

Special Issue: Race and Mental Health Among Older Adults: Original Research Article

Mental Health Attribution for Mexican-Origin Latinx and Non-Latinx Older Adults: A Latent Class Analysis

Stephanie E. A. Mendez, PhD,^{1,*} Carolyn A. Mendez-Luck, PhD, MPH,^{2,◉}
Karen Nylund-Gibson, PhD,³ and Bernardo Ng, MD⁴

¹University of Southern California, University Center for Excellence in Developmental Disabilities, Children's Hospital Los Angeles. ²College of Public Health and Human Sciences, Oregon State University, Corvallis. ³Department of Education, University of California, Santa Barbara. ⁴Sun Valley Behavioral Research Center, Imperial, California.

*Address correspondence to: Stephanie E. A. Mendez, PhD, University of Southern California, University Center for Excellence in Developmental Disabilities, Children's Hospital Los Angeles, Los Angeles, CA 90027. E-mail: steadams@chla.usc.edu

Received: March 31, 2020; Editorial Decision Date: July 7, 2020

Decision Editor: Robert J. Taylor, PhD, MSW

Abstract

Background and Objectives: Providing appropriate and culturally sensitive care to the rapidly growing number of U.S. Latinx older adults with psychiatric conditions presents a major public health challenge. We know little about older Latinx adults' perceived causes of mental health problems, offering clinicians limited insight to guide successful and culturally congruent treatment. Moreover, there is a paucity of mental health research examining heterogeneity in how Latinx individuals may attribute mental health symptoms. The present study sought to identify how Latinx and non-Latinx older adults attributed the sources of their mental health problems and how these types of attributions differ by ethnicity.

Research Design and Methods: This study analyzed data collected from a retrospective chart review and survey of 673 adults aged 55–95 years (430 Mexican origin and 244 non-Latinx) from a rural psychiatric outpatient clinic near the California–Mexico border. We conducted stratified latent class analysis (LCA) by race/ethnicity to explore the mental health attribution beliefs of Mexican-origin and non-Latinx clinic patients.

Results: Different LCA patterns for Mexican-origin Latinx versus non-Latinx groups were found. For non-Latinx adults, there was a class of individuals who attributed their mental health issues to social and financial problems. For Mexican-origin adults, there was a class of individuals who attributed their mental health issues to spiritual and/or supernatural factors, unaffected by acculturation level, depressive symptom severity, and time spent in the United States, but differing by gender. We found within-group heterogeneity: Not all Mexican-origin or non-Latinx older adults were alike in how they conceptualized their mental health.

Discussion and Implications: Mexican-origin Latinx and non-Latinx older adults attributed their mental health issues to different causes. More Mexican-origin older adults attributed their symptoms to spiritual causes, even after controlling for contextual factors. Further research is needed to determine whether attribution beliefs are affected by specific mental health diagnoses and other cultural factors not measured in this study.

Translational Significance: Mexican-origin Latinx and non-Latinx older adults attributed their mental health issues to different causes. This information can help mental health practitioners consider tailored approaches to engaging racial and ethnic minority older adults in their mental health care.

Keywords: Ethnicity, Latent class analysis, Mental health symptoms, Quantitative

Providing appropriate and culturally sensitive care to the rapidly growing number of Latinx older adults in the United States with neuropsychiatric conditions has been identified as a major public health challenge (Kim, 2018; Substance Abuse and Mental Health Services Administration, 2011) and a focal concern among mental health services providers (Fortuna, n.d.; Guzman et al., 2015). Latinx older adults use mental health services less than their same-age white counterparts (Cook et al., 2017; López et al., 2012), yet they are more likely to screen positively for depressive symptoms (Hooker et al., 2019). This is particularly alarming because the Latinx population has a longer average life expectancy than the general U.S. population (National Center for Health Statistics, 2019a), yet a higher risk of excess morbidity and mortality from preventable health conditions (Howard et al., 2014). The confluence of these factors suggests that Latinx adults live more years in poor health over their lifetimes, which places them at an increased risk for developing mental health issues in later life. For example, a scoping review of the literature and national statistics on Latinx health in the United States (Velasco-Mondragon et al., 2016) shows that Latinx populations, including the Mexican-origin population, are particularly vulnerable to chronic health conditions that are associated with cognitive decline (Taylor et al., 2020) and depression (Downer et al., 2016), such as type 2 diabetes (González et al., 2020), hypertension (National Center for Health Statistics, 2019b), and cardiovascular disease (Samieri et al., 2018). Moreover, older Latinx adults are at least one and one-half times more likely to develop Alzheimer's disease or other dementias compared with non-Latinx white adults (Alzheimer's Association, 2020) and develop symptoms at younger ages (Clark et al., 2005).

Other factors put some Latinx adults at increased risks for cognitive decline and poor mental health in older age. Socioeconomic status (SES; Phelan & Link, 2005; Phelan et al., 2010) and health insurance coverage (Healthy People 2020, n.d.) are two well-documented social determinants of health where the Latinx population falls short compared with the general U.S. population. Among the older than 65 years population, Latinx adults compared with non-Latinx white adults are more likely to be financially insecure and live below the federal poverty line (National Hispanic Council on Aging, 2016), live in linguistically isolated households (Burciaga Valdez & Arce, 2000) and neighborhoods (Ward et al., 2018), and to have faced discrimination throughout their lives (Krogstad & López, 2016). These factors have been shown to be associated with poor physical and mental health status (Braveman et al., 2011; Braveman & Gottlieb, 2014), including higher depressive symptoms (Bilotta et al., 2010; Ward et al., 2018) and trajectories of cognitive decline among older Latinx adults (Downer et al., 2016; González et al., 2020; Howrey et al., 2020).

This body of research is consistent with earlier work showing that older Mexican American adults have a significantly higher burden of depressive symptoms, compared with non-Latinx white adults (Sorkin et al., 2009).

Culture is another important factor associated with mental health and illness. According to Goodenough (1999), a culture consists of “principles or standards for deciding what is, what can be, how one feels about it, what to do about it, and how to go about doing it” (p. 85). In 2001, the Surgeon General issued a report (U.S. Department of Health and Human Services, 2001) that examined mental health, culture, race, and ethnicity. The report highlighted that culture affects the ways in which individuals view the causes, manifestations, and the course of mental disorders, including symptomatology and explanations for distress, help-seeking and coping, treatment adherence, and response (Gone & Kirmayer, 2010; U.S. Department of Health and Human Services, 2001). Thus, understanding the meaning that patients assign to their symptoms and circumstances is an important aspect of their well-being (Bignall et al., 2015) and could be one step toward improving prevention, the accuracy of diagnosis, and consequently, the relevance and completion of psychotherapy and other forms of treatment. For example, the perceptions of the cause of illness can lead to different help-seeking and self-care behaviors (Hedemalm et al., 2008; Lichtman et al., 2015; Simons et al., 2017). Research suggests that the effectiveness of psychotherapy and/or prescription medication for the treatment of disorders like depression may pivot on factors such as cultural acceptance of the treatment (Izquierdo et al., 2014).

Cultural factors have been shown to play a role in the mental health of Latinx adults also and their use of mental health services (Barrera & Longoria, 2018). For example, religion in Latin American countries is closely aligned with Catholicism and has been associated with worldviews such as “fatalism” (*fatalismo*), which is characterized by the belief that misfortune is due to God's will or destiny, and that a person has no control over life events (Abraído-Lanza et al., 2007; Caplan et al., 2011; Flórez et al., 2009). The influences of fatalism are complex and contested (as reviewed in the study of Abraído-Lanza et al., 2007). For example, findings from a recent meta-analytic review show that fatalism is associated with health behaviors, even though the relationship is smaller than previously suggested (Cohn & Villar, 2015). Cohn and Villar (2015) found in their analysis of 46 studies using fatalism scales that adults with more fatalistic beliefs were less likely to seek preventive cancer screening. Another study showed that older Latinx adults may hold onto beliefs in a higher power that guide how they perceive the causes of their mental health problems, including depression (Anastasia & Bridges, 2015). These studies are consistent with an

earlier study showing that Latinx older adults are more likely to adhere to traditional worldviews of mental health and their treatment than non-Latinx older adults (Lau & Gallagher-Thompson, 2002).

A better understanding of symptom attribution can provide insights and guidance in the provision of mental health care for Latinx patients, yet few studies in this area have focused on Latinx populations. Izquierdo et al. (2014) analyzed data from qualitative telephone interviews with Latino adults (50–88 years) who reported a recent encounter with primary care seeking help for a personal, emotional, or mental health problem. The researchers found that the perceptions of the sources of depression and of the illness itself influenced views on treatment and willingness to take medications. Jimenez et al. (2012) analyzed data collected as part of a randomized trial of adults 65 years and older with depression, anxiety, or at-risk alcohol use. The researchers investigated beliefs of the causes of mental illness by race/ethnicity and found that Latinx older adults attributed mental illness to loss (in terms of death and social activities) and medical reasons more frequently than non-Latinx white, African American, or Asian American older adults in the sample. However, the analysis was limited to one question on attribution, preventing a more comprehensive examination of Latinx older adults' views of the causes of mental illness. Bignall et al. (2015) conducted focus groups with a multicultural sample to investigate the perceived attributions of 19 mental health disorders and found that racial/ethnic minority adults, including Latinx adults, tended to view mental health disorders as a normal part of life or caused by spiritual reasons. However, these results were based on a small sample of Latinx adults ($n = 9$). Moreover, there is a paucity of mental health research across and within the Latinx population, despite its documented heterogeneity in physical and mental health outcomes (Arias et al., 2020; Borrell & Crawford, 2009; Hooker et al., 2019). To move the literature forward on Latinx mental health and provide formative research for future studies, we analyzed administrative data from a psychiatric outpatient clinic to identify how older Latinx and non-Latinx older adults attribute the sources of their mental health problems. The primary aims of the study were to determine how these types of attributions differed by ethnicity and to identify the association of acculturation and depression symptom severity on Mexican-origin older adults' mental health attribution. Based on extant literature, we expected to observe substantive between-group differences and quantitative within-group differences in how Mexican-origin and non-Latinx older adults characterize the cause of their mental health symptoms.

Method

Data Collection

The data for this secondary analysis came from a retrospective chart review of administrative data collected between 1995 and 2005 at a rural psychiatric outpatient clinic in Imperial County, CA. Imperial County is located north of the U.S. Mexico border with a predominantly Latinx population (82.7%), most of whom are of Mexican origin (DataUSA, 2018). The administrative data were collected at the first clinical visit for patients who voluntarily completed a 15-min self-administered questionnaire in their primary language (English or Spanish). The questionnaire included questions on depressive symptoms, views regarding the perceived sources of their mental health ailments, cultural orientation, and sociodemographics.

All patients were informed at the time of intake that the information provided may be used for research purposes. Caregivers were used as proxies to help patients with a diagnosis of dementia complete the questionnaire. All records were deidentified by the clinic prior to analysis and the study was approved by the Oregon State University institutional review board.

Participants

The questionnaire was completed by 673 adults aged 55–95 (430 Mexican origin and 243 non-Latinx). Of the 673 respondents in this study, 64% were of Mexican origin and 62% were women. The majority (94%) of non-Latinx adults identified as white. The average age for the entire sample was 69.48 years ($SD = 9.63$). The average years of schooling was 6.01 years ($SD = 4.89$) for Mexican-origin adults and 12.48 years ($SD = 3.99$) for non-Latinx adults in the sample. Although participants' SES was not specifically assessed during the data collection, Imperial County estimated a 13.6% poverty rate for adults 65 years and older, 19.4% for all families, and a median family income of \$35,226 in 1999 (U.S. Census Bureau, 2000). Specific sample demographics and descriptive information for variables of interest are given in Tables 1 and 2.

Measures

Attribution of mental health ailments

Vahia et al. (2013) developed a 13-item questionnaire to identify four primary domains (genetic/biological factors, social/interpersonal factors, economic factors, and cultural factors) to which Mexican Americans attribute symptoms of physical and mental illness. The items were developed based on a literature review and finalized through a consensus process with clinical experts (Vahia et al., 2013). A three-point scale (0 = "no," 1 = "maybe," and 2 = "yes") was used to be accessible to the clinic's low-literacy population (Vahia et al., 2013), which were dichotomized for the analysis to ease interpretability, so that 0 = "no" and

Table 1. Demographic Characteristics of Older Mexican-Origin Latinx and Non-Latinx Adults ($N = 673$)

	Total		Mexican origin		Non-Latinx	
	N	%	n	%	n	%
Total sample	673	100	430	64	243	36
Sex						
Male	255	38	137	32	118	49
Female	418	62	293	68	125	51
Location of birth						
California, United States	177	26	89	21	88	37
Oklahoma, United States	18	3	2	<1	16	7
Other state, United States	165	24	41	10	124	51
Mexicali, Mexico	32	5	32	7	0	0
Inland Mexico	268	40	265	61	3	1
Europe	1	<1	0	0	1	<1
Other country	11	2	0	0	11	5
Non-Latinx race/ethnicity						
American Indian or Alaska Native	—	<1	—	—	2	1
Asian American	—	1	—	—	7	3
Black	—	1	—	—	4	2
White	—	34	—	—	228	94
Indian Pakistani	—	<1	—	—	1	<1

Table 2. Overall Sample Descriptives for Continuous Variables of Interest

Predictors	Covariates									
	Age		Years of school		Years living in United States		Acculturation		Depression	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Mexican-origin Latinx	70.85	9.20	6.01	4.89	43.60	22.29	1.53	1.19	15.67	18.17
Non-Latinx	66.78	9.79	12.48	3.99	63.24	16.59	4.32	1.53	13.44	16.11
Total	69.48	9.63	8.32	5.54	50.80	22.53	2.53	1.88	14.80	17.47

Notes: *Depression* = Center for Epidemiological Studies Depression Scale (CES-D); *Acculturation* = Brief Acculturation Scale for Hispanics (BASH). Composite means provided for *Acculturation* and *Depression* scores.

1 = “maybe” and “yes” responses. Patients were asked, “What do you consider the cause of your ailments?” for each of 13 possible causes, grouped into substantive clusters by the current authors for analytic interpretability (Table 3).

Acculturation

Acculturation was measured using the Brief Acculturation Scale for Hispanics (BASH; Norris et al., 1996), which uses the language use subscale of the Short Acculturation Scale for Hispanics (SASH; Marin et al., 1987), and thus uses English language use as a proxy measure. BASH comprises four items related to the use of English versus Spanish languages for reading, speaking, and thinking: (a) In what language do you read and speak?; (b) What language did you use as a child?; (c) What language do you use at home?; and (d) In what language do you think? Each item had five response categories: 1 (only Spanish), 2 (Spanish

better than English), 3 (both equally), 4 (English better than Spanish), and 5 (only English). The mean score from these four items was used as the total acculturation score in our analysis. Previous work using this scale found significant correlations between BASH score and generational status ($r = 0.67$) and length of time in the United States ($r = 0.56$; Norris et al., 1996).

Depressive symptom severity

Depressive symptom severity was assessed using the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a commonly used measure of depressive symptom burden in community samples (Hahn et al., 2011), with higher scores reflecting greater depressive symptomatology. The CES-D appears psychometrically valid among Latinx adults, with one report of Cronbach’s $\alpha = 0.89$ (Chung et al., 2003).

Table 3. Attribution of Mental Health Ailments

Question stem	Item	Description
What do you consider the cause of your ailments?		<i>Spiritual</i>
	1	Curse or spell.
	2	Supernatural factors.
	3	Spiritual problems.
		<i>Social</i>
	4	Problems with significant other.
	5	Problems with family members.
	6	Problems with how you get along with people.
		<i>Economic</i>
	7	Problems with job.
	8	Financial problems.
		<i>Internal/Biological</i>
	9	Problems with the way you are.
10	Hereditary factors.	
11	Function of brain or mind.	
	<i>External</i>	
12	Lack of nutrients or vitamins.	
13	Alcohol or drugs.	

Note: Grouping based on substantive interpretability.

Demographic characteristics

Demographic information collected from each patient included age (continuous years), sex (female/male), ethnicity (Mexican-origin Latinx and non-Latinx), race (categorical), country of origin (categorical), years of formal schooling (continuous), and years living in the United States (continuous). Demographic characteristics of the sample are given in Tables 1 and 2.

Statistical Analyses

Latent class analysis (LCA) is a cross-sectional, person-centered statistical technique that illustrates heterogeneity within a given population based on identifying patterns of responses (Masyn, 2013). This multivariate approach is useful in this context because it allows the current researchers to explore the mental health attribution beliefs of two different populations in a way that honors the complexity and multidimensionality of these groups. This is particularly important for the Mexican-origin group because Latinx communities have been aggregated to a whole historically and have been treated as cultural monoliths in both research and applied settings (Comas-Díaz, 2001). Additionally, LCA concerns itself with groupings based on unknown (latent) variables such as the mental health attribution beliefs investigated in this study, rather than observable variables, such as gender or age (Masyn, 2013; Nylund-Gibson & Hart, 2014).

A separate series of LCAs was conducted for the two groups of interest in this study, Mexican-origin Latinx and non-Latinx older adults, using Mplus 8.1.5 (Muthén & Muthén, 1998–2018). The 13 indicators from the

attribution of mental health ailments questionnaire (Table 3) were used as indicators of the latent class using class enumeration procedures recommended by Masyn (2013). An optimal LCA solution was chosen based on an overall evaluation across multiple fit statistics (Masyn, 2013; Nylund et al., 2007; Tein et al., 2013). The following approximate fit criteria were used, where lower values indicated superior fit: log likelihood, Bayesian Information Criterion (BIC), Adjusted Bayesian Information Criterion (ABIC), Consistent Akaike Information Criterion (CAIC), and Approximated Weight of Evidence Criterion (AWE). Additionally, the p values of the Lo–Mendell–Rubin adjusted likelihood ratio test (LMRT) and the bootstrapped likelihood ratio test (BLRT) were assessed to determine whether adding a class would significantly improve model fit. The Bayes Factor (BF) provided a relative comparison of fit between each successive model, and the correct model probability (cmP) provided an estimate of the “correct” model relative to all models tested; higher values for both the BF and cmP indicate support for a particular model. Overall classification quality was evaluated according to each model’s entropy, an omnibus index where values greater than 0.80 indicate “good” classification (Clark & Muthén, 2009), and each model’s average posterior probabilities (AvePP; Masyn, 2013), where values more than 0.70 indicate adequate class separation (Nagin, 2005). Lastly, overall substantive meaningfulness and interpretability of each model were evaluated using a visual inspection of conditional item probabilities and theoretical guidance (Muthén, 2003).

After the final LCA solution was identified for each group (Mexican-origin and non-Latinx), an additional LCA was conducted with covariates added using the Bolck, Croon, and Hagenaars three-step method (Asparouhov & Muthén, 2014; Bolck et al., 2004; Vermunt, 2010). The rationale for this approach was to prevent the covariates from unintentionally biasing the class enumeration process (Nylund-Gibson & Masyn, 2016). Because the focus of this analysis was to better understand the potential impacts of acculturation and symptom severity on Mexican-origin older adults’ mental health attribution, we focused our covariate study on this population and did not run covariates with the non-Latinx sample.

Results

The fit statistics for the LCA series for each group are given in Table 4. The three-class solution was chosen for both the Mexican-origin and non-Latinx groups, as it provided the best LMRT p values and the second-best BIC, CAIC, AWE, and BLRT fit statistics, and defined a substantive meaningful third class for both groups. Additionally, although the BF and cmP values supported the two-class solution, this solution obscured the presence of this meaningful third class. The AvePP indicated that the models created distinct, well-separated classes for each group (Table 5), despite the

Table 4. Fit Statistics and Classification Coefficients for LCA Models

Group	K	LL	BIC	ABIC	CAIC	AWE	BLRT <i>p</i>	LMRT <i>p</i>	Entropy	BF	cmP
Mexican-origin Latinx	1	-2,875.80	5,830.44	5,789.18	5,843.44	5,948.26	—	—	—	<0.001	<.001
	2	-2,714.56	5,592.85	5,507.17	5,619.85	5,837.57	<.001	<.001	0.65	35.15	.972
	3	-2,675.68	5,599.97	5,469.86	5,640.97	5,971.58	<.001	.046	0.70	>10.0	.028
	4	-2,653.14	5,639.79	5,465.26	5,694.79	6,138.30	<.001	.213	0.68	>10.0	<.001
	5	-2,634.21	5,686.83	5,467.86	5,755.83	6,312.23	.013	.230	0.68	>10.0	<.001
	6	-2,619.54	5,742.38	5,478.99	5,825.38	6,494.68	.429	.276	0.71	>10.0	<.001
Non-Latinx	1	-1,598.71	3,268.89	3,223.42	3,281.89	3,379.35	—	—	—	<0.001	<.001
	2	-1,500.22	3,148.86	3,054.44	3,175.86	3,378.29	<.001	.157	0.69	>10.0	>.999
	3	-1,477.52	3,180.42	3,037.04	3,221.42	3,528.81	<.001	.025	0.69	>10.0	<.001
	4	-1,459.81	3,221.97	3,029.62	3,276.97	3,689.31	.050	.272	0.76	>10.0	<.001
	5	-1,441.98	3,263.27	3,021.97	3,332.27	3,849.58	.030	.231	0.76	>10.0	<.001
	6	-1,428.40	3,313.06	3,022.80	3,396.06	4,018.33	.286	.371	0.77	>10.0	<.001

Notes: K = number of classes; LL = log likelihood; BIC = Bayesian Information Criterion; ABIC = Sample-size Adjusted BIC; CAIC = Consistent Akaike Information Criterion; AWE = Approximate Weight of Evidence Criterion; BLRT *p* = bootstrapped likelihood ratio test *p* value; LMRT *p* = Lo-Mendell-Rubin adjusted likelihood ratio test *p* value; BF = Bayes Factor; cmP = correct model probability; LCA = latent class analysis. Bolded values indicate “best” fit for each respective statistic.

slightly low entropy for each group’s three-class solution (Table 4).

The conditional item probability plots for the Mexican-origin and non-Latinx LCA models are shown in Figures 1 and 2, respectively. The Mexican-origin LCA (Figure 1) revealed a relatively small but distinct class of individuals ($n = 52$, 12%) who were more likely to attribute their depressive symptoms to spiritual and/or supernatural causes, labeled *Spiritual*. This class was unique to the Mexican-origin model, as the non-Latinx LCA did not identify a similar class. The *Spiritual* class possessed a similar pattern of responses to the largest Mexican-origin class ($n = 200$, 46%), which was labeled *Internal/Brain*. Individuals in both classes were more likely to attribute their symptoms to internal (“the way you are”) and brain-related (“function of the brain or mind”) causes, but the *Spiritual* class was distinguished by its high endorsement of spiritual/supernatural causes. In fact, individuals in the other two classes were very unlikely (.10–.20 probability) to attribute their symptoms to any spiritual/supernatural causes. Moreover, the *Spiritual* class was further delineated by its members’ relative likelihood of attributing symptoms to social problems (e.g., “problems with family members ... how you get along with people”; .60–.65 probability). The third and second-largest Mexican-origin class ($n = 178$, 42%) was labeled the *Low Attribution* class, as these individuals were not likely to attribute their symptoms to any of the 13 listed causes. The lowest endorsed items across all three classes of the Mexican-origin group appeared to be the job-related and alcohol/drugs attributions.

The non-Latinx LCA (Figure 2) revealed three classes with proportions similar to the Mexican-origin LCA classes, including a small class ($n = 38$, 15%). However, this non-Latinx small class, labeled *Social/Internal/Financial*, possessed item response characteristics very different to the small Mexican-origin *Spiritual* class; the individuals in the non-Latinx *Social/Internal/Financial* class were very likely (.70–.90 probability) to attribute their mental health symptoms to social difficulties (problems with significant others, family members, and getting along with people), financial problems, internal causes (“the way you are”), and brain-related issues (“function of the brain or mind”). This *Social/Internal/Financial* class was distinguished from the largest non-Latinx class, labeled *Internal/Biological* ($n = 123$, 51%), by its high attribution of social and financial difficulties. In contrast, the individuals in the *Internal/Biological* class appeared to solely attribute their mental health symptoms to internal causes and brain-related issues. The second-largest class and approximately one third of the non-Latinx group ($n = 82$, 34%) was labeled the *Low Attribution* class, due to the individuals’ low likelihood of attributing their mental health symptoms to any of the given 13 causes. This non-Latinx *Low Attribution* class possessed a similar probability plot to the Mexican-origin *Low Attribution* class. Overall, across all three non-Latinx classes, the lowest endorsed mental health attributions

Table 5. Classification Probabilities for Three-Class Solution

Group	Class	1	2	3
Mexican-origin Latinx	1. <i>Spiritual</i>	.811	.174	.015
	2. <i>Internal/Brain</i>	.032	.871	.097
	3. <i>Low Attribution</i>	.002	.124	.874
Non-Latinx	1. <i>Social/Internal/Financial</i>	.870	.130	.000
	2. <i>Internal/Biological</i>	.050	.833	.118
	3. <i>Low Attribution</i>	.115	.000	.885

Notes: Values indicate probabilities of most likely profile membership (column) by latent profile (row). Bolded values indicate the average posterior probabilities (AvePP).

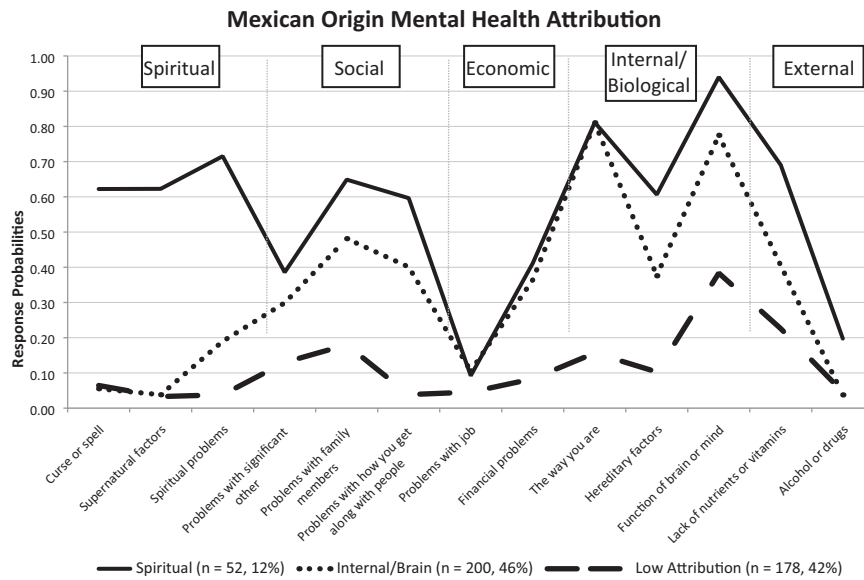


Figure 1. Conditional item probability plot for the Mexican-origin three-class latent class analysis model.

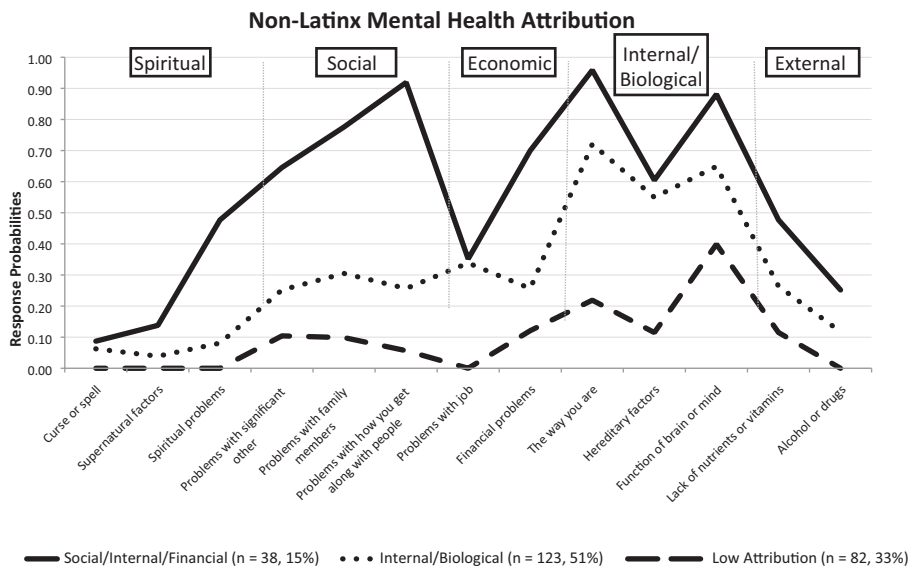


Figure 2. Conditional item probability plot for the non-Latinx three-class latent class analysis model.

Table 6. Covariate Effects on Relative Class Membership Probability for Final Mexican-Origin LCA Model

Attribution Classes (Mexican-origin LCA)	Covariate	Logit	SE	Logit/SE	p Value	Odds ratio
<i>Internal/Brain vs. Spiritual</i>	Years in the United States	<0.01	0.01	0.18	.85	1.00
	Female	0.86	0.44	1.98	.05	2.37
	Years of school	0.13	0.07	1.90	.06	1.14
	<i>Depression</i>	0.00	0.01	0.08	.94	1.00
	<i>Acculturation</i>	-0.16	0.26	-0.60	.55	0.85
<i>Low Attribution vs. Spiritual</i>	Years in the United States	0.01	0.01	0.53	.60	1.01
	Female	0.66	0.38	1.71	.09	1.93
	Years of school	0.02	0.06	0.40	.69	1.02
	<i>Depression</i>	-0.01	0.01	-0.82	.41	0.99
	<i>Acculturation</i>	-0.09	0.23	-0.39	.70	0.91
<i>Internal/Brain vs. Low Attribution</i>	Years in the United States	0.00	0.01	0.42	.68	1.00
	Female	-0.21	0.33	-0.62	.53	0.81
	Years of school	-0.11	0.04	-2.81	.01	0.90
	<i>Depression</i>	-0.01	0.01	-1.39	.16	0.99
	<i>Acculturation</i>	0.07	0.16	0.44	.66	1.07

Notes: $p \leq .01$ and odds ratios ≥ 1.50 in boldface. LCA = latent class analysis.

were the spiritual/supernatural causes, lack of nutrients/vitamins, and alcohol and drugs.

Years of formal education was found to significantly ($p < .01$; Table 6) affect whether a Mexican-origin individual was assigned to the *Internal/Brain* class versus the *Low Attribution* class, meaning that Mexican-origin individuals with more years of school were more likely to attribute their mental health symptoms to *Internal/Brain* causes rather than not. Years of school did not appear to significantly affect *Spiritual* class membership. No other statistically significant covariate effects were found (Table 6) for the Mexican-origin LCA model, suggesting that Mexican-origin individuals' class membership did not significantly differ by years lived in the United States, gender, depression symptom severity (CES-D), or acculturation (BASH). However, according to the covariate odds ratios, Mexican-origin women were twice as likely (odds ratio 1.93–2.37) than Mexican-origin men to be assigned to the *Spiritual* class rather than the *Internal/Brain* or *Low Attribution* classes, indicating a relatively important yet statistically nonsignificant effect of gender on *Spiritual* class membership.

Discussion

The current study sought to better illuminate between-group and within-group differences in how older Mexican-origin Latinx and non-Latinx individuals attribute their mental health symptoms using comparable LCA models as hypothesized, which yielded notable findings across the three-class models for each group, demonstrating substantive differences between the two ethnic groups in how they attributed their mental health, as well as within-group heterogeneity. First, the analysis provided additional

empirical evidence for a group of Mexican-origin adults' attribution of mental health issues to spiritual and supernatural causes, while revealing a gender difference in this attribution. Second, the within-group differences found in the Mexican-origin Latinx LCA and lack of significant acculturation-related covariate effects challenged extant literature's conceptualization of the Latinx population as a homogeneous group and overemphasis of English language acculturation on Latinx worldviews, while highlighting the potential impact of education on mental health attribution. Third, the analysis revealed heterogeneity of mental health attribution within the majority white (94%) non-Latinx group, adding a more dynamic understanding of mental health and symptom beliefs among this group.

For Mexican-origin older adults, a small class appeared to attribute their mental health issues to spiritual and/or supernatural factors, and Mexican-origin women were twice as likely to be grouped into this class compared with Mexican-origin men. This class was unique to the Mexican-origin LCA group and distinct from other Mexican-origin mental health attribution classes. Thus, the current study provides additional empirical support for the acknowledged importance of spirituality (*espiritismo*; Applewhite & Gonzales, 2012) and Latinx worldviews to older Latinx Mexican-origin individuals (Baez & Hernandez, 2010), and the need to consider these cultural values and their intersection with gender when working with older Mexican-origin clients. Passalacqua and Cervantes (2008) provide an exploration of the intersections between spirituality, culture, and gender and the utility of this integration into therapeutic work, recommending that clinicians recognize how healthy development may differ from a western male model of development, consider the intersectionality of clients' identities, and the importance of rituals for some religious clients. To this end, Moreira-Almeida et al. (2014) recommend taking

a spiritual history with clients to improve patient compliance, satisfaction, and list validated and clinically useful instruments for this purpose. The clinician should also take care not to overemphasize the potential role of *espiritismo* on clients' self-perception of their mental health; the same Mexican-origin adults who attributed their ailments to spiritual/supernatural causes also attributed their mental health issues to interpersonal, internal, hereditary, and biological factors. Thus, exploring the potential role of spiritual beliefs on client self-perception of functioning is only one aspect of culturally informed care.

Mexican-origin *Spiritual* class membership was unaffected by acculturation level (as measured by English language acquisition), depression symptom severity, and time spent in the United States. This provides support for challenging researchers' and clinicians' historical overemphasis on acculturation and westernized symptomology when seeking to understand and conceptualize Mexican-origin Latinx clients' mental health experiences, which can lead to "othering" (Viruell-Fuentes, 2007, 2011), over-pathologizing, misdiagnosing, and inappropriate treatment (Cassano et al., 2012; Mischoulon et al., 2005; Moreira-Almeida & Cardeña, 2011). Given the diversity within the U.S. Latinx population with respect to cultural practices and beliefs, and complex historical immigration and sociocultural relationships with the U.S. and dominant white culture (Miville, 2010), clinicians may wish to take a multicultural approach (Santiago-Rivera et al., 2002), using a tool such as the Cultural Formulation Interview (DeSilva et al., 2015) to learn more about a particular client's acculturation level, cultural values, immigration history, and language, sociopolitical, and ethnic identity issues. Doing this allows the clinician and client to better understand whether and how these issues may affect a client's self-perception or attitudes toward treatment approaches. The finding that Mexican-origin individuals were more likely to attribute their mental health symptoms to internal and brain-related causes rather than no other causes (*Low Attribution*) when they received more formal education suggests that schooling may have potentially impacted how these clients conceptualized their mental health attributions. Thus, clients' experiences with education, particularly westernized education, may provide a better understanding of their exposure to westernized internal and biological views of psychopathology rather than their English language acquisition or other markers of acculturation.

In contrast to the Mexican-origin Latinx group, a large portion of the majority non-Latinx white older adults (51%) were most likely to attribute their mental health issues to solely internal and biological causes, and non-Latinx adults were unlikely to attribute their mental health symptoms to spiritual or supernatural causes across the three classes. These findings reinforce previous research that non-Latinx white adults are less likely to believe their

ailments are caused by spiritual or supernatural forces compared with racial/ethnic minority (Bignall et al., 2015) and Latinx adults (Anastasia & Bridges, 2015). One contribution of our study is the finding that the majority white non-Latinx older adults too was a multidimensional group with diversity in how they conceptualized their own mental health difficulties. Our analysis identified a small portion of the group (15%) that was likely to attribute their symptoms to social and financial problems, in addition to the internal/biological attribution beliefs held by the largest class. These findings suggest that a certain portion of non-Latinx adults may perceive the origin of their difficulties as stemming from multiple domains in their life (internal, financial, and interpersonal). Clinicians may benefit from assessing the resources and areas of need in clients' various systems, such as using Bronfenbrenner's ecological theory framework when conceptualizing cases (Eriksson et al., 2018).

In addition to these within- and between-group differences, both the Mexican-origin Latinx and non-Latinx groups of older adults shared a likelihood of attributing their mental health difficulties to internal, genetic, and biological issues, especially attributing their symptoms to "problems with the way you are," "hereditary factors," and "function of the brain or mind." Given the significant effect of education on Mexican-origin individuals' mental health attribution beliefs, it is likely that both groups of individuals are more likely to endorse beliefs in internal and biological causes when exposed to more formal education. It is also possible that there were cultural differences in how each group of older adults interpreted these internal attribution items, in that Mexican-origin individuals possibly used a *fatalismo* lens (Rosales & Calvo, 2017), whereas the non-Latinx individuals ascribed to western behaviorist/environmental beliefs (Bignall et al., 2015). An alternative explanation would be that mental health literacy or stigma influences the ways in which Latinx and non-Latinx individuals view their mental health symptoms and seek treatment (Benuto et al., 2019; Carpenter-Song et al., 2010; Lopez et al., 2018). Additionally, research has shown that primary clinicians approach mental health treatment and referral differently for racial/ethnic minority adults (Jones et al., 2018). A recent analysis of Medical Expenditures Panel Survey data on primary care and special mental health visits showed racial and ethnic disparities in mental care visits, suggesting that Latinx adults have lower access to mental health services compared with their same-age white counterparts (Jones et al., 2018). Taken together, these experiences and perceptions may lead to older Latinx adults' greater stigmatization and negative attitudes toward treatment of "less severe" pathologies such as depression or anxiety (Hantzi et al., 2019) and lower utilization of mental health services for these issues (Villatoro et al., 2018).

Limitations and Future Research

There are a few limitations to the current study that lend themselves to recommendations for future research. First, the generalizability of the results to a broader older adult population is limited by the study's majority Mexican-origin clinical sample from a single facility in Imperial County, CA, in the United States. As this sample is a self-selected clinical population engaged in outpatient treatment, different mental health attributions may be found in nonclinical and untreated populations of older adults. Generalizability and a greater understanding of Mexican-origin older adult mental health attribution may be further expanded by including data collection from both rural and urban area clinics with varying proximities to the U.S.–Mexico border.

As is typical with secondary data analyses, the study was limited to the measures and items included in the original chart review data collection. The symptom attribution questionnaire was developed based on the extant literature and expert agreement, but it has not been psychometrically validated. However, psychometrically validated questionnaires assessing cultural health and mental health beliefs and attributions are currently limited. Thus, the current study's questionnaire serves an adequate purpose for assessing cross-cultural mental health attributions for a low-literacy population (Vahia et al., 2013), but could benefit from validation through exploratory and confirmation factor analyses. Future researchers may also wish to use a more involved measure that specifically targets Latinx health beliefs, such as the Cultural Health Attributions Questionnaire (Murguia et al., 2000), which has benefited from some evaluation and revision (Fox et al., 2015). The study also used the BASH (Norris et al., 1996) to measure acculturation, in which English language use is utilized as a proxy to measure acculturation. Although this proxy measurement is common (González et al., 2001), acculturation is a complex and multidimensional construct (Thomson & Hoffman-Goetz, 2009; Viruell-Fuentes, 2007), and future studies would be improved by using a more comprehensive measure, such as the full SASH (Marin et al., 1987), which measures acculturation beyond English language use. These more thorough measures may better account for Mexican-origin older adults' spiritual/supernatural mental health attributions, rather than the English language acquisition proxy. Differences in mental health attributions between the Mexican-origin and non-Latinx groups were limited to inferences based on comparing visual plots and item probabilities because LCAs do not allow for a direct statistical comparison of two models (Nylund-Gibson & Masyn, 2016). Furthermore, the cross-sectional and nonexperimental design of the study bars any causal inferences and limits the interpretations of the results to a single time point. This highlights the need for researchers to use longitudinal data and latent transition analysis (Nylund et al., 2007) to explore whether the classes identified are

stable over time and if Mexican-origin Latinx and non-Latinx older adults' mental health attributions can be more directly linked to their service utilization, coping behaviors, and mental health diagnoses as distal outcomes. Additional research questions of interest include whether attribution beliefs are affected by specific mental health diagnosis (e.g., Are older adults with psychotic disorders more likely to attribute their mental health to spiritual or supernatural causes, even when controlling for Latinx ethnic identity?) and whether there are differences in sources of support sought by Mexican-origin and non-Latinx older adults for their mental health issues, based on class membership or attribution beliefs.

Lastly, the data analyzed for this study are more than 15 years old, which raises the question of relevance to 2020. We argue that the data are indeed relevant for two reasons. First, the findings add to a literature that is not rich or well examined. Second, deficiencies persist with respect to culturally competent care in mental health care services (Barrera & Longoria, 2018; Izquierdo et al., 2014; Jimenez et al., 2012) as do disparities in mental health service utilization and outcomes for older Latinx adults (Cook et al., 2017; López et al., 2012). Thus, the data provide a unique opportunity to deepen our understanding of mental health attribution among older Latinx adults to inform efforts to improve treatment and outcomes for this population.

Conclusions

The current study's findings speak to a need for clinicians and researchers to better understand older adults' conceptualization of their mental health, especially Mexican-origin and other Latinx adults because of their increased mental and physical health risks in older age (Bilotta et al., 2010; Howard et al., 2014; Ward et al., 2018) and lower mental health service utilization (Cook et al., 2017; López et al., 2012). Both culturally sensitive and individualized conceptualizations of and approaches to mental health treatment are likely to lead to vulnerable adults' greater access, utilization, and adherence of treatment and thus better treatment outcomes (Barrera & Longoria, 2018; Bignall et al., 2015; Izquierdo et al., 2014; Vaughn et al., 2009). Researchers and clinicians may develop and implement more effective treatments for both the historically underserved and dominant majority client populations by examining mental health service utilization and implementation with an intersectional lens that encompasses age, gender, culture, and other important identity factors (Villatoro et al., 2018) as well as a heterogeneous person-centered approach to studying these groups (Bauer & Shanahan, 2007).

Funding

None declared.

Conflict of Interest

None declared.

Acknowledgments

The authors also wish to thank Angelica Herrera-Venson, Carla Alvarado, Alvaro Camacho, Ipsit V. Vahia, and Ruth Warre for their contributions to earlier work leading to the current study.

References

- Abraído-Lanza, A. E., Viladrich, A., Flórez, K. R., Céspedes, A., Aguirre, A. N., & De La Cruz, A. A. (2007). Commentary: Fatalismo reconsidered: A cautionary note for health-related research and practice with Latino populations. *Ethnicity & Disease, 17*, 153–158.
- Alzheimer's Association. (2020). *2020 Alzheimer's disease facts and figures*. Alzheimer's Association. Retrieved from <https://www.alz.org/media/Documents/alzheimers-facts-and-figures.pdf>
- 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. doi:10.1007/s10903-015-0196-y
- Applewhite, S. R., & Gonzales, J. M. (2012). Psychology of Latino American older adults: Strengths and challenges to mental health in a shifting society. In *Handbook of race and development in mental health* (pp. 307–328). doi:10.1007/978-1-4614-0424-8_17
- Arias, E., Johnson, N. J., & Vera, B. T. (2020). Racial disparities in mortality in the adult Hispanic population. *SSM—Population Health, 11*, 100583. doi:10.1016/j.ssmph.2020.100583
- Asparouhov, T., & Muthén, B. O. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling, 21*(3), 329–341. doi:10.1080/10705511.2014.915181
- Baez, A., & Hernandez, D. (2010). Complementary spiritual beliefs in the Latino community: The interface with psychotherapy. *American Journal of Orthopsychiatry, 71*, 408–415. doi:10.1037/0002-9432.71.4.408
- Barrera, I., & Longoria, D. (2018). Examining cultural mental health care barriers among Latinos. *CLEARvoz Journal, 4*(1), 1–12. doi:10.1176/appi.ps.54.9.1264
- Bauer, D. J., & Shanahan, M. J. (2007). Modeling complex interactions: Person-centered and variable-centered approaches. In T. D. Little, J. A. Bovaird, & N. A. Card (Eds.), *Modeling contextual effects in longitudinal studies* (pp. 255–283). Erlbaum.
- Benuto, L. T., Gonzalez, F., Reinoso-Segovia, F., & Duckworth, M. (2019). Mental health literacy, stigma, and behavioral health service use: The case of Latinx and non-Latinx whites. *Journal of Racial and Ethnic Health Disparities, 6*(6), 1122–1130. doi:10.1007/s40615-019-00614-8
- Bignall, W. R., Vaughn, L. M., & Jacquez, F. (2015). Attributions of mental illness: An ethnically diverse community perspective. *Community Mental Health Journal, 51*(5), 540–545. doi:10.1007/s10597-014-9820-x
- Bilotta, C., Bowling, A., Casè, A., Nicolini, P., Mauri, S., Castelli, M., & Vergani, C. (2010). Dimensions and correlates of quality of life according to frailty status: A cross-sectional study on community-dwelling older adults referred to an outpatient geriatric service in Italy. *Health and Quality of Life Outcomes, 8*(1), 56. doi:10.1186/1477-7525-8-56
- Bolck, A., Croon, M., & Hagenaars, J. (2004). Estimating latent structure models with categorical variables: One-step versus three-step estimators. *Political Analysis, 12*(1), 3–27. doi:10.2307/25791751
- Borrell, L. N., & Crawford, N. D. (2009). All-cause mortality among Hispanics in the United States: Exploring heterogeneity by nativity status, country of origin, and race in the National Health Interview Survey-linked Mortality Files. *Annals of Epidemiology, 19*(5), 336–343. doi:10.1016/j.annepidem.2008.12.003
- Braveman, P., Egerter, S., & Williams, D. R. (2011). The social determinants of health: Coming of age. *Annual Review of Public Health, 32*(1), 381–398. doi:10.1146/annurev-publhealth-031210-101218
- Braveman, P., & Gottlieb, L. (2014). The social determinants of health: It's time to consider the causes of the causes. *Public Health Reports (Washington, D.C.: 1974), 129*(1 Suppl. 2), 19–31. doi:10.1177/003335491412915206
- Burciaga Valdez, R., & Arce, C. (2000). *A profile of Hispanic elders*. San Antonio, TX: HORIZONS Project Nationwide Demographic Report.
- Caplan, S., Paris, M., Whittemore, R., Desai, M., Dixon, J., Alvidrez, J., Escobar, J., & Scahill, L. (2011). Correlates of religious, supernatural and psychosocial causal beliefs about depression among Latino immigrants in primary care. *Mental Health, Religion & Culture, 14*(6), 589–611. doi:10.1080/13674676.2010.497810
- Carpenter-Song, E., Chu, E., Drake, R. E., Ritsema, M., Smith, B., & Alverson, H. (2010). Ethno-cultural variations in the experience and meaning of mental illness and treatment: Implications for access and utilization. *Transcultural Psychiatry, 47*(2), 224–251. doi:10.1177/1363461510368906
- Cassano, P., Fava, M., & Mischoulon, D. (2012). Major depressive disorder with psychosis-like symptoms among Latinos. *Psychiatric Services (Washington, D.C.), 63*(5), 482–487. doi:10.1176/appi.ps.201100271
- Chung, H., Teresi, J., Guarnaccia, P., Meyers, B. S., Holmes, D., Bobrowitz, T., Eimicke, J. P., & Ferran, E., Jr. (2003). Depressive symptoms and psychiatric distress in low income Asian and Latino primary care patients: Prevalence and recognition. *Community Mental Health Journal, 39*(1), 33–46. doi:10.1023/A:1021221806912
- Clark, C. M., DeCarli, C., Mungas, D., Chui, H. I., Higdon, R., Nuñez, J., Fernandez, H., Negrón, M., Manly, J., Ferris, S., Perez, A., Torres, M., Ewbank, D., Glosser, G., & van Belle, G. (2005). Earlier onset of Alzheimer disease symptoms in Latino individuals compared with Anglo individuals. *Archives of Neurology, 62*(5), 774–778. doi:10.1001/archneur.62.5.774
- Clark, S. L., & Muthén, B. O. (2009). *Relating latent class analysis results to variables not included in the analysis*. Unpublished manuscript. Department of Education, University of California, Los Angeles.
- Cohn, L., & Villar, O. (2015). *Fatalism and health behavior: A meta-analytic review*. Technical Report. Universidad Autónoma de Ciudad Juárez. doi:10.13140/RG.2.2.10843.98085

- Comas-Díaz, L. (2001). Hispanics, Latinos, or Americanos: The evolution of identity. *Cultural Diversity and Ethnic Minority Psychology, 7*(2), 115–120. doi:10.1037//1099-9808.7.2.115
- Cook, B. L., Trinh, N. H., Li, Z., Hou, S. S., & Progovac, A. M. (2017). Trends in racial-ethnic disparities in access to mental health care, 2004–2012. *Psychiatric Services (Washington, D.C.), 68*(1), 9–16. doi:10.1176/appi.ps.201500453
- DataUSA. (2018). *DataUSA: Imperial County, CA, demographics* [Table]. Retrieved from <https://datausa.io/profile/geo/imperial-county-ca/>
- DeSilva, R., Aggarwal, N. K., & Lewis-Fernandez, R. (2015). The DSM-5 cultural formulation interview and the evolution of cultural assessment in psychiatry. *Psychiatric Times, 32*(6), 10. Gale Academic OneFile. doi:10.1353/hpu.2014.0132
- Downer, B., Rote, S., Markides, K. S., & Al Snih, S. (2016). The comorbid influence of high depressive symptoms and diabetes on mortality and disability in Mexican Americans aged 75 and above. *Gerontology and Geriatric Medicine, 2*, 2333721416628674. doi:10.1177/2333721416628674
- Eriksson, M., Ghazinour, M., & Hammarström, A. (2018). Different uses of Bronfenbrenner's ecological theory in public mental health research: What is their value for guiding public mental health policy and practice? *Social Theory & Health, 16*, 414–433. doi:10.1057/s41285-018-0065-6
- Flórez, K. R., Aguirre, A. N., Viladrich, A., Céspedes, A., De La Cruz, A. A., & Abraido-Lanza, A. F. (2009). Fatalism or destiny? A qualitative study and interpretative framework on Dominican women's breast cancer beliefs. *Journal of Immigrant and Minority Health, 11*, 291–301. doi:10.1007/s10903-008-9118-6
- Fortuna, L. (n.d.). *Working with Latino/a and Hispanic patients*. American Psychiatric Association. Retrieved May 30, 2020 from <https://www.psychiatry.org/psychiatrists/cultural-competency/education/best-practice-highlights/working-with-latino-patients>
- Fox, R. S., Malcarne, V. L., Roesch, S. C., & Sadler, G. R. (2015). The Cultural Health Attributions Questionnaire (CHAQ): Reliability, validity, and refinement. *Cultural Diversity and Ethnic Minority Psychology, 20*(2), 283–292. doi:10.1037/a0034180
- Gone, J. P., & Kirmayer, L. J. (2010). On the wisdom of considering culture and context in psychopathology. In T. Millon, R. F. Krueger, & E. Simonsen (Eds.), *Contemporary directions in psychopathology: Scientific foundations of the DSM-V and ICD-11* (pp. 72–96). Guilford.
- González, H. M., Haan, M. N., & Hinton, L. (2001). Acculturation and the prevalence of depression in older Mexican Americans: Baseline results of the Sacramento Area Latino Study on Aging. *Journal of the American Geriatrics Society, 49*(7), 948–953. doi:10.1046/j.1532-5415.2001.49186.x
- González, H. M., Tarraf, W., González, K. A., Fornage, M., Zeng, D., Gallo, L. C., Talavera, G. A., Daviglius, M. L., Lipton, R. B., Kaplan, R., Ramos, A. R., Lamar, M., Cai, J., DeCarli, C., & Schneiderman, N. (2020). Diabetes, cognitive decline, and mild cognitive impairment among diverse Hispanics/Latinos: Study of Latinos—Investigation of Neurocognitive Aging Results (HCHS/SOL). *Diabetes Care, 43*(5), 1111–1117. doi:10.2337/dc19-1676
- Goodenough, W. (1999). Outline of a framework for a theory of cultural evolution. *Cross-Cultural Research, 33*(1), 84–107. doi:10.1177/106939719903300106
- Guzman, E. D., Woods-Giscombe, C. L., & Beeber, L. S. (2015). Barriers and facilitators of Hispanic older adult mental health service utilization in the USA. *Issues in Mental Health Nursing, 36*(1), 11–20. doi:10.3109/01612840.2014.939790
- Hahn, E. A., Kim, G., & Chiriboga, D. A. (2011). Acculturation and depressive symptoms among Mexican American elders new to the caregiving role: Results from the Hispanic-EPESE. *Journal of Aging and Health, 23*(3), 417–432. doi:10.1177/0898264310380454
- Hantzi, A., Anagnostopoulos, F., & Alexiou, E. (2019). Attitudes towards seeking psychological help: An integrative model based on contact, essentialist beliefs about mental illness, and stigma. *Journal of Clinical Psychology in Medical Settings, 26*(2), 142–157. doi:10.1007/s10880-018-9573-8
- Healthy People 2020. (n.d.). Retrieved June 19, 2020 from <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/access-to-health>
- Hedemalm, A., Schaufelberger, M., & Ekman, I. (2008). Symptom recognition and health care seeking among immigrants and native Swedish patients with heart failure. *BMC Nursing, 7*(1), 9. doi:10.1186/1472-6955-7-9
- Hooker, K., Phibbs, S., Irvin, V. L., Mendez-Luck, C. A., Doan, L. N., Li, T., Turner, S., & Choun, S. (2019). Depression among older adults in the united states by disaggregated race and ethnicity. *The Gerontologist, 59*(5), 886–891. doi:10.1093/geront/gny159
- Howard, G., Peace, F., & Howard, V. J. (2014). The contributions of selected diseases to disparities in death rates and years of life lost for racial/ethnic minorities in the United States, 1999–2010. *Preventing Chronic Disease, 11*, E129. doi:10.5888/pcd11.140138
- Howrey, B. T., Al Snih, S., Middleton, J. A., & Ottenbacher, K. J. (2020). Trajectories of frailty and cognitive decline among older Mexican Americans. *The Journals of Gerontology, Series A: Biological Sciences and Medical Sciences, 75*, 1551–1557. doi:10.1093/gerona/glz295
- Izquierdo, A., Sarkisian, C., Ryan, G., Wells, K. B., & Miranda, J. (2014). Older depressed Latinos' experiences with primary care visits for personal, emotional and/or mental health problems: A qualitative analysis. *Ethnicity & Disease, 24*(1), 84–91.
- Jimenez, D. E., Bartels, S. J., Cardenas, V., Dhaliwal, S. S., & Alegria, M. (2012). Cultural beliefs and mental health treatment preferences of ethnically diverse older adult consumers in primary care. *The American Journal of Geriatric Psychiatry, 20*(6), 533–542. doi:10.1097/JGP.0b013e318227f876
- Jones, A. L., Cochran, S. D., Leibowitz, A., Wells, K. B., Kominski, G., & Mays, V. M. (2018). Racial, ethnic, and nativity differences in mental health visits to primary care and specialty mental health providers: Analysis of the Medical Expenditures Panel Survey, 2010–2015. *Healthcare (Basel), 6*(2). doi:10.3390/healthcare6020029
- Kim, K. (2018). County context and mental health service utilization by older Hispanics. *The Gerontologist, 59*(3), 456–464. doi:10.1093/geront/gny033
- Krogstad, J. M., & López, G. (2016). *Roughly half of Hispanics have experienced discrimination*. Pew Research Center. Retrieved from <http://www.pewresearch.org/fact-tank/2016/06/29/roughly-half-of-hispanics-have-experienced-discrimination/>

- Lau, A. W., & Gallagher-Thompson, D. (2002). Ethnic minority older adults in clinical and research programs: Issues and recommendations. *The Behavior Therapist*, 25(1), 10–11, 16. doi:10.1177/0898264304268151
- Lichtman, J. H., Leifheit-Limson, E. C., Watanabe, E., Allen, N. B., Garavalia, B., Garavalia, L. S., Spertus, J. A., Krumholz, H. M., & Curry, L. A. (2015). Symptom recognition and healthcare experiences of young women with acute myocardial infarction. *Circulation. Cardiovascular Quality and Outcomes*, 8(2 Suppl. 1), S31–38. doi:10.1161/circoutcomes.114.001612
- López, S. R., Barrio, C., Kopelowicz, A., & Vega, W. A. (2012). From documenting to eliminating disparities in mental health care for Latinos. *The American Psychologist*, 67(7), 511–523. doi:10.1037/a0029737
- Lopez, V., Sanchez, K., Killian, M. O., & Eghaneyan, B. H. (2018). Depression screening and education: An examination of mental health literacy and stigma in a sample of Hispanic women. *BMC Public Health*, 18(1), 646. doi:10.1186/s12889-018-5516-4
- Marin, G., Sabogal, F., VanOss Marin, B., Otero-Sabogal, R., & Perez-Stable, E. J. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences*, 9(2), 183–205. doi:10.1177/07399863870092005
- Masyn, K. E. (2013). Latent class analysis and finite mixture modeling. In T. D. Little (Ed.), *The Oxford handbook of quantitative methods* (Vol. 2: Statistical analysis, pp. 551–611). Oxford University Press.
- Mischoulon, D., Lagomasino, I. T., & Harmon, C. (2005). Atypical psychotic symptoms in a Hispanic population: Diagnostic dilemmas and implications for treatment. *Psychiatry (Edgmont)*, 2(10), 38–46.
- Miville, M. L. (2010). Latina/o identity development: Updates on theory, measurement, and counseling implications. In J. G. Ponterotto, J. M. Casas, L. A. Suzuki, & C. M. Alexander (Eds.), *Handbook of multicultural counseling* (3rd ed., pp. 241–251). Sage.
- Moreira-Almeida, A., & Cardena, E. (2011). Differential diagnosis between non-pathological psychotic and spiritual experiences and mental disorders: A contribution from Latin American studies to the ICD-11. *Revista Brasileira de Psiquiatria*, 1(33), S21–S28. doi:10.1590/S1516-44462011000500004
- Moreira-Almeida, A., Koenig, H. G., & Lucchetti, G. (2014). Clinical implications of spirituality to mental health: Review of evidence and practical guidelines. *Revista Brasileira De Psiquiatria (Sao Paulo, Brazil: 1999)*, 36(2), 176–182. doi:10.1590/1516-4446-2013-1255
- Murguia, A., Zea, M. C., Reisen, C. A., & Peterson, R. A. (2000). The development of the cultural health attributions questionnaire. *Cultural Diversity and Ethnic Minority Psychology*, 6, 268–283. doi:10.1037/1099-9809.6.3.268.
- Muthén, B. O. (2003). Statistical and substantive checking in growth mixture modeling: Comment on Bauer and Curran (2003). *Psychological Methods*, 8(3), 369–377. doi:10.1037/1082-989X.8.3.369
- Muthén, B., & Muthén, L. K. (1998–2018). *Mplus (version 8.1.5)* [Computer software]. Muthén & Muthén.
- Nagin, D. S. (2005). *Group-based modeling of development*. Harvard University Press.
- National Center for Health Statistics. (2019a). *Health, United States 2018 Chartbook* (p. 65). Centers for Disease Control and Prevention.
- National Center for Health Statistics. (2019b). *Racial and ethnic disparities in heart disease (Health, United States Spotlight, p. 2)*.
- National Hispanic Council on Aging. (2016). *Status of Hispanic older adults: Insights from the field*. Retrieved from <http://www.nhcoa.org/wp-content/uploads/2016/09/2016-NHCOA-Status-of-Hispanic-Older-Adults-report.pdf>
- Norris, A. E., Ford, K., & Bova, C. A. (1996). Psychometrics of a brief acculturation scale for Hispanics in a probability sample of urban Hispanic adolescents and young adults. *Hispanic Journal of Behavioral Sciences*, 18(1), 29–38. doi:10.1177/07399863960181004
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, 14(4), 535–569. doi:10.1080/10705510701575396
- Nylund-Gibson, K., & Hart, S. R. (2014). Latent class analysis in prevention science. In Z. Sloboda & H. Petras (Eds.), *Defining prevention science* (pp. 498–511). Springer.
- Nylund-Gibson, K., & Masyn, K. E. (2016). Covariates and mixture modeling: Results of a simulation study exploring the impact of misspecified effects on class enumeration. *Structural Equation Modeling*, 23(6), 782–797. doi:10.1080/10705511.2016.1221313
- Passalacqua, S., & Cervantes, J. M. (2008). Understanding gender and culture within the context of spirituality: Implications for counselors. *Counseling and Values*, 52, 224–239. doi:10.1002/j.2161-007X.2008.tb00106.x
- Phelan, J. C., & Link, B. G. (2005). Controlling disease and creating disparities: A fundamental cause perspective. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 60 Spec No 2, 27–33. doi:10.1093/geronb/60.special_issue_2.s27
- Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social conditions as fundamental causes of health inequalities: Theory, evidence, and policy implications. *Journal of Health and Social Behavior*, 51(1 Suppl), S28–S40. doi:10.1177/0022146510383498
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385–401. doi:10.1177/014662167700100306
- Rosales, R., & Calvo, R. (2017). “Si Dios Quiere”: Fatalismo and use of mental health services among Latinos with a history of depression. *Social Work in Health Care*, 56(8), 748–764. doi:10.1080/00981389.2017.1339760
- Samieri, C., Perier, M.-C., Gaye, B., Proust-Lima, C., Helmer, C., Dartigues, J.-F., Berr, C., Tzourio, C., & Empana, J.-P. (2018). Association of cardiovascular health level in older age with cognitive decline and incident dementia. *Journal of the American Medical Association*, 320(7), 657–664. doi:10.1001/jama.2018.11499
- Santiago-Rivera, A., Arredondo, P., & Gallardo-Cooper, M. (2002). *Counseling Latinos and la familia: A practical guide*. Thousand Oaks, CA: Sage. doi:10.4135/9781452204635
- Simons, G., Belcher, J., Morton, C., Kumar, K., Falahee, M., Mallen, C. D., Stack, R. J., & Raza, K. (2017). Symptom

- recognition and perceived urgency of help-seeking for rheumatoid arthritis and other diseases in the general public: A mixed method approach. *Arthritis Care & Research*, 69(5), 633–641. doi:10.1002/acr.22979
- Sorkin, D. H., Pham, E., & Ngo-Metzger, Q. (2009). Racial and ethnic differences in the mental health needs and access to care of older adults in California. *Journal of the American Geriatrics Society*, 57(12), 2311–2317. doi:10.1111/j.1532-5415.2009.02573.x
- Substance Abuse and Mental Health Services Administration. (2011). *Leading change: A plan for SAMHSA's roles and actions, 2011–2014* (HHS Publication No. (SMA) 11–4629; p. 117). Substance Abuse and Mental Health Services Administration.
- Taylor, C. A., Bouldin, E. D., Greenlund, K. J., & McGuire, L. C. (2020). Comorbid chronic conditions among older adults with subjective cognitive decline, United States, 2015–2017. *Innovation in Aging*, 4, igz045. doi:10.1093/geroni/igz045
- Tein, J. Y., Coxé, S., & Cham, H. (2013). Statistical power to detect the correct number of classes in latent profile analysis. *Structural Equation Modeling*, 20(4), 640–657. doi:10.1080/10705511.2013.824781
- Thomson, M. D., & Hoffman-Goetz, L. (2009). Defining and measuring acculturation: A systematic review of public health studies with Hispanic populations in the United States. *Social Science & Medicine* (1982), 69(7), 983–991. doi:10.1016/j.socscimed.2009.05.011
- U.S. Census Bureau. (2000). *Profile of selected economic characteristics: Census 2000 summary file 3—sample data, Imperial County*. Retrieved from <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkml>
- U.S. Department of Health and Human Services. (2001). *Mental health: Culture, race, and ethnicity: A supplement to mental health: A report of the surgeon general*. Substance Abuse and Mental Health Services Administration (US).
- Vahia, I. V., Camacho, A., Depp, C. A., Herrera, A., Thompson, W. K., Muñoz, R., Jeste, D. V., & Ng, B. (2013). To what factors do rural-dwelling Hispanics attribute depressive symptoms? *Depression Research and Treatment*, 2013, 1–6. doi:10.1155/2013/781986
- Vaughn, L., Jacquez, F., & Baker, R. C. (2009). Cultural health attributions, beliefs, and practices: Effects on healthcare and medical education. *The Open Medical Education Journal*, 2, 64–74. doi:10.2174/1876519X00902010064
- Velasco-Mondragon, E., Jimenez, A., Palladino-Davis, A. G., Davis, D., & Escamilla-Cejudo, J. A. (2016). Hispanic health in the USA: A scoping review of the literature. *Public Health Reviews*, 37(1), 31. doi:10.1186/s40985-016-0043-2
- Vermunt, J. K. (2010). Latent class modeling with covariates: Two improved three-step approaches. *Political Analysis*, 18(4), 450–469. doi:10.2307/25792024
- Villatoro, A. P., Mays, V. M., Ponce, N. A., & Aneshensel, C. S. (2018). Perceived need for mental health care: The intersection of race, ethnicity, gender, and socioeconomic status. *Society and Mental Health*, 8(1), 1–24. doi:10.1177/2156869317718889
- Viruell-Fuentes, E. A. (2007). Beyond acculturation: Immigration, discrimination, and health research among Mexicans in the United States. *Social Science & Medicine* (1982), 65(7), 1524–1535. doi:10.1016/j.socscimed.2007.05.010
- Viruell-Fuentes, E. A. (2011). “It’s a lot of work”: Racialization processes, ethnic identity formations, and their health implications. *Du Bois Review: Social Science Research on Race*, 8(1), 37–52. doi:10.1017/S1742058X11000117
- Ward, J. B., Albrecht, S. S., Robinson, W. R., Pence, B. W., Maselko, J., Haan, M. N., & Aiello, A. E. (2018). Neighborhood language isolation and depressive symptoms among elderly U.S. Latinos. *Annals of Epidemiology*, 28(11), 774–782. doi:10.1016/j.annepidem.2018.08.009