce feelings of general well-being (Brown and Harris 1978; Pearlin et al. 1981). As a still developing region, the LRGV in South Texas lacks adequate institutional infrastructures (e.g., public transportation, accessible health services) to meet the needs of an expanding population facing a myriad of structural based endemic disadvantages.

Incorporating Markides and Coreli (1986) Latino/Hispanic paradox description at the regional-level, this research combines and extends both descriptive frames to describe how social stress affects native-born and immigrant Latinos living in a still-developing enclave along the South Texas border. Drawn from regional sub-ethnic populations the data and analysis includes intra-group comparisons between native-born and foreign-born individuals of Mexican-origin that presumably experience similar sets of environmentally based stressors common to the region (e.g., minority status, poverty, lack of access to health services). Without challenge to the macro

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level assertions of the Latino paradox, the analysis tests it's' assumptions at the intra-ethnic group level.

Previous research has demonstrated that an individual's and group's position in the social stratification system of race, class, ethnicity, and by extension here, region, must face social and structural-based sets of stressors that create an environment of adversity (Pearlin 1999; Thoits 2010). Unlike psychological stress that can often be remedied through individual treatments, social structural based adversity is often times more difficult to address as it is external and outside the boundaries of an individual's or groups control. Yet despite the distinct challenges of social deprivation research indicates the health of native-born and foreign-born Latinos is better relative to non-Latino ethnic groups with structural based advantages.

Hypotheses

Differential vulnerability and exposure to stress has been a common explanation for socioeconomic disparities in health. This research investigates the extent to which exposure to traumatic life events and other stress is related to poor health outcomes in a regionally representative sample of native-born and foreign-born Mexican-origin individuals. Specifically we investigate: Do traumatic events and chronic strains negatively influence the health and mortality outcomes of older Mexican-origin individuals? Three hypotheses will be investigated.

H_1= exposure to traumatic events leads to poor health and mortality outcomes
H_2= exposure to chronic strains leads to poor health and mortality outcomes
H_3= foreign-born respondents fare better in health relative to their native-born counterparts

Data and Methods

The hypotheses introduced above will be examined using the data from the Border Epidemiologic Study on Aging (BESA)*. This is a longitudinal four wave population-based study on the health and functional status of community-dwelling Mexican Americans aged 45

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and older residing in the United States/Mexico border area of South Texas. This region is known as the Lower Rio Grande Valley (LRGV), and consists of Cameron, Hidalgo, and Starr counties. BESA is designed to study patterns of disablement in middle aged and older Mexican-origin individuals, and includes extensive socioeconomic, demographic and health information.

The 1996-1997 baseline wave of this panel study used area probability sampling that resulted in a final sample of 1089 households with at least one member aged 45 and over who agreed to complete an in-home, face-to-face interview in either Spanish or English, with a response rate of 92 percent. The sampling frame was based on maps drawn from the 1990 U.S. Census. The total sample pool of participants was age adjusted by census tract to reflect the 1994 age structure and proportionally selected according to their overall representation within each tract. The weighted BESA sample represented more than 300,000 residents Cameron, Hidalgo, and Starr counties. Survey participants were administered a two-hour face-to-face health survey instrument every two years. Follow-up interviews for wave 2 were conducted in 1999, with wave 3 conducted in (2001-2002) and wave 4 in (2005-2006). Loss to attrition was minimized by using a detailed follow-up plan that included establishing periodic contact with all participants through bi-annual telephone calls as well as with mailings of birthday and holiday cards.

Independent Variables

The measure of stress exposure included in this study involves consideration of two dimensions: traumatic events and chronic stress. Accordingly, there are two primary independent variables included in this analysis: 1) life traumas and 2) general problems.

The first independent variable, *life traumas,* is classified as potentially serious events that could have happened at *any* time in a person's life. Life traumas were assessed in the baseline survey instrument by a single open-ended question asked of respondents: "What do you consider

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the first major tragedy in your life?" Following the lead of Turner and Avison (2003), the open-ended responses were recoded and six categories were created for the regression analysis. The categories are: 1) no life tragedy; 2)major events which include several social adversities that are not typically violent in nature, such as parental/spousal divorce and involuntary loss of a job; 3) traumatic events, which imply force or coercion and includes events such as rape, physical and emotional abuse, and having a serious accident, injury, or illness that was life threatening or caused long-term disability; 4) witnessed violence refers to seeing someone killed and/or witnessing serious physical or emotional abuse; 5) experiences of bad news includes hearing of someone you know having committed suicide, being raped, or being seriously injured, and; 6) death events include the death of relatives and close friends.

The second independent variable, *general problems*, is used to measure exposure to chronic stress. A continuous count variable was created to assess the number of chronic strains experienced by the respondents. At wave 4, respondents were administered a 16 item checklist regarding ongoing problems in their lives. Items on the checklist included not having enough money, difficulty paying for or getting medical care, poor housing, fear of crime, injuries and disabilities, lack of transportation, and not enough job opportunities. At wave 4, general problems were summed up to create a continuous score to assess the amount of exposure to chronic strains across multiple domains. This index was not standardized.

Dependent Variable

Fayers and Sprangers (2002) state that one of the most frequently used measures of self-reported health status is a single question asking respondents to rate their overall health on a scale from "excellent" to "poor." There is widespread agreement that this simple question provides a useful summary of how respondents perceive their overall health status. Previous research has shown that self-reported health measures predict mortality and morbidity, and can

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be used to screen high-risk groups. In addition, self-rated health questions have been shown to be related to functional ability, medical diagnosis, and physical and mental symptoms. For this reason subjective measures of health can be used as another pathway to study the relationship between stress and health.

The first dependent variable for the analysis is self-rated health at wave 4. Self-rated health was assessed by a single question asked of respondents: "In general, would you say your health is…" 1) excellent; 2) good; 3) fair; or 4) poor. For the purpose of these analyses the four responses were collapsed into two categories: excellent/good health, and fair/poor health. These two categories were coded 0= excellent/good health; 1=fair/poor health. Each category contained approximately half of the respondents. The second dependent variable for the analysis is mortality. Reported deaths over the 10 year study were assessed at each follow up period by reports of family members and verification through the Social Security Death Index (SSDI). A dummy variable deceased was then created (0=Alive, 1=Deceased).

Control Variables

The analyses include several control variables. Demographic control variables are taken from the Wave 1 baseline survey and include gender (0=male, 1-female), nativity (0=foreign-born, 1= native-born), and age (based on self-reports and categorized as 45-54, 55-64, 65-74, and 75 or older). In addition socioeconomic status (SES) is measured using two variables: 1) education, measured as total years of school completed, is grouped in three categories: 1-8, 9-12, 12+ (more than high school education), and 2) income, measured as the total household income from all sources for respondent, including partner's income, is grouped into three categories: $0-$9,999, $10,000-$29,999 and $30,000 or more. Finally, baseline health status is included as a control variable. Base line health status is assessed by a single question asked of respondents: "In general, would you say your health is…" 1) excellent; 2) good; 3) fair; or 4) poor.

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Descriptive Statistics

Before presenting the results of the regressions models it is important to understand the characteristics of Mexican-origin individuals included in the analyses. Descriptive statistics were calculated to assess sample characteristics of respondents in wave 4. The Mexican-origin population in wave 4 is closely divided between foreign-born (47%) and native-born (53%). Around 68 percent of respondents are female compared to 32 percent males. A significant portion of the sample was classified as socioeconomically disadvantaged, with approximately 44 percent reporting annual household incomes of $0-$9,999. In addition, 65 percent of respondents reported having 0-8 years of education. Furthermore, about 36 percent of respondents reported being over the age of 65. At baseline, 51 percent of the full sample reported having excellent or good health compared to 49 percent reporting fair or poor health. No large differences between foreign-born and native-born respondents were reported for baseline health.

The distribution of predictor variables can be found in Table 1. The first of two independent variables of main interest is life traumas measured at wave 1. In the baseline sample, 9.3% of foreign-born respondents reported a major event as their first life tragedy compared to 6.1% of native-born respondents. About 10% of the foreign-born reported experiencing a traumatic event compared with 9% of the native-born. The category of "witnessed violence" was equally distributed between foreign-born and native-born, with approximately .5% of both groups reporting similar rates of exposure. Foreign-born respondents (7.6%) reported experiences of bad news (i.e. hearing of someone you know having being serious injured) compared to native-born (9.9%). By far, death events-- such as the loss of parent, spouse, or child -- was the most frequently reported life trauma for both foreign-born (67%) and native-born (67.4%) groups.

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The second main independent variable of interest is general problems at wave 4.General problems is measured by a count of chronic strains. An independent t-test was conducted to determine if any significant differences exist between foreign-born and native-born respondents exposure to chronic stress. As indicated in Table 2, there were statistically significant differences between foreign-born and native-born respondents when comparing general problem scores. That is, on average, foreign-born respondents scored higher on the general problem scale than native-born respondents. This finding is not surprising given that immigrants are more likely to experience additional adversities compared to their native-born counter parts.

Results

The multivariate analysis is designed to examine the relationship between traumatic life events, and chronic strains on self-reported health for foreign-born and native-born Mexican-origin individuals living in the Rio Grande Valley. Model 1 shows the results for the effects of the control variables on self-rated health as fair or poor. The results show that the control variables education, age, and self-reported health at wave 1 are related to perceived health in the expected directions. That is, education, age, and general health status at wave 1 are positively related to perceived health status at wave 4. Conversely, gender, country of birth, and household income are not associated with perceived health.

In Model 2, the two main independent variables are added to the control variables from Model 1. Again, education, age, and self-reported health at wave 1 are positively related to perceived health status at wave 4. Traumatic life events, measured by the six categories (no events, major events, traumatic events, witnessed violence, experienced of bad news, and death events) are not associated with self-reported health measured at wave 4. In addition, results from Model 2 show that general problems measured in wave 4 are positively associated with self-reported health at wave 4. Thus, for every additional general problem reported at wave 4, other

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things being equal, the likelihood of reporting fair/poor health rather than excellent/good health at wave 4 is 14 percent higher.

The mortality analysis was assessed through a series of multiple logistic regression models. Model 1 in Table 4 shows the results for the effects of the control variables on mortality. The results show that the control variables gender, age, and self-reported health at wave 1 are related to mortality in the expected directions. That is, gender, age, and general health status at wave 1 are positively related to mortality by wave 4. Conversely, education, country of birth, and household income are not associated with mortality. In Model 2, the two main independent variables life traumas and general problems are added to the control variables from Model 1. Again, gender, age, and self-reported health at wave 1 are positively related to perceived health status at wave 4. Traumatic life events, measured by the five categories (no events, major events, traumatic events, experienced of bad news, and death events) are not associated with mortality status measured at wave 4. The category witnessed violence was dropped from the analysis due to cell size. Finally, results from Model 2 show that general problems measured in wave 4 is not associated with mortality status at wave 4. However, nativity measured by country of birth, does nears significance at $P<.10$.

CONCLUSION

The United States older Latino population has experienced unprecedented growth in the past several decades. Despite these growing numbers there has been relatively little research that explores how exposure to negative life events and chronic strains affects the physical health and mortality outcomes of Latinos. Research is urgently needed to examine the environmental, psychosocial, and cultural factors that may positively or negatively influence the health and well-being of this population. This matter is of great importance because Latinos residing in the U.S. have been found to experience more exposure to stressors than the general population.

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This research examined the extent to which traumatic life events and chronic strains affect the physical health and mortality outcomes of foreign-born and native-born Mexican-origin individuals (age 45 an older) residing along the U.S./Mexico border. Previous studies have focused on comparing exposures to stress across racial and ethnic groups, but few have focused specifically on the physical health and mortality outcomes of stress exposure within a single minority ethnic group. The three questions guiding this study are: 1) do traumatic life events negatively impact physical health and mortality outcomes?, 2) do chronic strains negatively impact physical health and mortality outcomes?, and 3) does the Latino/Hispanic paradox extend to a local/regional population? That is, do foreign-born respondents fare better in terms of health and mortality than their native-born counterparts in regards to exposure to stress?

Socioeconomic status and race/ethnicity have generally been associated with greater exposure to stressful events. Previous research has shown that exposure to traumatic life events and chronic strains are related to a wide variety of mental, biological, and physical health outcomes. Consistent with the literature, the results from this study show educational attainment is strongly predictive of health status, though no association was found for mortality. Similarly, income was found to have no association with either self-reported health or mortality despite the fact that over 43% of respondents reported having a total household income of less than $10,000. The Lower Rio Grande Valley has among the highest poverty rates in the United States. A significant portion of respondents, both foreign-born and native-born alike, can be classified as socioeconomically disadvantaged. Despite this fact, nearly 49% of the total sample reported their health to be either excellent or good at wave 4. This finding may be attributed to the low cost of living in areas along the U.S./Mexico border.

Contrary to previous findings, there does not appear to be any negative effects on physical health or mortality from exposure to life traumas for foreign-born or native-born

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Mexican-origin individuals in this region. Life traumas measured at wave 1 was not associated with self-reported health or mortality status at wave 4. A possible explanation for this finding may be that less than 10% of respondents reported having experienced a traumatic event such as physical abuse or having had a serious accident, injury, or illness that was life threatening, whereas, 67% of respondents reported a death event (i.e. death of parent/spouse/child) as being their first life trauma. It is worth noting that the median age reported for experiencing the first life trauma was 40 years (mean of 66 years). The results from the analysis are consistent with the literature on the distribution of traumatic events over the life course. For instance, one of the most consistent findings in the variations of life events is that younger adults report a greater number of negative events than older adults (Hatch and Dohrenwend 2007). In addition, studies have shown that older individuals tend to rate events as less potentially disruptive than younger respondents (Masuda and Holmes 1978).

In regards to the second hypothesis, chronic stress exposure was found to significantly impact the health of both foreign-born and native-born respondents. These results are consistent with the literature that suggests that "exposures to chronic stress are considered more toxic because they are most likely to result in long-term or permanent changes in the emotional, physiological, and behavioral responses that influence susceptibility to and course of disease" (Cohen et al 2007:1685). While the results of the control variables included in the analysis showed no association between income and perceived health, other factors not included in this study--such as ongoing disabilities, difficulties getting medical care, and fear of crime--may influence the perceived health of respondents in the sample.

Finally, the hypothesis suggesting that foreign-born respondents would fare better in terms of health and mortality (Latino/Hispanic paradox) compared to their native-born counterparts is not supported. The results showed no significant differences between foreign-

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born and native-born respondents with respect to the effects of stress exposure on physical health and mortality. These finding are in contrast to previous research that has shown that foreign-born individuals residing in the United States tend to show better physical health and mortality outcomes than their native-born counterparts (Hummer et al 1999). There may be several reasons for these findings. For instance, while foreign-born Latinos tend to show better physical health and mortality outcomes than their native-born counterparts, this initial advantage tends to lessen with increasing time spent in the U.S. Foreign-born respondents included in the study had resided in the United States an average of 51 years (median of 35 years). Perhaps foreign-born come to resemble their native-born counterparts because foreign-born Latinos are more likely to engage in negative health behaviors with length of residence in the United States (Turra and Goldman 2007). Additionally, foreign-born Latinos residing along the U.S.-Mexico border may be exposed to additional stressors due to recent increases in funding for U.S. border enforcement policies, such as the militarization of the border which included the physical construction of walls, resulting in fear of deportation. This may in turn work against their health advantage.

Limitations

One of the limitations of this study is that the data from the Border Epidemiologic Study on Aging did not include the most robust measures for the assessment of traumatic life events and chronic strains. While the measures used in this analysis allowed for the categorization of different types of negative life events, it did not allow for a count to be made of different life traumas throughout the life course. Specific checklists designed to measure traumatic life events and recent life events (within a year) would have allowed for a more in-depth evaluation of the effect of life time traumas on physical health outcomes. Likewise, the measure of general problems only included certain measurements of chronic strains. Measures of specific domains, such as financial/economic, occupational, and parental stress would have allowed for a better

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understanding of the types of chronic strains Mexican-origin individuals are exposed to. Additionally, this study was limited to only analyzing one indicator of health (self-rated health at wave 4).Though self-rated health has been found in other studies to be predictive of mortality, additional indicators of health would have strengthen this analysis. Finally, this study was limited to analyzing the effects of traumatic life events and chronic strains among participants residing in the Lower Rio Grande Valley of Texas.

Future Research

These results suggest a need for future research on the interplay between different types of stressors and physical health outcomes among Mexican-origin individuals. Further investigation should consider whether traumatic life events and chronic strains affect Mexican-origin individuals across different age groups. The analysis here does provide some insights, but it is only a beginning and further investigation is needed to clarify how stressful life events impact the mental and physical health of Mexican-origin individuals living in other regions of the country. Further research must determine whether the Latino/Hispanic paradox can be explained by differential exposure and vulnerability to stress. Previous research has shown that Mexican immigrants are at a higher risk to stress exposure than their native-born counterparts.

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Table 1: Distribution of Predictor Variables

Stressors	**Country of Birth**	
Life Traumas	Mexico %)	USA (%)
No Event	5.63	3.86
Major Event	9.26	9.41
Traumatic Event	9.98	8.95
Witness Event	0.54	0.46
Exp. Bad News	7.62	9.88
Death Events	66.97	67.44
Gen Health Wave 4		
Excellent/Good	48.27	49.41
Fair/Poor	51.73	50.59

Table 2: T-test

Country of Birth		
Stressor	Mexico	US
	Mean (SD)	Mean (SD)
General Problems	2.7 (3.9)	2.08 (3.6)*

* $p<.05$

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Table 3: Regression Results for Self-Reported Health

Gen Health (wave 4)	Model 1 odds ratio	Model 2 odds ratio
Gender		
Female	1.23	1.09
Male	Ref	
Nativity		
US-born	1.30	1.01
Foreign-born	Ref	Ref
Education		
0-8 years	2.10*	2.03+
9-12 years	1.62	1.85
12+ years	Ref	Ref
Age		
45-54	Ref	Ref
55-64	1.88**	1.81*
65-74	1.42	1.62+
75+	1.79+	1.93+
Income		
$0-$9,999	1.41	1.06
$10000-$29,999	0.89	0.89
$30,000+	Ref	Ref
Gen Health (wave1)		
Excellent	Ref	Ref
Good	2.94***	2.99***
Fair	7.72***	8.19***
Poor	16.5***	19.60***
Tragedy Type		
No Events		Ref
Major Event		0.92
Traumatic Event		0.83
Witnessed Violence		0.87
Exp of Bad News		1.45
Death Events		1.17
Gen Prob (wave 4)		1.14***

p<.10;*p<.05;**p<.01;***p<.001

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Table 4: Regression Results for Mortality

Deceased	**Model 1 Odds Ratio**	**Model 2 Odds Ratio**
Gender		
Female	.45***	.44**
Male	Ref	Ref
Nativity		
US-born	1.41	1.65+
Foreign-born	Ref	Ref
Education		
0-8 years	1.37	1.63
9-12 years	1.87	1.99
12+ years	Ref	Ref
Age		
45-54	Ref	Ref
55-64	3.03**	2.73*
65-74	10.99***	9.44***
75+	35.49***	28.58***
Income		
$0-$9,999	2.1	2.24
$10000-$29,999	1.63	1.58
$30,000+	Ref	Ref
Gen Health (wave1)		
Excellent	Ref	Ref
Good	2.33*	2.24+
Fair	2.49*	2.63*
Poor	6.49***	9.28***
Tragedy Type		
No Events		Ref
Major Event		0.84
Traumatic Event		0.93
Exp of Bad News		0.87
Death Events		0.97
Gen Prob (wave 4)		1.01

p<.10;*p<.05;**p<.01;***p<.001

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