9-2019

Fatalism and Pain Experience in Hispanic and Non-Hispanic White Patients with Chronic Pain

Esmeralda Ibette Nuñez

Recommended Citation

Nuñez, Esmeralda Ibette, "Fatalism and Pain Experience in Hispanic and Non-Hispanic White Patients with Chronic Pain" (2019). *Loma Linda University Electronic Theses, Dissertations & Projects*. 1897.
https://scholarsrepository.llu.edu/etd/1897

LOMA LINDA UNIVERSITY
School of Behavioral Health
in conjunction with the
Faculty of Graduate Studies

Fatalism and Pain Experience in Hispanic and Non-Hispanic White Patients with Chronic Pain

by

Esmeralda Ibette Nuñez

A Dissertation submitted in partial satisfaction of
the requirements for the degree
Doctor of Philosophy in Clinical Psychology

September 2019

Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

Chairperson

David A. Vermeersch, Professor of Psychology

Elizabeth Preston Cisneros, PhD

Elizabeth P. Cisneros, Clinical Neuropsychologist, Casa Colina Hospital and Centers for Healthcare

PhD

Diane L. Scheiner, Clinical Neuropsychologist, Casa Colina Hospital and Centers for Healthcare

Daniel A. Skenderian, Director of Neuropsychology and Psychology, Casa Colina Hospital and Centers for Healthcare

ACKNOWLEDGEMENTS

Thank you to my wonderful dissertation committee for your willingness to take part in this project. A special thanks to Dr. Skenderian and Dr. Scheiner, who took me under their wings when the path ahead of me seemed most unclear. I admire the passion and authenticity you both bring to your work and will always treasure your ongoing presence in my life, your kindness, and you believing in me.

I’d also like to thank my husband, Philippe, who built a home of constancy and love for us at the foot of a beautiful hill. You deserve an honorary degree, but will have to make due with finally getting your wife back.

CONTENT

Chapter

Appendices

TABLES

Tables Page

ABBREVIATIONS

BPI-SF	Brief Pain Inventory- Short Form
CLHC	Chance Externality Health Locus of Control
CBT	Cognitive Behavioral Therapy
IHLC	Internality Health Locus of Control
MHLC	Multidimensional Health Locus of Control
NHW	Non-Hispanic White
PHLC	Powerful Others Externality Health Locus of Control

ABSTRACT OF THE DISSERTATION

Fatalism and Pain Experience in Hispanic and Non-Hispanic White Patients with Chronic Pain

by

Esmeralda Ibette Nuñez

Doctor of Philosophy, Graduate Program in Clinical Psychology
Loma Linda University, September 2019
Dr. Daniel Skenderian, Chairperson

The purpose of this dissertation was to explore fatalistic beliefs about pain among Hispanic and Non-Hispanic White (NHW) patients with chronic pain in order to assess the assertion that fatalism is a uniquely important cultural determinant of pain experience among Hispanics. Hypotheses were that across both Hispanic and NHW patients, lower socioeconomic status and lack of access to a usual source of healthcare for chronic pain, rather than ethnicity, would relate to greater pain fatalism. Secondly, it was hypothesized that greater pain fatalism would relate to higher pain severity and pain interference for both groups. Pearson product-moment correlations were used to test hypotheses in an inpatient sample of 30 Hispanic and 33 NHWs with a variety of chronic pain conditions. Results were that education was significantly correlated with pain fatalism only for Hispanic participants. More specifically, among Hispanics fewer years of education was significantly correlated with greater pain fatalism ($r = -.52$, $p < .01$). The relationship between less income and greater pain fatalism among Hispanic patients trended towards significance ($r = -.34$, $p < .07$). Greater pain fatalism was significantly related to greater pain-related functional impairment only for NHW patients ($r = .35$, $p < .05$). Results

highlight the limitations of relying on stereotypic understandings of patient groups. At the same time, findings suggest that pain fatalism may have a different meaning and function across ethnic groups. The impact of pain fatalism on a patient's functioning likely depends on the meaning of pain fatalism in relation to a patient's cultural values, historical experiences, and situational context.

CHAPTER ONE

INTRODUCTION

Pain, as defined by the International Association for the Study of Pain, is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (Mersky, 1979). The experience of pain has been described as a complex interaction between sensory information and patient cognitions that results in a pain experience unique to the individual (Coghill, McHaffie, & Yen, 2003; Melzack & Wall, 1967). Imperceptible differences in injury and disease process can develop into chronic pain for some patients, but not others. Neuroimaging has suggested that chronic pain is distinct from acute pain in that chronic pain involves less sensory processing and more cognitive and emotional processing, as demonstrated by concordant activation of the prefrontal cortex across chronic pain conditions (Apkarian, Bushnell, Treede, & Zubieta, 2005). Because clinical pain responses can influence treatment, outcomes, and adherence, it is important for health professionals to examine and understand possible cultural sources of variation in pain perception and expression; particularly as Hispanics, currently the largest ethnic minority group in the United States, are projected to constitute 28.6% of the population by the year 2060 (Campbell, 2005). A review of the psychological literature on pain experiences in Hispanic Americans revealed mixed findings regarding the prevalence rate of chronic pain in this group, but some investigations have suggested that the prevalence rate among Hispanics is at least comparable to rates of chronic pain among Non-Hispanic Whites (NWHs) (Hollingshead, Ashburn-Nardo, Stewart, & Hirsch, 2016). Hispanics also report greater pain severity, greater pain sensitivity, and less pain tolerance compared to NHWs (Bates & Edwards, 1991; Gagnon, Matsuura, Smith, & Stanos, 2014). Cultural factors that influence cognitive, psychological, and affective processing of pain have been hypothesized to partially explain differences in pain experience between ethnicities (Sanders et al., 1992).

Psychological Control of Pain

The Gate-control theory of pain proposes that pain perception and response are the consequence of elaborate interactions among sensory-discriminative, motivational-affective, and cognitive-evaluative factors (Melzack et al., 1967). Pain as sensory input is subject to the moderating effects of cognitive, affective, and behavioral factors before it becomes conscious to the individual. Turk and colleagues (1983) suggested that psychological factors may account for variance in pain perception and pain responses among people with pain. More specifically, they proposed that psychological control factors are a central mechanism in pain perception. Pain experience could theoretically be changed by altering cognitive, affective, and behavioral responses to pain. There is now considerable evidence that patients with chronic pain who participate in cognitive behavioral therapies (CBTs) report lower pain and improve in terms of psychological and physical functioning (Morley, Eccleston, & Wilson, 1999; Vlaeyen & Morley, 2005). CBT has also been found to be an effective treatment for adult ethnic minorities (Horrell, 2008). A review of the literature by Flor and authors (1992) revealed that multidisciplinary teams, particularly those that incorporate psychological interventions into their medical pain treatment plans, are more effective in reducing patient pain intensity and pain interference, and improving mood, than single-discipline treatments. Additionally, these researchers found that multidisciplinary treatments demonstrate improved outcomes in terms of return to work and healthcare utilization compared to single-discipline treatments and no treatment. Finally, multidisciplinary treatment of chronic pain has been shown to strengthen patient beliefs about personal control over pain and decrease beliefs that pain is controlled by others or due to chance (Coughlin, Badura, Fleischer, & Guck, 2000).

Culture and Pain

Investigating how culture relates to individual health behavior is important because the utility of integrating cultural factors into clinical practice and public health policy has yet to be determined (Huey, Tilley, Jones, & Smith, 2014; Kagawa Singer, 2012). To date, there is limited research investigating pain beliefs held by Hispanics in the U.S.. In a review of the literature on pain coping in Hispanics, Campbell and authors (2009) found that research on pain beliefs in Hispanics is very preliminary, but existing findings suggest that some pain beliefs related to "luck" or chance may be an integral part of Hispanic cultures. More recently, researchers have suggested that fatalism, broadly defined as the belief that life events are predetermined or controlled by fate, may negatively impact pain behaviors in Hispanics the same way that fatalism has been negatively associated with less preventive health behaviors in other populations (Hollingshead, 2016). Considering the volume of evidence indicating that psychological factors influence pain perception, it is reasonable to assume that cultural beliefs about pain underlie variations in pain experience among people of different cultural backgrounds (Lasch, 2000). For example, research has indicated that Hispanics may engage in more pain catastrophizing: exaggerated negative thoughts that occur in anticipation of or during pain episodes, as compared to NHWs (Edwards, Moric, Husfeldt, Buvanendran, & Ivankovich, 2005). Greater pain catastrophizing has been connected with greater pain severity and disability among patients with acute and chronic pain (Wertli, Eugster, Held, Steurer, Kofmehl, & Weiser 2014). It is unclear what specific cultural factors may underlie these differences in pain-related cognitions and, consequently, pain experience.

Fatalism and Health Behavior

Betancourt and Lopez (1993) define culture as socially shared norms, roles, beliefs, and values. Specific beliefs could be considered cultural to the extent that they are shared among members of a particular group. Fatalism is a cultural variable that has been of interest to researchers and health professionals because of its link to outcomes such as decreased preventive cancer screening, lowered diabetes treatment adherence and self-care, and engagement in risky sexual activity associated with HIV contraction (Espinosa de Los Monteros & Gallo, 2011; Kalichman, Kelly, Morgan, & Rompa, 1997; Powe & Finnie, 2003; Walker et al., 2014). Fatalism was first conceptualized as a cultural value orientation (general fatalism) that reflects a social group's general understanding of how humans should relate to nature and whether people should try to control events in their environment or be subjugate to them (Kluckhohn & Strodtbeck, 1961). Fatalism has also been investigated with regard to disease-specific beliefs that death is inevitable when a disease is present, that some health outcomes are outside human control and are predetermined, and that health outcomes are controlled by external forces, powerful others, or chance (Egede & Bonadonna, 2003; Powe et al., 2003; Straughan & Seow, 1998)

Fatalism and Ethnicity

Hispanics have often been represented in medical and psychological literature as being more fatalistic than individuals of other ethnic groups. However, some investigators have questioned whether existent research supports this assertion and found little evidence to support its validity (Abraído-Lanza et al., 2007). These researchers have instead highlighted the assumption that Hispanics are culturally fatalistic as a general limitation of research on Hispanics. Newer research has suggested that some Hispanics may be more fatalistic about health *as a consequence* of experiencing social circumstances of less control, such as poverty. U.S. Hispanics have a higher poverty rate of 23.2 %, while the overall U.S. poverty rate is 14.3% (Macartney, Bishaw, & Fontenot, 2013). One study investigating the relative impact of fatalistic beliefs that staying healthy is largely under God's control and healthcare access factors, such as insurance coverage in the past 12 months and having a usual place to go for medical care or advice, found that access factors were in fact much more predictive of healthcare utilization among Hispanics than were patient beliefs (De Jesus & Xiao, 2014). Thus, when lower income Hispanics are overrepresented in research samples, researchers may falsely conclude that Hispanics are more culturally fatalistic than other ethnic groups, when instead fatalism may be more strongly associated with socioeconomic variables (i.e., lower income and education levels). In their research investigating cancer fatalism among African Americans and NHWs, Powe and Finnie (2003) found that fatalistic beliefs among

African Americans relate to socioeconomic status. Individuals of lower socioeconomic status often face social circumstances of lowered access and increased barriers to healthcare that in turn increase the odds of non-survival and of knowing someone within their group who has died of cancer. Better understanding of how disease-specific fatalism relates to socioeconomic status can help health professionals avoid the unfounded assumption that Hispanics and other ethnic minorities are culturally fatalistic.

Another presenting issue within fatalism research is the practice of grouping U.S. Hispanics within a single ethnic category, the assumption being that individuals from Spanish-speaking nations share the same cultural beliefs. This categorization overlooks the cultural heterogeneity of the U.S. Hispanic population. People from countries that were colonialized by the Spanish may share language and a sense of community; however, individuals from different Hispanic nations have differing immigration patterns and varying ethnic experiences in the U.S. (Torres, 2004). As an example, a Mexican male who has completed six years of formal education in Mexico and immigrants to the United States may have a vastly different worldview (and beliefs about health) than a U.S.-born Mexican-American female who has a bachelor's degree and is now attending medical school. Though both individuals can be categorized as Hispanic, their health beliefs likely vary because of differences in nationality, gender, and socioeconomic status. Researchers investigating culturally-relevant issues among Hispanics with diabetes have found that fatalistic beliefs vary among Hispanic subgroups (Caban & Walker, 2006). Hispanics in the U.S. can also vary in terms of level of acculturation, defined as the dual process by which individuals retain the culture of their family's country of origin and adopt the culture of their host country (Berry, 1997). More acculturated individuals are defined as those who adopt aspects of their host country's culture to a greater degree. Research findings have suggested that less acculturated Hispanic women within the U.S. endorse more fatalistic beliefs about their health compared to more acculturated Hispanic women (Castro, Furth, & Karlow, 1984).

General Fatalism Versus Disease-Specific Fatalism

Disease-specific fatalism has more consistently related to health behaviors among Hispanics for a variety of health outcomes than has general fatalism. In a review of literature investigating the relevance of fatalism for the study of cancer screening behavior among Hispanic women, researchers identified 11 quantitative studies measuring the relationship between fatalism and cancer screening behaviors (Espinosa de los Monteros et al., 2011). Two of the 11 studies used a measure of general fatalism created by Cuéllar and authors as a predictor of cancer screening behavior and the other nine studies used cancer-specific measures of fatalism (Cuéllar, Arnold, and González, 1995; Randolph, Freedman, & Freedman, 2002; Teran, Baezconde-Garbanati, Marquez, Castellanos, & Belkic, 2007). One of the two studies that assessed general fatalism revealed that higher fatalism significantly predicted lower rates of cancer screening behavior, while the second study did not find a significant relationship between more global fatalistic beliefs and cancer screening behavior. Contrastingly, six out of the nine studies that investigated disease-specific fatalism in relation to cancer screening found a statistically significant relationship between cancer fatalism and health behavior such that higher levels of cancer fatalism predicted decreased participation in cancer screening. The more consistent relationship between cancer fatalism and cancer-related health behaviors is in line with attitude-behavior relations theory, that suggests general cognitions (i.e., attitudes, values, beliefs) may inconsistently relate to specific behaviors, but cognitions that are more specific to a behavior of interest tend to be more predictive of that behavior (Ajzen & Fishbein, 1977; Ajzen & Fishbein, 2005). Rotter (1975) also argued that when trying to predict health behaviors and psychological factors related to a specific situation, specific measures are stronger at predicting outcomes than general measures (Rotter, 1975).

Measures of Fatalism

At present, there are no gold-standard measures to assess general fatalism or disease-specific fatalism for any group. Lack of established measures, reliance of single-item measures with poor reliability and validity, and limited evidence for available measures have been highlighted as pitfalls of fatalism research in Hispanics (Abraido-Lanza et al., 2013). The most widely used measures assessing fatalistic beliefs, first validated on non-Hispanic populations, are the Multidimensional Health Locus of Control scales (MHLC) (Abraido-Lanza et al., 2013). The MHLC scales are health-focused questionnaires designed to measure beliefs regarding who or what a person believes is in control of their health (Wallston, 2005). The original version of the instrument has two roughly equivalent forms (forms A and B) each consisting of three six-item subscales: Internality (IHLC); Powerful Others Externality (PHLC); and Chance Externality (CHLC). The CHLC subscale was designed to assess the belief that chance, fate, or luck influence one's health (Wallston et al., 1994). Basing scale items on an adaptation of Rotter's social learning theory, Wallston and authors (1994) asserted that health behaviors are influenced by peoples' beliefs regarding whether or not their health is controlled by their own behavior, powerful others, or chance. In theory, perceived health locus of control is an important determinant of health status through its influential effect on behaviors. Research has since supported this theory. One example is the British Cohort Study, where researchers found that greater internal locus of control beliefs at age 10 predicted reduced risk of obesity, overweight status, and psychological distress at age 30 in a sample of 7551 British men and women (Gale, Batty, & Deary, 2008).

Researchers have found that health locus of control beliefs also relate to pain severity and disorder impact among NHW patients with chronic pain (Pellino, & Oberst, 1992; Toomey, Mann, Abashian, & Thompson-Pope, 1991). Chance health locus of control beliefs among patients with chronic pain have been related to more helplessness as a response to pain and greater psychological distress (Crisson & Keefe, 1988). Other investigations have indicated that chance locus of control is related to greater depression and poorer quality of life among patients seeking treatment for pain (Wong & Anitescu, 2017). By contrast, internal health locus of control beliefs are associated with lower pain severity, lower disability, higher quality of life, and better psychosocial adjustment (Trafimow & Trafimow, 1998; Zaharoff, 2003). Internal locus of control beliefs are also associated with better coping abilities, more active coping behaviors, and greater effectiveness of multimodal and psychological interventions for pain conditions (Härkääà, Järvikoski, & Estlander, 1996; Malinoski, 2001).

The MHLC- Form C is an iteration of the original MHLC designed to flexibly assess locus of control beliefs in regards to specific medical conditions (Wallstron, 2005). Comparison of MHLC in its generic forms to the condition-specific Form C has demonstrated that pain-specific versions of Form C explain more unique variance in pain ratings among patients with pain conditions (Wallston, 2005). Available scales for evaluating pain locus of control are all based on Form C to some extent (Cano-García, Rodríguez-Franco, & López-Jiménez, 2010). Researchers using Form C have found that patients receiving specialty-pain clinic services tend to attribute their pain to chance at greater levels than patients at general medical clinics (Toomey et al, 1993). Among patients with chronic headaches and more emotional and social disability, and among patients with fibromyalgia, chance locus of control attributions for pain have been associated with greater pain intensity and greater pain interference, defined as the extent that pain hinders engagement with social, cognitive, emotional, physical, and recreational activities. (Pastor et al., 1993; Scharff, Turk, & Marcus, 1995). Among patients with nonmalignant chronic pain, chance locus of control for pain has been associated with pain-related feelings of helplessness and depression (Wallston, 1994).

Pain fatalism has also been measured using the Barriers Questionnaire: a 27-item scale designed to assess patient-held beliefs about pain that may act as barriers to pain management (Gunnarsdottir, Donovan, Serlin, Voge, & Ward, 2002). A limitation of this questionnaire is that it was designed to assess beliefs about pain within the specific context of cancer; also, though validated in a Hispanic sample, the questionnaire has not yet been validated to assess pain beliefs among patients with nonmalignant chronic pain (Jacobsen, Møldrup, Christrup, & Sjøgren, 2009; Ward & Hernandez, 1994). Furthermore, the face validity of the measure’s three-item fatalism factor is questionable: two items assess beliefs about the effectiveness of medication for controlling pain, while the third item assesses beliefs about physician responsiveness to pain expression.

Nowhere does it explicitly assess the belief that pain is a matter of chance/fate. Not surprisingly, because of its questionable validity, the measure's fatalism subscale has been found by some to demonstrate low reliability (Ward et al., 1994). Finally, some research has demonstrated that items on the fatalism subscale are frequently not endorsed by a high percentage of patients and therefore were even excluded on more recent iterations of the measure, such as the 13-item Barriers Questionnaire (Green, Hart-Johnson, & Loeffler, 2011).

Pain Fatalism in Hispanics

From review of the existing literature, it is clear that research investigating pain beliefs among Hispanics in the U.S. is limited (Campbell et al., 2009; Hollingshead et al., 2016). In one of the few published studies on pain beliefs and their relationship to pain experience in U.S.-based Hispanics, Bates and authors (1993) found that fatalistic attributions, as measured by Rotter's (1966) original locus of control scale assessing general attributions about fate or luck, were more prevalent among Hispanic participants with chronic pain than in participants of European descent with chronic pain. Across ethnic groups, chance attributions for pain were related to higher ratings of pain intensity. Within several ethnic groups including Hispanics, those who endorsed chance locus of control for pain reported higher pain intensity than those who endorsed an internal locus of control for pain. A limitation of Bates et al.'s study was that it did not control for differences in years of education among ethnic groups, though Hispanics in their study had significantly less formal education as compared to individuals of other ethnic groups. Thus, socioeconomic status (SES) differences, rather than ethnicity-specific cultural differences, may account for the higher prevalence of pain fatalism observed among Hispanics in their study. More recently, researchers found that fatalistic beliefs about pain, as measured by MHLC- Form C, predicted treatment failure at discharge among U.S. Hispanic patients receiving multidisciplinary outpatient treatment for fibromyalgia (Torres et al., 2009). This study however did not report how fatalistic beliefs about pain relate to pain severity.

Research on Hispanics conducted abroad has suggested that fatalistic beliefs may relate to differences in subjective pain experience. Cano-Garcia and authors (2009) found that more endorsement of pain fatalism predicted greater reported pain intensity and more medication use among Spanish patients with migraine- and tension-type headaches. Moreover, their research revealed that fatalistic pain attributions significantly correlated with more pain-related outcomes such as pain experience, coping style, and pain behavior, than did attributions of internal locus of control and health care professional locus of control. Chance locus of control attributions for pain significantly correlated with more negative cognitions in response to pain, less headache self-efficacy, less adaptive coping, more pain catastrophizing, more nonverbal and verbal pain complaints, and more activity avoidance. Both of the previously mentioned studies were conducted on a Spanish sample in Spain. As such, findings may not generalize to Hispanic patients with chronic pain in the United States, where the largest Hispanic subgroups, in order of population, are of Mexican, Puerto Rican, and Cuban origin (Torres, 2004). Additionally, this study did not explore the effects of ethnicity, income, and education. Thus, it is unclear whether pain attributions in this sample are connected to socioeconomic status or ethnicity.

CHAPTER TWO

CURRENT STUDY

Existent research on fatalistic beliefs and chronic pain in NHWs suggests that fatalistic beliefs about pain could relate to subjective pain experience, pain coping, and psychological distress across ethnic groups. Evidence suggesting that fatalism is a pervasive cultural belief that affects chronic pain experience among U.S. Hispanics, but that this is less relevant to chronic pain experience among NHWs, is missing from the literature. The extent to which pain-specific fatalism may relate to pain intensity and pain interference in a U.S. Hispanic patient sample with chronic pain as compared to a NHW patient sample with chronic pain has yet to be investigated. The purpose of this study was to explore and compare the role of fatalistic beliefs about pain in a sample of Hispanic and NHW patients with chronic pain, in order to assess the validity of the assertion that fatalism is an important cultural determinant of pain experience among Hispanics. One aim of this study was to see how factors such as income, education, and barriers to continuous pain care may better explain pain-specific fatalistic beliefs across these ethnic groups. A second aim was to explore the relationship between pain fatalism and pain experience across ethnic groups. Pain-specific fatalism was the focus in this study because of research indicating that specific beliefs are more appropriate to assess than general beliefs when looking at specific health behaviors. To our knowledge, no previous research has explored and compared socioeconomic predictors of pain fatalism and how pain fatalism relates to pain experience in U.S.-based Hispanics and NHWs.

It was hypothesized that across both Hispanic and NHW patients, lower income, fewer years of education, and lack of access to a usual source of healthcare for chronic pain, rather than ethnicity, would relate to higher pain fatalism. Secondly, it was hypothesized that more pain fatalism would relate to higher pain severity and pain interference in both groups of patients. If there were to be significant differences in the relationship between pain fatalism, pain severity, and pain intensity between Hispanic and NHW patients, it was hypothesized that the strength of these relationships would be attenuated when the effects of income, education, and access to care were controlled. It was expected that Hispanic patients would endorse more pain fatalism on average as compared to NHWs, but that this difference would be better explained by significant differences in income, education, and healthcare access between ethnic groups.

CHAPTER THREE

METHODS

Participants

Sixty-three inpatient participants (Hispanic *n* = 30; NHW *n* = 33) at Casa Colina Hospital and Centers for Healthcare were identified to complete a voluntary survey between November 2017 and January 2019 as part of a pilot study investigating how fatalistic pain beliefs relate to subjective pain experience in Hispanic and NHW persons with chronic pain. Casa Colina Hospital is a 68-bed acute inpatient and post-acute rehabilitation medical facility located in Pomona, California. Eleven out of 30 (36.7%) Hispanic participants completed the survey in Spanish and 14 out of 30 (46.7%) Hispanic participants were born abroad in Latin America. Two NHW participants were born abroad (Canada and Europe). Purposive sampling was used to recruit Hispanic and NHW participants with chronic pain diagnoses and/or other conditions contributing to chronic pain. The recruited number of participants for this study was based on recommended sample sizes for research studies with the aim of estimating correlations among predictors and outcomes (Hertzog, 2008). Potential participants were identified through weekly review of new inpatient hospital admissions. More specifically, each week new admissions were reviewed to identify patients whose medical charts indicated they were Hispanic or NWH and who also had a chronic pain diagnosis and/or other conditions related to chronic pain. Inclusion criteria for potential participants were 1) being at least 18 years of age, 2) self-identifying either as Hispanic or NWH, 3) Spanish and/or English language proficiency, and 4) endorsing current pain that has lasted at minimum three months. Per the literature, pain persisting three to six months or longer is regarded as chronic (Treede et al., 2015). Exclusion criteria were 1) diagnoses of dementia, major neurocognitive impairment, and/or a malignant pain condition. Appendix A lists the diseases and conditions that were considered for inclusion in this study. All diagnoses were made by physiatrists. The majority of participants in the current study were diagnosed with a pain condition associated with chronic musculoskeletal pain. See Table 1 for further information regarding frequency of pain conditions within the current study.

Table 1. Frequencies of Pain Diagnoses

Pain Category	n (%)
Musculoskeletal Pain	37 (58.7)
Neuropathic Pain	17 (27.0)
Primary Pain	15 (23.8)
Postsurgical and Posttraumatic Pain	11 (17.5)
Headache and Orofacial Pain	5 (7.9)
Visceral Pain	1 (1.6)
Patients with one category of pain	40 (63.5)
Patients with two categories of pain	22 (34.9)
Patients with three categories of pain	1(1.6)

Note. N = 63

Materials

Demographics

Ethnicity, gender, country of birth, years of education, and annual income variables were self-reported by participants. Participants indicated their ethnicity as either Hispanic or NHW. The ethnicity variable was dummy coded for statistical analyses. Hispanic was coded as 0 and Non-Hispanic White was coded as 1. Similarly, the gender variable was dummy coded, with men coded as 0 and women coded as 1. Participants indicated their birthyear, which was later verified with the date of birth listed on their inpatient medical records. Age was calculated from date of study participation using patients' date of birth. Annual income was reported by marking one of seven categories that corresponded to increasing income ranges. For study analyses, income was treated as a continuous variable with higher values indicating higher self-reported annual income. This demographic information was gathered to assess these variables as population-level factors and potential sources of variation for fatalistic beliefs about pain (Betancourt & Flynn, 2009). See Appendix B for an example of the demographic form that was provided to participants.

Current Pain Diagnoses

Information on each participant's chronic pain diagnosis and other pain-related diagnoses were verified using available inpatient medical records. These data were subsequently recoded by pain category as outlined by Treede et al. (2015). Table 1 shows final sample pain diagnoses organized by chronic pain category including chronic primary pain, chronic postsurgical and posttraumatic pain, chronic neuropathic pain, chronic headache and orofacial pain, chronic visceral pain, and chronic musculoskeletal pain.

Healthcare and Pain Care Access

To assess whether participants had access to healthcare, participants were asked to indicate whether or not they had a usual doctor or place to go when they are sick or need health advice before their inpatient hospitalization. Similarly, to assess if participants had access to pain-specific care, they were asked to indicate whether or not they had a usual doctor or place to go when they are in pain or need pain-related treatment before their inpatient hospitalization. Responses for both questions were dummy coded for statistical analyses with 0 indicating “yes” responses and 1 indicating “no” responses.

Pain Fatalism

Pain fatalism was measured using total scores for the six-item CHLC measure, a subscale of the MHLC- Form C adapted for pain. Form C was designed to flexibly assess patients’ locus of control beliefs regarding an existing medical condition (Wallston et al., 1994). The entire measure consists of three, six-item subscales that factor accordingly into three relatively orthogonal dimensions: Internal locus of control, Powerful others locus of control, and Chance locus of control. Dimensions of the MHLC can be administered independently. Each item on the scale represents a statement about a patient’s own condition or disease that they rate on a six-point Likert scale ranging from “1-strongly disagree” to “6-strongly agree.” Higher total scores on the “Chance” subscale indicate more fatalistic attributions for pain. The scale has demonstrated adequate reliability and validity in a variety of nonmalignant chronic pain samples, and in both English and Spanish-speaking samples (Cronbach’s $\alpha \geq .70$) (Castarlenas et al., 2016; Doku Ramírez, Fonseca Parra, González Gil, & Gualdrón Alba, 2012; Moretti, Medrano, & Basler, 2015; Wallston, 2005). The MHLC scales were designed for use with people who function at an eighth grade reading level. See Appendix C for list of CHLC items.

Pain Severity and Impact on Functioning

Pain severity and impact of functioning were measured using the Brief Pain Inventory-Short Form (BPI-SF) (Cleeland, 1994). The BPI-SF is a 15-item self-report measure designed to assess pain severity, impact of pain on daily function, pain location, pain medications and amount of pain relief in the past 24 hours or the past week (Cleeland, 2014; Keller et al., 2004). Since its creation, the BPI-SF has been validated in English and Spanish-speaking patient samples with nonmalignant chronic pain (Andres Ares et al. 2015; Keller et al., 2004) . Subscales of BPI-SF have demonstrated adequate reliability coefficients across English and Spanish-speaking patients with nonmalignant cancer pain (Cronbach's $\alpha \geq .70$). Additionally, longitudinal analyses of the scale have demonstrated that BPI-SF scales are sensitive to change and can therefore detect improvements or declines in a patient's condition in chronic pain samples (Keller et al., 2004). The BPI-SF is appropriate for patients who function at or above a 5th grade reading level (Cleeland, 2014). It is one of the most widely used assessments for clinical pain (Keller et al, 2006).

Test developers recommend that pain severity be measured using items that assess pain at its "worst," "least," "average," and "now." Pain severity items are rated on a 10-point Likert scale, with "0" indicating "no pain" and "10" indicating "pain as bad as you can imagine." As such, pain severity for this study was measured by calculating an average value for worst pain, least pain, average pain, and pain now. Test developers recommend measuring pain interference by creating a mean value of items such that patients indicate degree of pain interference across seven domains. Patients indicate functional impairment across these domains on a 10-point Likert scale with "0" indicating that pain “does not interfere” and “10” indicating that pain “completely interferes.” Because this study was done with participants who were on an inpatient unit and had therefore not engaged in work or employment-related activities in the 24 hours before their participation in this study, pain interference in the domain of work was excluded from analyses. However, test creators indicate that an average pain interference score can be calculated when patients indicate their functioning in at least four domains of functioning. As such, pain interference in this study was assessed by calculating an average score for pain interference across six domains of functioning that still applied to participants during their inpatient stay (e.g., general activity, walking, mood, enjoyment of life, relations with others, and sleep). Higher scores on BPI-SF subscales indicate greater pain intensity and greater pain impact on functioning.

Covariates

Time since pain onset in years and current involvement in litigation related to chronic pain were assessed as potential covariates in this study. Current involvement in injury-related litigation was dummy coded with “yes” coded as 0 and “no” coded as 1. For Hispanic participants, acculturation as measured by nativity and preferred survey language were also assessed as potential study covariates. Participants expressed their preferred survey language (i.e., English or Spanish) before completing the survey, which was subsequently dummy coded as 0 for “preferred English” and 1 for “preferred Spanish.” Birthplace was also dummy coded as 0 for “U.S.-born” and 1 as “non-U.S.-born.”

Procedure

Individuals admitted to the inpatient unit between November 2017 and January 2019 who met both study inclusion/exclusion criteria based on review of weekly new inpatient hospital admissions were offered the opportunity to participate in this study. Potential participants were contacted in person by the primary investigator (PI: Esmeralda Nuñez, M.A.) in their hospital room to explain the purpose of the study, including the inclusion/exclusion criteria. Those interested in participation were screened for eligibility, and told that participation in the study would require their informed consent. Those who expressed continued interest were informed that participation would involve completing a 15-minute questionnaire with a $5 compensation for their time. Additionally, they were informed that their decision to participate or not to participate in the study would not affect their treatment at Casa Colina Hospital in any way. Those who expressed continued interest were guided through informed consent and provided either written or verbal consent to participate in the study. Only participants who met inclusion/exclusion criteria and who correctly answered a sequence of questions designed to assess their capacity to consent to research participation were enrolled. All participants were encouraged to ask questions, and were informed they were under no obligation to complete the study and could elect to discontinue at any time. Participants who were unable to read and/or write were verbally consented and administered questionnaires by the primary investigator. Upon completing the questionnaire, participants were debriefed and compensated for their participation.

Statistical Analyses

Before testing the study hypotheses, the database was screened for missing data and outliers. Assumptions for conducting Pearson product-moment correlation were also verified. Confirmatory factor analyses were performed on CHLC and BPI-SF measures for the entire study sample. Lastly, data were screened for the potential influence of covariates.

Pearson product-moment correlations were conducted to test the hypothesis that across both Hispanic and NHW patients, lower income, fewer years of education, and lack of access to a usual source of healthcare and pain care would relate to greater pain fatalism. More specifically, analyses were performed by conducting an ethnicity-based comparison of correlations among income, education, access to healthcare, access to pain care, and total fatalism scores to explore between-ethnicity differences in correlation effect sizes. Additionally, for Hispanic participants, Pearson product-moment correlations for preferred survey language and birthplace were assessed as potential covariates.

Secondly, in order to test the hypothesis that fatalistic beliefs were positively correlated with pain severity and pain interference across Hispanic and NHW patients, Pearson product-moment correlations were also performed. More specifically, analyses were performed by conducting an ethnicity-based comparison of correlations among pain fatalism scores, pain severity scores, and pain interference scores.

CHAPTER FOUR

RESULTS

Preliminary Analyses

The final analyses included 30 Hispanic and 33 NHW participants with chronic pain. One participant was missing data for education and four participants were missing data for income bracket. A missing value analysis and a Little's Missing Completely at Random test did not indicate statistical deviation from randomness for missing data in the sample (*p* = .555). Since the 6.35% rate of missing data for income exceeded the rate of five-percent or less that would be considered inconsequential to subsequent analyses, missing data for income were imputed using an Expectation-Maximization (EM) method (Dong &Peng, 2013). Subsequent study analyses were performed with these imputed income data points. Pairwise deletion was used for analyzing available data for the study participant who did not provide information on number of completed years of education.

Final sample demographics, before imputation of missing data for income, are presented in Table 2. Overall, NHW participants reported significantly more years of education than Hispanic participants [*t*(60) = -5.67, *p* < .001]. On average, Hispanic participants had 4.89 fewer years of education than NHW participants. There were no significant differences between Hispanic participants and NHW participants in terms of age, gender, access to healthcare, access to pain care, pain fatalism, pain severity, and pain interference. For NHW participants, the covariate of years with chronic pain was significantly positively correlated with pain severity (*r* = .46, *p* <.01). More years with chronic pain was significantly positively correlated with higher self-reported pain severity among NHW participants. All other covariates (i.e., involvement in litigation related to chronic pain, acculturation as measured by survey language and nativity) were not significantly related to endorsed pain fatalism, pain severity, and pain interference for either Hispanic or NHW participants. See Table 3 for Pearson product-moment correlations among pain fatalism, pain severity, pain interference, and variables assessed as potential covariates.

Table 2. Final Sample Demographics Based on Ethnicity

Variable	Hispanic (n =30)	Non-Hispanic White (n =33)
	M(SD)	M(SD)
Age	63.93 (15.23)	66.76 (12.66)
Education*	9.33 (4.38)	14.22 (2.07)
Pain Fatalism	16.70 (6.89)	12.42 (5.71)
Pain Interference	5.63 (2.94)	5.70 (2.34)
Pain Severity	5.34 (2.44)	5.59 (1.97)
Years with Chronic Pain	6.14 (7.73)	7.43 (7.11)
	n(%)	n(%)
Access to Healthcare	27 (90.0)	26 (78.2)
Access to Pain Care	22 (73.3)	29 (87.9)
Gender	16 (53.3)	11 (33.3)
Income		
$0-14,999	7(23.3)	2(6.10)
$15,000-24,999	6(20.0)	7(21.20)
$25,000-39,999	3(10.0)	6(18.20)
$40,000-59,999	7(23.3)	2(6.10)
$60,000-79,999	3(10.0)	7(21.20)
$80,000-99,999	0(0.0)	4(12.10)
$100,000 or more	2(6.7)	3(9.10)

Note. *$p < .05$. Of the 63 participants total sample, two Hispanic and two Non-Hispanic White participants declined to provide income information.

Table 3. Correlations between proposed covariates and pain fatalism, pain severity, and pain interference for Hispanic and Non-Hispanic White participants

	1	2	3	4	5	6
1. Pain fatalism	-					
2. Pain Severity	0.144	-				
	(-0.124)					
3. Pain Interference	-0.068	0.678***	-			
	(0.353)*	(0.424)**				
4. Years with Chronic Pain	0.169	-0.050	-0.068	-		
	(-0.017))	(0.366)**	(-0.031)			
5. Current Legal Dispute	0.238	0.258	0.124	0.119	-	
	(-0.244)	(0.294)	(0.059)	(0.001)		
6. Birthplace	0.051	-0.126	-0.224	0.075	-0.199	-
	(0.161)	(-0.093)	(0.180)	(-0.154)	(0.120)	
7. Survey Language	0.226	-0.108	-0.240	0.118	0.141	0.813***
	-	-	-	-	-	-

Note. Correlations listed in parentheses are for Non-Hispanic White participants. *$p < .05$, **$p < .01$, ***$p < .001$

Test of Research Hypotheses

The first set of hypotheses that less income, fewer years of education, and lack of access to a usual source of healthcare and pain care would relate to greater pain fatalism across ethnic groups was not supported. Only education was significantly correlated with pain fatalism and this relationship was only observed for Hispanic participants. More specifically, among Hispanic participants fewer years of education was significantly correlated with greater pain fatalism ($r = 0.52$, $p < .01$). The negative relationship between higher income and greater pain fatalism among Hispanic patients trended towards significance ($r = -.34$, $p = .07$). Neither income nor education was significantly correlated with pain fatalism or NHW participants. Additionally, access to healthcare and pain care were not significantly correlated with pain fatalism for either Hispanic or NHW participants. These results are displayed in Table 4.

Table 4. Correlations Among Socioeconomic Factors and Pain Fatalism for Hispanic and Non-Hispanic White Participants

	1	2	3	4
1 Education				
	-			
2. Income	0.463**			
	(0.288)	-		
3. Access to Health Care	-0.103	-0.013		
	(0.165)	(0.238)	-	
4. Access to Pain Care	0.181	0.021	0.302	
	(0.145)	(0.019)	(0.262)	-
5. Pain Fatalism	-0.521**	-0.341	-0.198	-0.096
	(-0.093)	(-0.037)	(-0.040)	(-0.210)

Note. Correlations listed in parentheses are for Non-Hispanic White participants.
**p* < .05, ***p* < .01, ****p* < .001

The second set of hypotheses that fatalistic pain beliefs would relate to higher pain severity and greater pain interference across ethnic groups was also not supported. No significant relationship was found between pain fatalism and pain severity for either Hispanic or NHW participants. Furthermore, no significant relationship between pain fatalism and pain interference for Hispanic participants was observed. However, there was a significant relationship between pain fatalism and pain interference for NHW participants ($r = .35$, $p < .05$). More specifically, greater pain fatalism among NHW was related to greater reported impact of pain on daily functioning. These results are displayed in Table 5.

Table 5. Correlations Among Pain Fatalism, Pain Severity, and Pain Interference for Hispanic and Non-Hispanic White Participants

	1	2
1. Pain Fatalism	-	
2. Pain Severity	0.144 (-0.123)	-
3. Pain Interference	-0.068 (0.353*)	0.678*** (0.424)*

Note. Values listed in parentheses are for Non-Hispanic White participants.
*$p < .05$, **$p < .01$, ***$p < .001$

CHAPTER FIVE

DISCUSSION

The purpose of this study was to investigate whether fatalistic beliefs uniquely predict pain experience among Hispanic patients, as a partial explanation for why some studies have shown that Hispanics report greater pain severity than their NHW counterparts. Fatalism among Hispanics and other U.S.-minority groups has been of interest to researchers because of fatalism's link to worse health outcomes among ethnic minorities with diseases such as cancer and diabetes. The results of the current study do not support the idea that pain fatalism accounts for greater pain severity among Hispanic patients with chronic pain as compared to their NHW counterparts. Instead, pain fatalism was not significantly related to pain severity for either group. Furthermore, Hispanic and NHW patients reported similarly low levels of pain fatalism. In other words, pain fatalism was neither pervasive nor unique to Hispanic patients in this study, thus providing further evidence to question the assumption that fatalism is a unique aspect of Hispanic cultures. Yet, pain fatalism may still be a belief worthy of further investigation among patients with chronic pain because of its potential relationship to broader cultural beliefs about seeking control and/or coping with uncontrollable life circumstances.

In the current study, level of pain fatalism did not appear to be a relevant cultural factor among patients with chronic pain, or at least not in the traditional (i.e., expected) sense. Indeed, pain fatalism was not related to worse pain-related outcomes for Hispanic patients. Instead, among Hispanic and NHW patients with similar levels of pain fatalism and pain severity, pain fatalism was significantly related to greater pain-related functional impairment in NHW patients only. The big question is why. One possible explanation is that pain fatalism has a different meaning within these cultural groups given overarching differences in their beliefs about control or lack thereof. It is possible, for example, that Hispanic and NHW patients have different cognitive, affective, and behavioral modes of responding to lack of control that are generally functional given their historical experiences.

This study sample consisted of 30 Hispanic participants and 33 NHW participants with a variety of chronic pain conditions. The majority of patients had access to health care and pain-specific care before their inpatient stay at Casa Colina Hospital. There were no significant ethnicity-based differences in this sample in terms of chronic pain duration, income, access to healthcare and pain-specific care before coming to Casa Colina. Though disease severity was not directly assessed in this study, presumably Hispanic and NHW participants were relatively similar in terms of disease severity considering that all patients were referred for comprehensive inpatient rehabilitation care and admitted to the hospital following assessment by a rehabilitation physician (physiatrist) confirming that acute level of care was warranted. The lack of significant differences between study groups in terms of disease-specific factors (e.g., pain type, pain duration), income, and access to care prior to research participation is a substantial strength of this study. In other words, our results cannot be explained by differences in disease-specific or socioeconomic factors between Hispanic and NHW patients. Previous research comparing pain experience between Hispanic and NHW persons has often been confounded by such differences, including group differences in access to treatment (Campbell & Edwards, 2012).

Surprisingly, differences in self-reported pain severity previously observed between Hispanics and NHWs with chronic pain were not observed in this study (Bates & Edwards, 1991; Gagnon, Matsuura, Smith, & Stanos, 2014). Among our sample, Hispanic participants *did not* report greater pain severity than NHW participants. Additionally, there was no significant difference between Hispanic and NHW participants in terms of self-reported pain-related functional impairment (i.e., the degree to which patients reported that pain interferes with their functioning across various life domains). These findings indicate that, in the absence of confounding differences in disease-specific factors and access to care, Hispanic and NHW patients with chronic pain report similar pain levels and are similarly impacted by pain in their day-to-day functioning. The fact that Hispanic and NHW participants in our study were comparable in terms of self-reported income and prior access to care may also explain why Hispanic and NHW participants also did not demonstrate significant differences in self-reported pain fatalism. Others have posited that the idea that measuring pain fatalism is uniquely relevant to understanding differences in chronic pain severity and functional impairment among Hispanics; however, this notion is not supported by current study findings. Moreover, both Hispanic and NHW participants in this sample on average tended to disagree with fatalistic statements about their pain.

One question that arises from the results of this study is why access to healthcare and pain-specific care were not significantly correlated with pain fatalism as hypothesized. Contrary to expectation, having access to healthcare and access to pain-specific care were *not* significantly correlated with lower pain fatalism for either Hispanic or NHW participants. This finding likely reflects the fact that the vast majority of patients in this study reported access to healthcare and pain-specific care before their inpatient hospitalization. It is possible that because of this, participants in this sample were generally less fatalistic than a sample of patients who did not have access to appropriate care before participating in this study might be. Again, it is important to note that pain fatalism was relatively low across both Hispanic and NHW patients and this perhaps is due to out participants near universal report of prior access to care. Coughlin et al. (2000) investigated chronic pain locus of control beliefs before and after patients participated in a multidisciplinary pain management program. The researchers found that patient perceptions of internal control over pain increased posttreatment, and that external control over pain, such as fate or powerful others, decreased from pretreatment to posttreatment. If there were a greater representation of patients who did not have access to care before their participation in this study, we could speak more definitely about healthcare access or lack thereof as it relates to fatalistic beliefs about pain. It may also be possible that having access to healthcare does not relate to fatalistic pain beliefs because there are other more important determinants of those beliefs, such as, the quality of healthcare. Researchers have found that ethnic minorities with access to healthcare tend to rate their care as less satisfactory than their White counterparts and that these effects are independent of education and income (Haviland, Morales, Dial, & Pincus, 2005).

Another question that arises from our study results concerns why there was a significant association between education and pain fatalism for Hispanic participants but not for NHW participants. The study hypothesis that both income and education would relate to pain fatalism across ethnic groups was based on previous research suggesting that disease-fatalism is a function of socioeconomic status rather than ethnicity (De Jesus

& Xiao, 2014, Powe & Finnie, 2003). Yet, in the current study, education did not relate to pain fatalism for NHW participants. More specifically, in this study there was a significant negative correlation between education and pain fatalism such that fewer years of education related to greater pain fatalism only for Hispanic participants. One possible explanation for this differential finding is that Hispanic and NHW participants in this study were significantly different in terms completed years of education. Hispanic participants in this study had 4.89 fewer years of education than NHW participants. Just over half of Hispanic participants in this study had fewer than 12 years of education. The large representation of persons with fewer than 12 years of education possibly helped strengthen the correlation between lower education and greater pain fatalism among Hispanics. It could be that a similar association between education and pain fatalism would be observed among NHWs in a sample of patients including greater representation of NHWs with fewer than 12 years of education. While the findings of this study do not support the hypothesis that education and income are significantly related to pain fatalism across both Hispanic and NHW patients, results nonetheless highlight that pain fatalism among Hispanics is a function of education and that fatalistic beliefs about pain are not ubiquitous among Hispanic patients. Furthermore, that Hispanic and NHW participants reported similarly low levels of pain fatalism on average, lends support to the idea that disease-fatalism may not be especially prominent in all Hispanic samples, but may be so in Hispanic samples with lower levels of education. Future studies should investigate the relationship between education and pain fatalism among Hispanic and NHW participants with less than 12 years of education and patients who have less access to healthcare and pain-specific care.

Yet another question that arises from the findings of this study concerns why there was a trend towards significance between income and pain fatalism among Hispanic patients, but not among similar income-level NHWs. A post-hoc hypothesis was that the significant relationship between less income and greater pain fatalism observed in Hispanic participants was accountable to the strong, significant correlation between income and education in Hispanic patients. To test this, a partial correlation between income and pain fatalism was conducted for Hispanic participants while controlling for effect of level of education. As expected, the relationship between income and pain fatalism for Hispanic participants disappeared when the education was controlled ($r = -.13$, $p = .50$).

The second hypothesis, that higher pain fatalism would predict greater pain severity and pain interference for Hispanic and NHW participants, was not supported. Instead, pain fatalism was significantly negatively correlated with pain interference only in NHW participants. These findings do not lend support to the hypothesis proposed by other researchers suggesting that higher self-reported pain severity among Hispanics patients is explained by greater fatalistic beliefs among this ethnic group. Not only did Hispanic participants in the current study report similar pain severity as NHW participants, but fatalistic beliefs were not significantly related to pain severity for either group.

Though Hispanic and NHW participants in this study reported similar levels of pain interference, pain interference was surprisingly significantly related to fatalism only in NHWs. Why an analogous relationship would not exist for Hispanic participants is unclear. As previously mentioned, one possibility is that fatalistic beliefs about pain have different meanings and functions for Hispanic and NHW patients given their historical experiences within the U.S. For example, fatalistic pain beliefs may be a form of adaptive coping for persons who come from historical contexts where experiences that cause pain were largely out of a person's control. On the other hand, fatalistic pain beliefs may signal a sense of helplessness or depression for patients coming from a historical context of more control and navigating pain that is experienced as out of their control.

This explanation is supported by one U.S. study on mostly low income members of the general public that found that health fatalism about diseases such as cancer, diabetes, and heart disease takes on a variety of different meanings and fulfills several personal and social functions (i.e., uncertainty management, stress relief, sense-making, and face-saving) where fatalistic beliefs do not necessarily relate to worse health outcomes (Keeley, Wright, and Condit, 2009). Another possibility for this unexpected finding is that disease-specific fatalistic beliefs in-and-of themselves are not problematic, but may become so in the presence of moderating factors such as whether fatalistic beliefs are related to depressive cognitions. One study investigating the role of fatalism, depression, and service utilization among U.S. Latinos found that the relationship between greater fatalism and less health service utilization in past year was mediated by depressive symptoms (Anastasia and Bridges, 2015). Similarly, a study of 615 U.S. adults with type 2 diabetes found that greater fatalism both directly and indirectly predicted greater diabetes distress through depression (Asuzu, Walker, Williams, &Egede, 2017). In turn, greater diabetes distress predicted less diabetes self-care and higher hbA1C blood glucose levels. However, the strength of the direct relationship between depression and diabetes distress was stronger than that of the relationship between fatalism and diabetes distress. The authors concluded that whether fatalism leads directly to distress may be idiopathic. In the current study, depressive symptoms were not assessed. It's possible that differences in depressive symptoms between Hispanic and NHW patients could have explained why pain fatalism was significantly related to pain interference among NHW, but not among Hispanics. For Hispanic and NHW patients alike, pain-related functional impairment affects the ability to be independent and need to depend on others. However, loss of independence and increased dependence, may result in more depression for NHW patients who may value personal autonomy more highly than Hispanic patients (Hofstede, 1980). Previous research has demonstrated that people of European backgrounds on average tend to favor more individualistic values promoting personal autonomy and those of Hispanic backgrounds tend to favor more collectivistic values promoting a socially interdependent view of the self (Triandis et al., 1995). Future studies should investigate the potential relationships among pain fatalism, depression, individualism-collectivism, and chronic pain outcomes.

Limitations

Several limitations of this study were noted. Firstly, given that there was limited research to guide study design before data collection, our target sample size was based on guidelines for pilot research rather than on a priori power analyses. Thus, our ability to mitigate for Type II error in advance was limited. Nonetheless, a post-hoc power analysis using the medium correlation effect size found between pain fatalism and pain interference ($\rho = .353$) suggests that sample size in this study was sufficient to mitigate for the risk of Type II error ($\beta = .82$). One of the important contributions on this study is that researchers going forward can use these results to conduct their own power analyses and other important study design decisions necessary for building upon these findings.

Another limitation of this study is that correlational data were used to evaluate the relationships among study variables, thus limiting the ability to make causal inferences about the relationships between fatalism and pain interference. Based on the current study, it cannot be determined whether patients who are more fatalistic about pain also report more pain-related impairment in daily functioning, or if patients who encounter more pain-related impairment become more fatalistic. It is theoretically possible that pain fatalism and pain-related impairment have a bidirectional relationship and that this relationship is mediated by other factors, such as whether or not a patient is also experiencing depressive symptoms. Future research should further explore pain fatalism to see if there is a causal relationship between these beliefs and pain interference among patients with chronic pain. All data in this study were based on self-report and therefore potentially subject to self-report biases (e.g., social desirability effect, sampling bias). Going forward, researchers should look at how pain fatalism may relate to pain-related functional impairment using more objective measures to rate patient functioning, such as clinician behavioral observations. Lastly, this study was conducted with patients who were being seen as part of a comprehensive inpatient rehabilitation program for post-acute and chronic medical conditions requiring inpatient care, thus the results may not be generalizable to a community sample of persons with chronic pain conditions.

Implications and Conclusions

Previous research investigating the relationship between disease-specific fatalistic beliefs and disease outcomes has largely focused on the relationship between these beliefs and negative health behaviors. In this study, fewer years of education among Hispanic participants was significantly associated with greater fatalistic beliefs about pain, yet pain fatalism was not significantly related to either self-reported pain severity or self-reported pain-related functional impairment. Health professionals may feel reflexively inclined to correct fatalistic pain beliefs, under the misguided notion holding such beliefs could contribute to worse health outcomes in their patients. However, in this study, greater pain fatalism was *in fact not* significantly related to greater pain severity and pain interference for both Hispanic and NHW patients. Surprisingly, greater pain fatalism was only related to greater self-reported functional impairment for the study's NHW patients. This finding should encourage health professionals to question any underlying assumption that disease-specific fatalistic beliefs are necessarily and universally detrimental to patient care outcomes. It is entirely possible that among Hispanic patients in our current sample, and potentially other minority and socioeconomically-disadvantaged groups (who have historically experienced circumstances of less control in their day-to-day lives), that fatalistic beliefs - serve *an adaptive function*; helping people cope with difficult circumstances with some degree of acceptance. On the other hand, for patient groups who historically experienced theoretically more control in their day-to-day lives (i.e., NHW of higher income and higher educational backgrounds), disease-fatalism may reflect a sense of helplessness in coping with a condition that feels out of their control. There is some research support for this idea. For example, in one study of locus of control and suicide risk among African American adolescents, researchers found that external locus of control mitigated risk for suicide when those beliefs were congruent with religious coping style (Spann et al., 2006).

Overall, study findings highlight the potential dangers of relying on stereotypic ethnicity-based generalizations about patient cultural beliefs and their presumed adverse effects on health outcomes. By relying on ethnicity-based generalizations, health professionals do run the risk of pathologizing potentially adaptive health beliefs in certain groups while overlooking the potentially adverse effect such beliefs in others. For clinicians treating chronic pain, especially those working within highly diverse settings, it may be especially helpful to gain an understanding not only of a patient's beliefs about their chronic pain, but also the function and adaptability of those beliefs given their historical and situational contexts. Acceptance and Commitment Therapy (ACT) may be an especially helpful approach within diverse treatment settings given that it is based on the philosophy of functional contextualism, which focuses on understanding the workability of an individuals' behavior given their unique environment (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013). Within this approach, specific beliefs are only considered problematic to the extent that they affect an individual's ability to flexibly respond to their current circumstances and adapt to them so that the individual can still live a life that is guided by the values that are most meaningful to them. It may be helpful for clinicians to have a broad understanding of potentially relevant cultural beliefs that will affect any given patient's experience of their illness, for example, understanding what values are emphasized within a patient's family and the broader communities with which they identify. Ultimately, however, it is most important to remain curious and open to the unique, intersectional identities of each patient as they influence their disease-relevant cognitions, emotions, and behaviors. When clinicians come into a clinical interaction with both a general understanding of the patient's experience and a willingness to attune to their individual worldviews, they can better tailor medical and psychological interventions to the values that are most important to their patients and help them connect with their sense of what it means to live meaningful lives in the face of chronic pain.

REFERENCES

Abraído-Lanza, A., Viladrich, A., Florez, K., Cespedes, A., Aguirre, A., & De La Cruz, A. (2007). Commentary: Fatalismo reconsidered: A cautionary note for health-related research and practice with Latino populations. *Ethnic Disparities*, *17*(1), 153–158.

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, *84*(5), 888–918.

Ajzen, I., & Fishbein, M. (2005). The Influence of Attitudes on Behavior. In M. P. Zanna (Ed.), *The Handbook of Attitudes* (pp. 173–221).

Anastasia, E. A., & Bridges, A. J. (2015). Understanding service utilization disparities and depression in Latinos: The role of fatalismo. *Journal of immigrant and minority health*, *17*(6), 1758-1764.

Andrés Ares, J., Cruces Prado, L. M., Canos Verdecho, M. A., Penide Villanueva, L., Valle Hoyos, M., Herdman, M., & Velázquez Rivera, I. (2015). Validation of the short form of the Brief Pain Inventory (BPI-SF) in Spanish patients with non-cancer-related pain. *Pain Practice*, *15*(7), 643-653.

Apkarian, A. V., Bushnell, M. C., Treede, R. D., & Zubieta, J. K. (2005). Human brain mechanisms of pain perception and regulation in health and disease. *European journal of pain*, *9*(4), 463-463.

Asuzu, C. C., Walker, R. J., Williams, J. S., & Egede, L. E. (2017). Pathways for the relationship between diabetes distress, depression, fatalism and glycemic control in adults with type 2 diabetes. *Journal of Diabetes and its Complications*, *31*(1), 169-174.

Baker, T. A., Buchanan, N. T., & Corson, N. (2008). Factors influencing chronic pain intensity in older black women: Examining depression, locus of control, and physical health. *Journal of Women's Health*, *17*(5), 869-878.

Bates, M. S., & Edwards, W. T. (1991). Ethnic variations in the chronic pain experience. *Ethnicity & disease*, *2*(1), 63-83.

Bates, M. S., Edwards, W. T., & Anderson, K. O. (1993). Ethnocultural influences on variation in chronic pain perception. *Pain*, *52*(1), 101-112.

Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied psychology*, *46*(1), 5-34.

Betancourt, H., & Flynn, P. M. (2009). The psychology of health: Physical health and the role of culture in behavior. *Handbook of US Latino psychology: Developmental and community-based perspectives*, 347-361.

Betancourt, H., & López, S. R. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist*, *48*(6), 629.

Caban, A., & Walker, A.E. (2006). A systematic review of research on culturally relevant issues for Hispanics with diabetes. *The Diabetes Educator*, *32*(4), 584–595.

Campbell, L. C., Andrews, N., Scipio, C., Flores, B., Feliu, M. H., & Keefe, F. J. (2009). Pain coping in Latino populations. *The Journal of Pain*, *10*(10), 1012-1019.

Cano-García, F. J., Rodríguez-Franco, L., & López-Jiménez, A. M. (2010). A shortened version of the Headache-Specific Locus of Control Scale in Spanish population. *Headache: The Journal of Head and Face Pain*, *50*(8), 1335-1345.

Castarlenas, E., Solé, E., Racine, M., Sánchez-Rodríguez, E., Jensen, M. P., & Miró, J. (2016). Locus of control and pain: Validity of the Form C of the Multidimensional Health Locus of Control scales when used with adolescents. *Journal of Health Psychology*.

Castro, F. G., Furth, P., & Karlow, H. (1984). The health beliefs of Mexican, Mexican American and Anglo American women. *Hispanic Journal of Behavioral Sciences*, *6*(4), 365-383.

Cleeland, C. S. (1994). Brief pain inventory–short form (BPI–SF). *Houston, TX.*

Cleeland, C. S. (2014). The brief pain inventory user guide. 2009. *Houston: The University of Texas MD Anderson Cancer Center Google Scholar*.

Coghill, R. C., McHaffie, J. G., & Yen, Y. F. (2003). Neural correlates of interindividual differences in the subjective experience of pain. *Proceedings of the National Academy of Sciences*, *100*(14), 8538-8542.

Coughlin, A. M., Badura, A. S., Fleischer, T. D., & Guck, T. P. (2000). Multidisciplinary treatment of chronic pain patients: its efficacy in changing patient locus of control. *Archives of Physical Medicine and Rehabilitation*, *81*(6), 739-740.

Crisson, J. E., & Keefe, F. J. (1988). The relationship of locus of control to pain coping strategies and psychological distress in chronic pain patients. *Pain*, *35*(2), 147-154.

Cuellar, I., Arnold, B., & Gonzalez, G. (1995). Cognitive referents of acculturation: Assessment of cultural constructs in Mexican Americans. *Journal of Community Psychology*.

De Jesus, M., & Xiao, C. (2014). Predicting Health Care Utilization Among Latinos Health Locus of Control Beliefs or Access Factors?. *Health Education & Behavior*, *41*(4), 423- 430.

Doku Ramírez, A., Fonseca Parra, L. F., González Gil, E. J., Gualdrón Alba, J. C., & Cifuentes Villalobos, C. E. (2012). Evaluation of locus of control and its relation to anxiety and depression variables in a group of participants in psychological care. *Universidad de La Sabana: Facultad de Psicología de la Universidad de La Sabana*.

Edwards, R. R., Moric, M., Husfeldt, B., Buvanendran, A., & Ivankovich, O. (2005). Ethnic similarities and differences in the chronic pain experience: a comparison of African American, Hispanic, and white patients. *Pain Medicine*, *6*(1), 88-98.

Egede, L. E., & Bonadonna, R. J. (2003). Diabetes Self-management in African Americans: An Exploration of the Role of Fatalism. *The Diabetes Educator*, *29*(1), 105–115.

Espinosa de Los Monteros, K., & Gallo, L. C. (2011). The relevance of fatalism in the study of Latinas' cancer screening behavior: a systematic review of the literature. *International Journal of Behavioral Medicine*, *18*(4), 310–8.

Flor, H., Fydrich, T., & Turk, D. C. (1992). Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain*, *49*(2), 221-230.

Gagnon, C. M., Matsuura, J. T., Smith, C. C., & Stanos, S. P. (2014). Ethnicity and interdisciplinary pain treatment. *Pain Practice*, *14*(6), 532-540.

Gale, C. R., Batty, G. D., & Deary, I. J. (2008). Locus of control at age 10 years and health outcomes and behaviors at age 30 years: the 1970 British Cohort Study. *Psychosomatic Medicine*, *70*(4), 397-403.

Green, C. R., Hart-Johnson, T., & Loeffler, D. R. (2011). Cancer-related chronic pain. *Cancer*, *117*(9), 1994-2003.

Gunnarsdottir, S., Donovan, H. S., Serlin, R. C., Voge, C., & Ward, S. (2002). Patient-related barriers to pain management: the Barriers Questionnaire II (BQ-II). *Pain*, *99*(3), 385-396.

Härkäää, K., Järvikoski, A., & Estlander, A. M. (1996). Health optimism and control beliefs as predictors for treatment outcome of a multimodal back treatment program. *Psychology and Health*, *12*(1), 123-134.

Haviland, M. G., Morales, L. S., Dial, T. H., & Pincus, H. A. (2005). Race/ethnicity, socioeconomic status, and satisfaction with health care. *American Journal of Medical Quality*, *20*(4), 195-203.

Hayes, S. C., Levin, M. E., Plumb-Vilardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior therapy*, *44*(2), 180-198.

Hertzog, M. A. (2008). Considerations in determining sample size for pilot studies. *Research in nursing & health*, *31*(2), 180-191.

Hofsteds, G. (1980). *Culture's consequences*. Beverly Hills, Sage Publications.

Hollingshead, N. A., Ashburn-Nardo, L., Stewart, J. C., & Hirsh, A. T. (2016). The pain experience of Hispanic Americans: A critical literature review and conceptual model. *The Journal of Pain*, *17*(5), 513-528.

Horrell, S. C. V. (2008). Effectiveness of cognitive-behavioral therapy with adult ethnic minority clients: A review. *Professional Psychology: Research and Practice*, *39*(2), 160.

Huey, S. J., Tilley, J. L., Jones, E. O., & Smith, C. a. (2014). The contribution of cultural competence to evidence-based care for ethnically diverse populations. *Annual Review of Clinical Psychology*, *10*, 305–338.

Jacobsen, R., Møldrup, C., Christrup, L., & Sjøgren, P. (2009). Patient-related barriers to cancer pain management: a systematic exploratory review. *Scandinavian journal of caring sciences*, *23*(1), 190-208.

Kagawa Singer, M. (2012). Applying the concept of culture to reduce health disparities through health behavior research. *Preventive Medicine*, *55*(5), 356–361.

Kalichman, S. C., Kelly, J. A., Morgan, M., & Rompa, D. (1997). Fatalism, current life satisfaction, and risk for HIV infection among gay and bisexual men. *Journal of Consulting and Clinical Psychology*, *65*(4), 542–546.

Keeley, B., Wright, L., & Condit, C. M. (2009). Functions of health fatalism: fatalistic talk as face saving, uncertainty management, stress relief and sense making. *Sociology of health & illness*, *31*(5), 734-747.

Keller, S., Bann, C. M., Dodd, S. L., Schein, J., Mendoza, T. R., & Cleeland, C. S. (2004). Validity of the brief pain inventory for use in documenting the outcomes of patients with noncancer pain. *The Clinical journal of pain*, *20*(5), 309-318.

Kluckhohn, F., & Strodtbeck, F. (1961). Variations in value orientations. Evanston, IL: Row, Peterson.

Lasch, K. E. (2000). Culture, pain, and culturally sensitive pain care. *Pain Management Nursing*, *1*(3), 16-22.

Macartney, S., Bishaw, A., & Fontenot, K. (2013). Poverty rates for selected detailed race and Hispanic groups by state and place: 2007–2011. *American community survey briefs*, *2*.

Malinoski, P. T. (2001). Mediators and moderators of stress management and antidepressant treatment for chronic tension-type headache.

Merskey, H. (1979). Pain terms: a list with definitions and notes on usage. Recommended by the IASP Subcommittee on Taxonomy. *Pain*, *6*, 249-252.

Moretti, L. S., Medrano, L. A., & Basler, H. D. (2015). Validation of the Pain Locus of Control Questionnaire in Argentinean university students with headaches. *Pensamiento Psicológico*, *13*(1), 27-38.

Morley, S., Eccleston, C., & Williams, A. (1999). Systematic review and meta-analysis of randomized controlled trials of cognitive behaviour therapy and behaviour therapy for chronic pain in adults, excluding headache. *Pain*, *80*(1), 1-13.

Pastor, M. A., Salas, E., López, S., Rodríguez, J., Sánchez, S., & Pascual, E. (1993). Patients' beliefs about their lack of pain control in primary fibromyalgia syndrome. *British journal of rheumatology*, *32*(6), 484-489.

Powe, B. D., & Finnie, R. (2003). Cancer fatalism. *Cancer Nursing*, *26*(6), 454–467.

Randolph, W. M., Freedman, D. H., & Freedman, J. L. (2008). Pap smear use in population of older Mexican-American women. *Women & Health*, *36*(1), 21–31.

Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of consulting and clinical psychology*, *43*(1), 56.

Sanders, S., H., Brena, S. F., Spier, C. J., Beltrutti, D., McConnell, H., & Quintero, O. (1992). Chronic low back pain patients around the world: cross-cultural similarities and differences. *The Clinical journal of pain*, *8*(4), 317-323.

Scharff, L., Turk, D. C., & Marcus, D. A. (1995). The relationship of locus of control and psychosociaI-behavioral response in chronic headache. *Headache: The Journal of Head and Face Pain*, *35*(9), 527-533.

Spann, M., Molock, S. D., Barksdale, C., Matlin, S., & Puri, R. (2006). Suicide and African American teenagers: Risk factors and coping mechanisms. *Suicide and life-threatening behavior*, *36*(5), 553-568.

Straughan, P., & Seow, A. (1998). Fatalism reconceptualised: A concept to predict health screening behaviour. *Journal of Gender, Culture and Health*, *3*(2), 85–100.

Toomey, T. C., Mann, J. D., Abashian, S. W., Carnrike, J. C., & Hernandez, J. T. (1993). Pain locus of control scores in chronic pain patients and medical clinic patients with and without pain. *The Clinical journal of pain*, *9*(4), 242-247.

Torres, V. (2004). The diversity among us: Puerto Ricans, Cuban Americans, Caribbean Americans, and Central and South Americans. *New directions for student services*, *2004*(105), 5-16.

Torres, X., Collado, A., Arias, A., Peri, J. M., Bailles, E., Salamero, M., & Valdés, M. (2009). Pain locus of control predicts return to work among Spanish fibromyalgia patients after completion of a multidisciplinary pain program. *General hospital psychiatry*, *31*(2), 137-145.

Trafimow, D., & Trafimow, J. H. (1998). Predicting back pain sufferers' intentions to exercise. *The Journal of Psychology*, *132*(6), 581-592.

Treede, R. D., Rief, W., Barke, A., Aziz, Q., Bennett, M. I., Benoliel, R., & Giamberardino, M. A. (2015). A classification of chronic pain for ICD-11. *Pain*, *156*(6), 1003-1007.

Triandis, H. C. (1994). Theoretical and methodological approaches to the study of collectivism and individualism. *Cross Cultural Research and Methodology Series-Sage-*, *18*(1), 41-41.

Turk, D. C., Meichenbaum, D., & Genest, M. (1983). *Pain and behavioral medicine: A cognitive-behavioral perspective* (Vol. 1). Guilford Press.

Wallston, K. A. (2005). The validity of the multidimensional health locus of control scales. *Journal of health psychology*, *10*(5), 623-631.

Wallston, K. A., Stein, M. J., & Smith, C. A. (1994). Form C of the MHLC scales: a condition-specific measure of locus of control. *Journal of personality assessment*, *63*(3), 534-553.

Ward, S. E., & Hernandez, L. (1994). Patient-related barriers to management of cancer pain in Puerto Rico. *Pain*, *58*(2), 233-238.

Wertli, M. M., Eugster, R., Held, U., Steurer, J., Kofmehl, R., & Weiser, S. (2014). Catastrophizing—a prognostic factor for outcome in patients with low back pain: a systematic review. *The Spine Journal*, *14*(11), 2639-2657.

Wong, H. J., & Anitescu, M. (2017). The role of health locus of control in evaluating depression and other comorbidities in patients with chronic pain conditions, a cross-sectional study. *Pain Practice*, *17*(1), 52-61.

Zaharoff, A. D. (2003). *The relationship between fibromyalgia and emotional expressivity and its influence on locus of control, ways of coping, and quality of life*. (Unpublished doctoral dissertation). West Virginia University, United States.

APPENDIX A

List of List of Chronic Pain Conditions Considered for Study Inclusion

Chronic Pain Syndrome
Back Pain
Spinal Injury
Nerve Damage/Neuropathy
Arthritis
Fibromyalgia
Polytrauma
Headaches

APPENDIX B

Demographics

1. What is your birth year? (for example, 1975) ______________

2. I am a:
☐ Man ☐ Woman ☐ Other

3. Check the box below for the number that represents your total years of education completed:

Elementary School		High School	College	Graduate School
☐ 1	☐ 5	☐ 9	☐ 13	☐ 17
☐ 2	☐ 6	☐ 10	☐ 14	☐ 18
☐ 3	☐ 7	☐ 11	☐ 15	☐ 19
☐ 4	☐ 8	☐ 12	☐ 16	☐ 20+

4. Check the box below that represents your yearly income (if you rely on your family for financial support,
please indicate your family's yearly income):

☐ $014,999
☐ $15,000-24,999
☐ $25,000-39,999
☐ $40,000-59,999
☐ $60,000-79,999
☐ $80,000-100,000
☐ More than $100,000

5. My ethnic or racial origin is:
☐ Hispanic or Latino
☐ American Indian or Alaskan Native
☐ Asian
☐ Native Hawaiian or Pacific Islander
☐ Black or African American
☐ White
☐ Other___________

6. Were you born in the U.S.? ☐ No ☐ Yes

7. If NO, where were you born? ___________How long have you lived in the U.S.?______________

8. Where is your pain located?
☐ Back
☐ Fibromyalgia

☐ Shoulders
☐ Head
☐ Neck
☐ Hands
☐ Feet
☐ Joints
☐ Nerve Pain
☐ Other:

9. How long have you had your current pain (in months or years)? ____________________

10. How often have you had your pain in the last 3 months?
☐ Constantly
☐ Nearly Constantly
☐ Intermittently
☐ Occasionally

11. Number of pain medications taken each day? __________________

12. Before coming to Casa Colina, did you have a usual place to go when you were sick or needed health advice? ☐ Yes ☐ No

13. Before coming to Casa Colina, did you have doctors or nurses who were able to treat pain and that were easily accessible to you? ☐ Yes ☐ No

14. Are you currently involved in legal dispute related to your chronic pain? ☐ No ☐ Yes

APPENDIX C

Multidimensional Health Locus of Control- Form C- Chance Subscale- Adapted for Pain

1=STRONGLY DISAGREE **(SD)** 2=MODERATELY DISAGREE **(MD)** 3=SLIGHTLY DISAGREE **(D)**	4=SLIGHTLY AGREE **(A)** 5=MODERATELY AGREE **(MA)** 6=STRONGLY AGREE **(SA)**

1. Most things that affect my pain happen to me by chance.

2. Luck plays a big part in determining how my pain improves.

3. Whatever improvement occurs with my pain is largely a matter of good fortune.

4. If my pain worsens, it's a matter of fate.

5. If I am lucky, my pain will get better.

6. As to my pain, what will be will be.