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Depression Among Mexican-Origin Mothers: Exploring the Immigrant Paradox

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Abstract

Objectives: Residential time in the United States appears to be a risk factor for mental health problems among Latinos, according to studies of the immigrant paradox, or a pattern of findings documenting better health for immigrants relative to U.S.-born Latinos. The present study used an acculturative stress model to examine the immigrant paradox with a sample of Mexican-origin mothers.

Method: Mothers [$N = 175$; age = 33.52 (10.75)], who were foreign- or U.S.-born, were categorized as more acculturated or less acculturated based on cluster analyses using demographic and language proficiency variables. The association between acculturative status and depressive symptoms approximately 9 months later was tested with two models: with both cultural stressors (i.e., perceived discrimination, acculturative stress) and cultural assets (i.e., *familismo*, ethnic identity) as mediators, and with the effects of cultural stressors moderated by cultural assets.

Results: Data provide some support for the validity of the mediation model. Less acculturated mothers reported (a) a stronger ethnic identity, which appears to have protected them from later depression, and (b) stronger *familismo*, which increased risk for later depression. In addition, discrimination was negatively related to later depression.

Conclusions: We found support for the mediating role of cultural assets in the link between acculturation and depression, but some associations were in unexpected directions. These findings highlight the complexities of preserving core cultural characteristics among Mexican-origin mothers living in the United States, and the need to consider the context in which cultural processes unfold.

Keywords

Mexican Americans; acculturation; depression; cultural assets; cultural stressors

Depression is among the most common mental health disorders and is particularly prevalent among women with young children (Chaudron et al., 2005). Yet depression in Mexican American (MA) mothers remains understudied, although the Mexican-origin

population in the United States presently numbers more than 34 million (López, 2015). Survey data suggests that in the MA population, risk for mental health problems such as depression varies by immigrant status (Teruya & Bazargan-Hejazi, 2013). Such findings may be understood from an acculturative stress perspective; that is, acculturation often exposes Latinos to stressors that emerge from navigating a new cultural milieu, thereby increasing stress and psychological problems (Berry, 2003). At the same time, core cultural characteristics (e.g., ethnic identity, *familismo*) are preserved during the acculturation process, and these may serve as assets that positively impact psychological well-being in the Latino population (Fuller & García Coll, 2010). But little is known about how cultural assets (i.e., ethnic identity, *familismo*) work alongside cultural stressors (i.e., acculturative stress, experiences of discrimination) to shape depressive symptoms, especially among MA women with young children, a group at high risk for depression (Chaudron et al., 2005). To further understand these mechanisms, the present study examined depression in relation to cultural factors in a sample of MA mothers with varying levels of acculturation.

The Immigrant Paradox and Depression in the Mexican American Population

For decades, researchers have documented a pattern of findings in which poor, immigrant Latinos appear healthier on major indicators of well-being compared to their wealthier, U.S.-born Latino peers (for a review, see Teruya & Bazargan-Hejazi, 2013). This paradox is observed most robustly among Mexican-origin Latinos (thus the terminology, *Mexican Health Paradox*, favored by some; Horevitz, & Organista, 2013). For example, findings from a large regional survey of Mexican Americans in the United States (the *Mexican American Prevalence and Services Survey; MAPSS*) showed that less than one in five immigrant Mexicans experiences a mental health disorder in his or her lifetime, relative to *one in every two* U.S.-born Mexican American (Vega et al., 1998). More recent studies support this robust pattern of higher risk for mental health problems among the U.S.-born relative to immigrants born in Mexico (Salas-Wright, Vaughn, & Goings, 2017). Moreover, some evidence suggests a stronger immigrant paradox for depression than for other mental health disorders (excluding substance abuse); specifically, depression rates show up to a threefold increase and have an earlier onset of disorder for U.S.-born Latinos (Alegria, Canino, Stinson, & Grant, 2006; Breslau, Borges, Hagar, Tancredi, & Gilman, 2009; Grant, Stinson, Hasin, Dawson, Chou, & Anderson, 2004).

The study of depression in MA mothers of young children is especially significant. First, the immigrant paradox for depression, or the disparity in depression that favors foreign-born MA women, appears to emerge or widen during the childbearing years (i.e., 18–29; Breslau et al., 2009). Second, because depression tends to recur, mothers who experience depression during their childbearing years are at higher risk for depression during their child rearing years, especially when their children are young (Riley et al., 2008). Finally, maternal depression undermines healthy child development (Lovejoy, Graczyk, O’Hare, & Neuman, 2000), putting the next generation of MA children at risk for poor psychological health. Indeed, recent analyses based on MAPSS showed that adult children of depressed mothers were at significant risk for substance use disorders (~60% met criteria), even compared with

children of mothers who themselves had substance use problems, highlighting the *uniquely harmful effects of maternal depression* relative to other forms of mental illness. Interestingly, in further support of the immigrant paradox, the associations found in this study held only for the U.S.-born; no association between maternal depression and substance use was found among *immigrant* adult children (Vega & Sribney, 2011).

It is not clear what explains the immigrant paradox, but some hypotheses have been offered, including selective migration (e.g., in which only the most resilient individuals immigrate) and the salmon bias (e.g., in which immigrants return to their countries of origin when they experience health problems); past studies, though limited, have not supported either hypothesis (e.g., Borges et al., 2009; Morales, Lara, Kington, Valdez, & Escarce, 2002). Moreover, methodological limitations have significantly hindered research on the immigrant paradox (Horevitz & Organista, 2013). Specifically, suppositions regarding the paradox must be tempered with recognition of likely but understudied within-group differences based on country of origin, age of migration, gender, mental health disorder, documentation status, and insurance status (Teruya & Bazargan-Hejazi, 2013). For example, a number of studies suggest that among the foreign-born population, mental health prevalence rates differ depending on age at arrival, with immigrants who spend more years of residence—and in particular, their childhood years—in their country of origin showing lower risk for psychopathology (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000; Alegria et al., 2007; Vega, Sribney, Aguilar-Gaxiola, & Kolody, 2004). Depression, specifically, appears to be higher in immigrants who arrived in the United States before the age of 16 than those who arrived at older ages (Vega et al., 2004). In fact, some findings suggest no immigrant paradox at all for Latinos who arrive in the United States before age 6 (Alegria et al., 2007). These variations are believed to reflect the experience of Latinos, within and across generations, as they acculturate to living in the United States (Cook, Alegria, Lin, & Guo, 2009; Portes, Fernandez-Kelly, & Haller, 2005).

The Role of Acculturation

Acculturation refers to the simultaneous processes of adapting to the language, behavior, norms and values of mainstream culture (known as acculturation), and the parallel process of maintaining one's culture of origin (known as enculturation). Theories of acculturation emphasize a developmental and interactive process that may result in change in cognition, affect and behavior on both an individual and group level for both the receiving and the immigrating society of persons (Calzada, Huang, Covas, Ramirez, & Brotman, 2016). Thus, individual members of an immigrant population adopt a strategy that reflects simultaneous movement along the independent dimensions of acculturation *and* enculturation. Importantly, both appear to be linked to mental health (Berry, 2003).

Acculturation to U.S. culture has increasingly been identified as a *risk* factor for Latinos, even as it is necessary, inevitable and in some ways beneficial (e.g., by providing opportunities for employment; Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005). As posited by the acculturative stress model, acculturation increases risk for psychopathology when it exposes Latinos to acculturative stress, discrimination and the erosion of traditional cultural characteristics that diminish social support (Berry, 2003). Mexican-origin Latinos,

more than any other Latino group, are the most likely to experience acculturative stress, or stress that arises during the process of acculturation related to intercultural contact and especially of learning English, and that leads to depression, anxiety and other mental health problems (Hovey, 2000; Finch & Vega, 2003; Torres, 2010). Traditionally conceived as an immigrant phenomenon, acculturative stress is currently recognized as relevant to later-generations as well (Crockett et al., 2007). Indeed, current models of acculturative stress mirror models of acculturation in considering two independent dimensions: the pressure *to* acculturate and the pressure *against* acculturation.

Acculturation may also increase experiences of discrimination, in part because of more frequent interactions with and greater awareness of discriminatory practices by mainstream society (Arellano-Morales et al., 2015; Cook et al., 2009; Pérez, Fortuna, & Alegría, 2008). Discrimination occurs in many forms, including unfair treatment, social exclusion, and physical or verbal harassment, and appears to vary as a function of context (e.g., the receiving community) and characteristics of the individual (e.g., English proficiency; phenotypal characteristics; Pérez et al., 2008). Experiences of discrimination, particularly when personal, contribute significantly to health problems, including depression, both independently and via their influence on acculturative stress (Finch, Kolody, & Vega, 2000; Flores et al., 2008; Torres & Ong, 2010).

Further exacerbating potential risk, later-generation Latinos may be less enculturated, as they lose or fail to develop traditional Latino values and language. According to the *cultural buffers* hypothesis, Latinos who retain core cultural characteristics may be protected against negative outcomes, regardless of acculturation and even in the face of adverse circumstances stemming from poverty and discrimination (Horevitz & Organista, 2013). These core cultural characteristics may be considered cultural assets. In support of this hypothesis, a robust literature shows that a strong ethnic identity, or sense of commitment and belonging to one's culture of origin, attenuates risk for mental health problems, possibly by fostering a high self-esteem (Smith & Silva, 2011). Relatedly, adherence to cultural values such as *familismo*, with its emphasis on the extended family unit as a source of instrumental and emotional support, has been described as protective (Calzada, Tamis-LeMonda, & Yoshikawa, 2013). Based on inconsistencies in the empirical literature, some researchers have called into question whether cultural "buffers," such as ethnic identity and *familismo*, uniformly promote health and well-being (e.g., for all individuals, across all outcomes; Calzada et al., 2013; Smith & Silva, 2011). Despite these uncertainties, cultural assets are widely considered key variables in the study of the immigrant paradox (Hovey, 2000).

Conceptual Model

The guiding hypothesis reflected in the current scholarship is that acculturative status predicts depression depending on the presence of ethnic identity and/or *familismo*. In considering cultural assets as moderators, research can help to identify under what circumstances (e.g., when *familismo* is high) and for whom (e.g., for those with a weak ethnic identity) acculturative status predicts depression. An alternate hypothesis suggests that ethnic identity and *familismo* might be better understood as mediators, rather than moderators, in the link between acculturative status and mental health (Ensel & Lin, 2000;

Harrell, 2000). In considering cultural assets as mediators, research can help to identify why acculturative status predicts depression. That is, acculturative status may predict depression because of its effect on ethnic identity and/or *familismo* (i.e., cultural assets as mediators), possibly because they foster positive cognitions and feelings that promote well-being (Torres, 2010; Torres, Yznaga, & Moore, 2011). In the present study, we consider both possibilities. As illustrated in Figure 1, our conceptual model suggests that acculturative status and maternal depression are linked by cultural stressors (pressure to acculturate, pressure against acculturation, experiences of discrimination) and assets (ethnic identity, *familismo*), and examines whether cultural assets may be better understood as mediators (Model 1) or as moderators (Model 2).

The Present Study

The present study of Mexican American families of young children used data collected at two time points to test a model of the immigrant paradox among MA mothers. As described above and shown in Figure 1, acculturation is expected to predict depression through its association with cultural stressors and assets. To address past methodological limitations (e.g., the use of proxy variables) in the study of acculturation (Berry, 2003), we used acculturative status rather than immigrant status as the independent variable in the model because past studies have shown that the dichotomization of immigrant status based on nativity obscures important variations among foreign-born Latinos based on age at arrival. Moreover, we conceptualized acculturative status broadly, drawing on demographic characteristics (e.g., years in the United States) as well as theoretical models of acculturation that highlight its multidimensional nature (e.g., language competence, cultural knowledge in both the culture of origin and the receiving culture; Zea, Asner-Self, Birman, & Buki, 2003).

We hypothesized that acculturated MA mothers would experience higher levels of perceived discrimination; higher levels of pressure against acculturation; lower levels of pressure to acculturate; lower levels of *familismo* and ethnic identity; and more depressive symptomatology, relative to less acculturated mothers. To understand the associations between study variables, we compared two models: a mediation model in which all of the cultural processes (both stressors and assets) mediate the association between acculturative status and depression, and a moderated mediation model in which cultural stressors predict depression, but the associations are moderated by cultural assets. For the mediation model, we hypothesized that the link between acculturative status and depression would be mediated by cultural processes, and that cultural stressors would be positively associated, and cultural assets negatively associated, with depressive symptomatology among mothers. For the moderated mediation model, we hypothesized that the link between acculturative status and depression would be mediated by cultural stressors, but that the magnitude of the associations would vary based on the presence of cultural assets. Specifically, we expected a weaker link between acculturative status and cultural stressors in the presence of ethnic identity and *familismo*.

Method

Participants

Data was drawn from a study of 175 self-identified Mexican-origin mothers of 3 – 6-year-old ($M = 4.97$; $SD = .74$) children living in a midsized city in the Southwest. Mothers were born in Mexico ($n = 110$; 63%) or the United States ($n = 65$; 37%); mothers born in Mexico had lived in the United States an average of 12.82 (11.01) years. Nearly all (94%) of the children were born in the United States. Mothers were 33.52 (10.75) years on average, and most were married or living with a partner (78%) and had a high school education or higher (61%). However, nearly half (48%) of mothers were living in poverty, according to federal poverty guidelines (household income relative to number of persons in the home). Significant differences were found between mothers who were Mexican-born relative to those who were U.S.-born; Mexican-born mothers were less likely to have completed high school (54% vs. 14%; $\chi^2 = 27.23$, $p < .0001$) and more likely to live in poverty (56% vs. 29%; $\chi^2 = 10.91$, $p = .004$). Demographic characteristics are presented for the full sample in Table 1.

Procedure

Bilingual research assistants (RAs) recruited mothers during community events and adult education classes at social service agencies throughout the local community. To be eligible, mothers had to self-identify as having a Mexican family background, and be the primary caregiver of a 3- to 6-year-old child. Eligible mothers who were interested were given an overview of the project and scheduled for an appointment at the location of her choice; most chose to conduct the interview in their homes. After obtaining informed consent, mothers were administered a set of questionnaires through an in-person interview that lasted 75–90 min. Mothers were paid \$40 for their time. Mothers were then recontacted 6–12 months later and reinterviewed using the same assessment battery. In the present study, we used data on acculturative status and cultural processes from baseline and data on maternal depression from follow-up. There were no differences on any study variables between mothers participated ($n = 120$; 69%) and those who did not participate ($n = 55$; 31%) in the follow-up interview.

Measures

All measures were available from developers in Spanish and in English.

Acculturative status.—To define acculturative status, we used the following survey items from a demographic form: mothers' age, education, occupation, income, marital status, country of birth, age at arrival in the United States. We also used the English-and Spanish-language proficiency items from the Abbreviated Multidimensional Acculturation Scale (AMAS; Zea et al., 2003; described further below).

Experiences of discrimination.—The Perceived Racism Scale for Latinos (PRSL; Collado-Proctor, 1999) is a 34-item self-report measure of the perceived frequency with which a participant has been the target of ethnically/racially motivated discrimination in the past year. It is available in both English and Spanish. Items tap into overt and

covert discriminatory experiences across a variety of contexts, including occupational (e.g., “Because I am Latino, I have been passed up for promotions and benefits at work”), health care (e.g., “I have been treated with disrespect in health care settings because I am Latino”) and public settings (e.g., “Because I am Latino, I have been stopped, ignored, or harassed by the police”). To obtain an overall frequency of perceived discrimination score, individual items (rated from “never” to “several times a day”), were averaged. Internal consistency was high for the PRSL in both languages in the present study (i.e., .80–.88).

Acculturative stress.—The Multidimensional Acculturative Stress Inventory (MASI; Mena, Padilla, & Maldonado, 1987), available in English and Spanish, is a 36-item measure of stress associated with the acculturation process among individuals of Mexican-origin living in the United States. Its subscales include English Competency Pressures (e.g., “I don’t speak English or don’t speak it well”), Spanish Competency Pressures (e.g., “I feel pressure to learn Spanish”), Pressure to Acculturate (e.g., “It bothers me when people pressure me to assimilate to the American ways of doing things”), and Pressure Against Acculturation (e.g., “People look down upon me if I practice American customs”). Participants are asked whether an event occurred in the past three months and if so, to determine the level of associated stress (on a four-point scale from “not at all stressful” to “extremely stressful”). In the present sample, alpha coefficients ranged from .75–.84 in both languages.

Ethnic identity.—The Ethnic Identity scale of the AMAS (Zea et al., 2003) is a 6-item measure of ethnic identity. Items include, “I am proud of being Mexican” and “Being Mexican plays an important part in my life.” and are rated on a four-point scale from “not at all” to “extremely well”. The AMAS was standardized in English and Spanish with Latino university students from various countries of origin and showed adequate psychometric properties. In the present study, alphas were .81 – .96 for the English and Spanish versions.

Familismo.—The Mexican American Cultural Values Scales (MACVS; Knight et al., 2010) is a recently developed scale tapping into several Mexican cultural values including *familismo*. The *familismo* scale has 16 items on a five-point scale that tap into the desirability to maintain close relationships (“emotional support,” 6 items), the importance of tangible caregiving (“obligation to family,” 5 items), and the reliance on communal interpersonal reflection to define the self (“family as referent,” 5 items). The MACVS was developed and its psychometric properties established in a community sample of English- and Spanish-speaking MA families. Internal consistency was high for the MACVS (.84–.90 for English and Spanish, respectively) in the present study.

Maternal depression.—The Center for Epidemiological Studies Depression Scale (CESD; Radloff, 1977) is a 20-item self-report measure of depressive symptoms experienced over the past week (e.g., “I could not get ‘going’”). Items are rated on a 4-point Likert scale ranging from “rarely or none of the time,” to “almost or all of the time.” The Spanish CESD has been widely used and validated with MA adults (e.g., Hovey, 200; Guarnaccia, Angel, & Worobey, 1989). In the present study, alphas were .74 (Spanish) and .88 (English).

Analytic Approach

We accounted for item-level missingness in established measures (AMAS, MASI, MCVAS, CESD, and PRSL had 0.6% missing) by calculating the measure for each subject using up-weighted observed values. There were 3 missing values in the stand-alone items; we accounted for them with full information maximum likelihood.

To define acculturative status, we used a data-driven approach that included survey items (e.g., mothers' age, education, occupation, income, marital status, country of birth, age at arrival in the United States) from a demographic form, and English- and Spanish-language proficiency items from the Abbreviated Multidimensional Acculturation Scale (AMAS; Zea et al., 2003; described further below). Because items were of various types (categorical, ordinal, and numeric) with a complex and nonlinear dependence structure, we applied nonparametric cluster analysis (i.e., rather than standard factor analysis). The goal of cluster analysis is to identify groups of mothers ("clusters") who are similar to each other on a set of measured characteristics (Kaufman & Rousseeuw, 1990). Unlike model-based methods, such as latent class analysis (McCutcheon, 1987), nonparametric cluster analysis does not assume a model for the data, and hence accommodates a wider variety of data scenarios. In the method we used, one first defines a measure of distance or dissimilarity between mothers, and then hierarchically groups them, by successively joining individuals or groups until a set of well-defined and stable clusters emerges. To define this dissimilarity without reference to a probability distribution (e.g., the normal distribution) and without requiring any particular dependence structure (such as linear dependence or conditional independence, as in factor analysis), we used the random forest algorithm. Random forest returns a "variable importance" measure, which quantifies the extent to which each input variable contributed to the resulting dissimilarity matrix (Liaw & Wiener, 2002; Shi & Horvath, 2006). Finally, using *R* software, we used the dissimilarity matrix with an agglomerative clustering algorithm to define groups based on acculturative status.

To test our conceptual model, we fit structural equation models using the Lavaan package in *R*. Models with a comparative fit index (CFI; Bentler, 1990) and Tucker-Lewis index (TLI; Tucker & Lewis, 1973) greater than 0.95, and with root mean square error of approximation (RMSEA; Steiger & Lind, 1980) less than 0.03, were considered acceptable (Hooper, Coughlan, & Mullen, 2008). The acculturative status clusters were used as predictor variables in the conceptual model. To estimate a mediation model (Model 1), we considered the relation between acculturative status and maternal depression, mediated by cultural stressors (i.e., perceived discrimination, pressure to acculturate, pressure against acculturation) and cultural assets (i.e., ethnic identity, *familismo*) using a half-longitudinal design (Cole & Maxwell, 2003) with cross-lagged regression models (Orth, Robins, Widaman, & Conger, 2014). The hypothesis of mediation includes two sets of subhypotheses: 1) that acculturative status affects each of the mediators (perceived racism; pressure to acculturate; pressure against acculturation; *familismo*; ethnic identity), and 2) that each of the mediators affects depression. To estimate the effect of acculturative status on each of the mediators, we regressed each mediator measured at follow-up on acculturative status measured at baseline, controlling for a) a set of covariates (age, poverty status, and education) and b) the same mediator measured at baseline, allowing errors to correlate

between these regressions. To estimate the effect of the mediators on maternal depression, we regressed depression measured at follow-up on each of the mediators measured at baseline controlling for (a) the same set of covariates and (b) depression measured at baseline.

This analytic model exploits the longitudinal design in two ways. First, it allows us to regress variables measured at follow-up on variables measured at baseline to assure temporal ordering. Second, it allows us to include baseline measures of the endogenous variables as covariates to control for confounding bias (e.g., Cook et al., 2009). To test for moderated mediation (Model 2), we included interaction effects between the cultural stressors (i.e., perceived discrimination, pressure to acculturate, pressure against acculturation) and cultural assets (i.e., ethnic identity, *familismo*) in the prediction of maternal depression.

Two participants with the highest depression scores at follow-up were found to be influential outliers, so we used robust maximum likelihood estimation (Yuan & Bentler, 1998) to fit the path models. Alternative robustness approaches that we tried, including dropping data from the two subjects, bootstrap standard errors, and robust regression for the model predicting follow-up depression, gave qualitatively similar estimates, but a wide range of *p* values. For this reason, we report our results with confidence intervals instead of *p* values and hypotheses tests—confidence intervals are more stable, convey more information, and are harder to manipulate than *p* values (e.g., Gardner & Altman, 1986; Kline, 2013; Poole, 2001). To interpret findings, we focus on two characteristics of the confidence interval [CI]: 1) its width and 2) its direction. A CI that includes effects $> .1$ and is overwhelmingly in one direction is considered evidence of a positive/negative association; a CI that includes effects $> .1$ and is in *both* directions is considered evidence of no substantial association; a CI that includes effects $> .1$ and is in *both* directions is considered indeterminate (uninterpretable).

Results

Two clusters of acculturative status were identified. Of all the variables entered into the analyses, the clusters differed most prominently on the following characteristics: country of birth/generation status, age at arrival, Spanish language proficiency, English language proficiency, language use in the home (mother and other family members), married to/living with Mexican spouse or partner, frequency of communication with relatives in Mexico, and frequency of visits to Mexico. Clusters were distinguished primarily by age at arrival to the United States (U.S.-born mothers age at arrival was coded as their chronological age). Cluster 1 ($n = 72$) represented less acculturated participants who were older at age of arrival; predominately Spanish-speaking; more likely to have a Mexican-origin spouse/partner; living in homes where Spanish was predominately spoken; and less likely to communicate with and visit relatives in Mexico. Cluster 2 ($n = 48$) represented more acculturated participants who were U.S.-born or had arrived in the United States as a young child; predominately English-speaking or English/Spanish bilingual; and more likely to communicate with and visit relatives in Mexico. Descriptive statistics for the clusters are shown in Table 1. Cluster membership was similar among the 55 mothers lost to follow-up ($p = .7$), with 24 classified as more acculturated, and 31 classified as less acculturated.

Means and standard deviations of all study variables are presented in Table 2. Relative to less acculturated mothers, more acculturated mothers reported more pressure against acculturation, less pressure to acculturate, less *familismo*, and lower levels of ethnic identity. No differences were found in perceived discrimination or self-reported depressive symptoms.

Results from a test of Model 1 (the mediation model) are presented in Table 3. The model fit statistics showed a good fit: CFI > 0.996; TLI > 0.99; and RMSEA < 0.01. Chi-square tests indicated that the model was an improvement over the baseline model ($p < .001$) and consistent with the observed (unrestricted) covariance matrix ($p = .5$).

As shown in Figure 2, we found evidence of several associations between acculturative status (independent variable) and cultural factors (mediators). Specifically, more acculturated mothers reported more pressure against acculturation (95% CI [0.1, 0.6]), less *familismo* (95% CI [-0.50, 0.02]), lower levels of ethnic identity (95% CI [-0.73, -0.14]), and higher levels of depression (95% CI [-0.02, 0.3]). However, there was no evidence of a relationship between acculturation and perceived discrimination (95% CI [-0.15, 0.09]), and the relationship between acculturation and pressure against acculturation was indeterminate (95% CI [-0.46, 0.13]).

We also found evidence of associations between cultural factors (mediators) and depression (dependent variable). Mothers who reported higher pressure to acculturate (95% CI: [0.01, 0.27]), higher *familismo* (95% CI: [0.00, 0.25]), lower levels of perceived discrimination (95% CI: [-0.39, -0.03]), and lower levels of ethnic identity (95% CI: [-0.32, -0.01]) at baseline reported more depressive symptoms at follow-up. However, the relationship between pressure against acculturation and depression was indeterminate (95% CI: [-0.15, 0.17]).

Results from a test of Model 2 (the moderated mediation model) are presented in Table 4. The model fit statistics showed a good fit: CFI = 0.97, TLI = 0.94, and RMSEA = 0.047. However, Model 1 fit indices were slightly better, and estimates for the moderators in Model 2 were uninterpretable (i.e., had large ranges spanning from negative to positive).

Discussion

The present study of the immigrant paradox used an acculturative stress model to examine the prospective association between acculturative status and maternal depression in Mexican-origin mothers considering a host of cultural factors as potential mediators and moderators. To our knowledge, this is the first study to examine cultural stressors (e.g., pressure to acculturate, pressure against acculturation, perceived discrimination) and assets (e.g., ethnic identity, *familismo*) simultaneously in a test of the paradox using maternal depression as the outcome. It is also one of the few studies to date to use a person-centered approach in studying acculturative status.

Cluster analyses identified two groups of participants based on acculturation variables. The more acculturated mothers were U.S.-born or had arrived in the United States at a young age and were English-speaking, whereas the less acculturated mothers arrived at older

ages and were predominately Spanish-speaking. Notably, 12% of the more acculturated group was Mexican-born, and the less acculturated group included a U.S.-born mother, underscoring the value of moving beyond country of birth as an indicator of acculturative status. Also notable is the association between acculturation and socioeconomic status. The more acculturated and less acculturated groups differed on most background characteristics, with more acculturated mothers reporting higher education levels, employment rates, and income. These differences are in line with current acculturation theory, which emphasizes the demographic context after settlement (Cabassa, 2003). For example, mothers who arrive in the United States as children have more opportunity to learn English, continue their formal education, and participate in the U.S. workforce, and these experiences of inclusion create more frequent and intense intercultural contact that further promotes acculturation. Although we controlled for demographic differences, the effects of socioeconomic status and acculturation likely work in concert to shape mothers' experiences in the United States and are difficult to parse out.

Next, we examined acculturative status as a predictor of depression, drawing on an acculturative stress model to guide our hypotheses. Consistent with the immigrant paradox, we predicted that acculturated mothers would experience more depressive symptoms; instead, we found no differences in maternal depression based on acculturative status. The inconsistent findings may reflect the diverse methodological approaches used to study acculturation, or it may be that foreign-born mothers are increasingly exposed to discriminatory immigration policies (e.g., community raids and deportations of undocumented immigrants) that increase risk for psychological distress. Indeed, deportations were at a historic high in 2013 and 2014 when data collection for the present study took place (Gonzalez-Barrera & Lopez, 2016).

To test the immigrant paradox, we compared a mediation model, in which cultural stressors and assets all serve as mediators in the link between acculturative status and depression, and a moderated mediation model, in which cultural assets attenuate the link between cultural stressors and depression. We found some evidence of mediation but not moderation. Specifically, our results showed that acculturated mothers were less likely to endorse a strong ethnic identity and the cultural value of *familismo*, and that both cultural assets—ethnic identity and *familismo*—were associated with self-reported depressive symptoms one year later, but in opposite directions. Ethnic identity emerged as a protective factor, but *familismo* increased risk for depression, calling into question its categorization as a cultural asset. While *familismo* is commonly described in the literature as a protective factor that buffers Latinos from the negative effects of everyday stressors, some scholars have cautioned against this assumption (Calzada et al., 2013). In a dynamic model proposed by Calzada and colleagues, the influence of *familismo* is neither categorically positive or negative but instead depends on a host of contextual variables, such as poverty, household composition, and documentation status, that interact with familistic attitudes and behaviors. These behavioral manifestations are rarely examined in the extant literature, including in the present study, though they yield both benefits (e.g., help with child rearing responsibilities) and costs (e.g., stress related to caring for extended family members, financial strain from providing financial support). According to the model, it is the cost-benefit ratio that determines the impact of *familismo*. In our study, the costs of engaging in familistic

behaviors may have outweighed the benefits and overwhelmed their internal resources of participant mothers. This hypothesis warrants consideration in future studies.

We also found meaningful associations based on the cultural stressor variables, but none in support of mediation: acculturative status was associated with the pressure against acculturation, but the pressure against acculturation was not associated with later depression. Acculturative status was not associated with either perceived discrimination or the pressure to acculturate, but both of these factors were associated with later depression. The association between pressure to acculturate and depression was positive, whereas the association between perceived discrimination and depression was negative. The surprising negative effect of perceived discrimination on depression contradicts some past research (Gee, Ryan, Laflamme, & Holt, 2006; Moradi & Risco, 2006). Although this finding warrants further investigation, we posit that experiences of discrimination may have prompted the use of active coping skills that ultimately reduced risk for depressive symptoms in mothers. This interpretation is consistent with the notion that some individuals cope with discrimination in positive ways, for example by engaging in educational and advocacy efforts or seeking additional supports (Lee & Ahn, 2012; Miller & Kaiser, 2001; Villegas-Gold & Yoo, 2014). A recent study of Latino and Asian American college students found that experiences of microaggressions were positively associated with the use of coping skills (e.g., problem-solving, seeking emotional support), which were predictive of lower levels of psychological distress (Sanchez, Adams, Arango, & Flannigan, 2018). An assessment of coping is important for future research on the acculturative stress model.

The other notable finding from the present study was that both the pressure to acculturate and a lower ethnic identity predicted depression, suggesting that mothers must acculturate to U.S. cultural norms while maintaining a strong connection to their Mexican identity. Theoretically, biculturalism, or the simultaneous connection with and competencies within both mainstream culture and one's culture of origin, is hypothesized to be the most adaptive strategy (Berry, 2003). Biculturalism appears to be related to better mental and physical health (LaFromboise, Coleman, & Gerton, 1993), lower stress (Berry, 2003), and less intergenerational familial conflict (Coatsworth, Pantin, & Szapocznik, 2002). Particularly for MA mothers who are raising their children in a new cultural context, biculturalism may help them approach parenting in a way that best prepares their children for success in the United States (Calzada, Brotman, Huang, Bat-Chava, & Kingston, 2009).

The present study had a number of limitations. First, the inconsistencies between present study findings and past research undoubtedly reflect the myriad ways in which acculturation is conceptualized and measured in the broader literature, as well as variations in how processes play out across different contexts. The specificity principle of acculturation emphasizes the role of the setting, person, time, process, and domain, and their interactions, as moderators in the study of acculturation (Bornstein, 2017). More research is needed to explore the impact of acculturation on depression with greater consideration for context, as discussed above. Second, although the acculturative status clusters go a long way to summarize the acculturation information available in the dataset, a binary variable cannot capture the subtlety of the multidimensional and dynamic phenomenon of acculturation. Future studies should ensure the use of methods and measures that reflect advances

in acculturation theory. Third, we relied exclusively on mother self-report for all study variables, introducing the possibility of rater bias. Diagnostic interviews, in particular, would be important in future studies of the immigrant paradox because they reduce rater bias and provide a clinically meaningful and psychometrically sound measure of depression. Fourth, our sample was limited to Mexican-origin mothers, limiting the generalizability of findings. As migration from other Spanish-speaking countries (e.g., Guatemala, El Salvador) becomes more common, these sources of heterogeneity become increasingly important to consider in establishing the validity of our conceptual model for the broader Latino population. Finally, we had a modest sample size and only two time points, making it difficult to achieve statistical precision from the complex models tested in this study.

Nonetheless, our study is the first to our knowledge to examine depressive symptoms among MA mothers of young children as a function of both cultural stressors and assets. Our findings provide mixed support for the notion that acculturation places mothers at risk for depression (i.e., the immigrant paradox). Instead, it seems that while more acculturated mothers may be more vulnerable to depression because they tend to have lower ethnic identity, less acculturated mothers may be more vulnerable to depression because they tend to be highly familistic. While both ethnic identity and *familismo* may serve to strengthen social support and access to emotional and instrumental resources, it appears that they only serve as assets under certain circumstances (Calzada et al., 2013; Umaña-Taylor, Zeiders, & Updegraff, 2013). To prevent the high levels of depression observed among MA mothers of young children, ongoing research must examine how MA mothers develop and maintain these cultural assets in ways that yield more benefits than cost.

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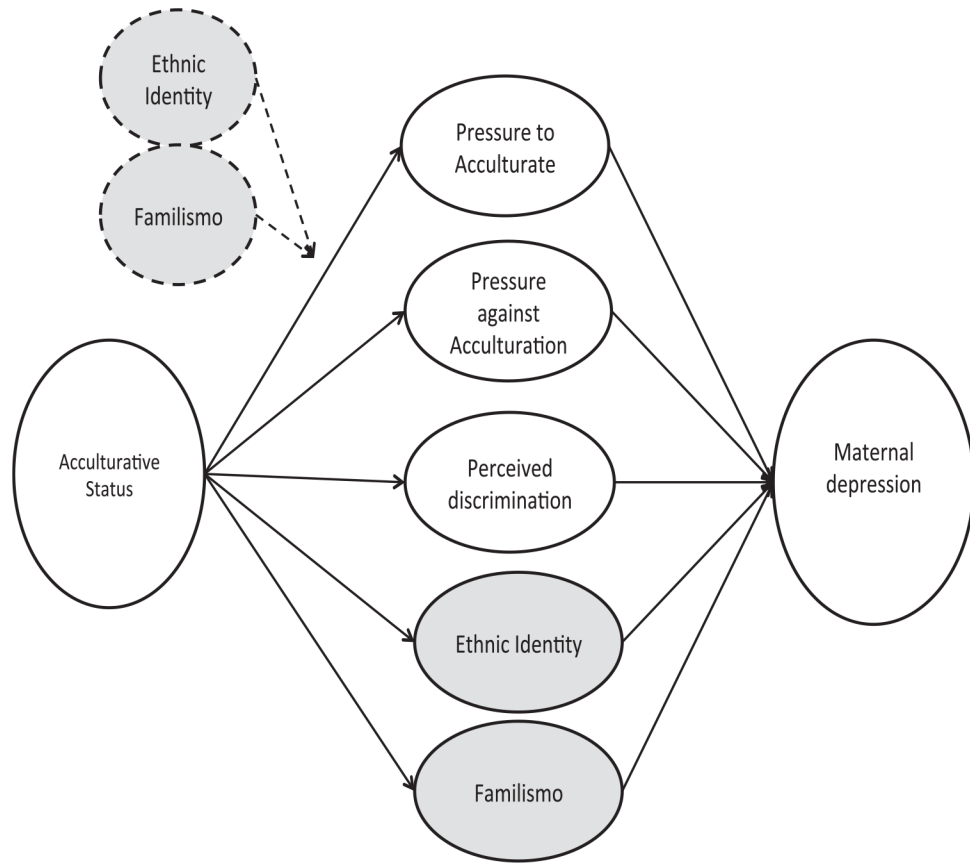


Figure 1. Conceptual model linking acculturative status and maternal depression.

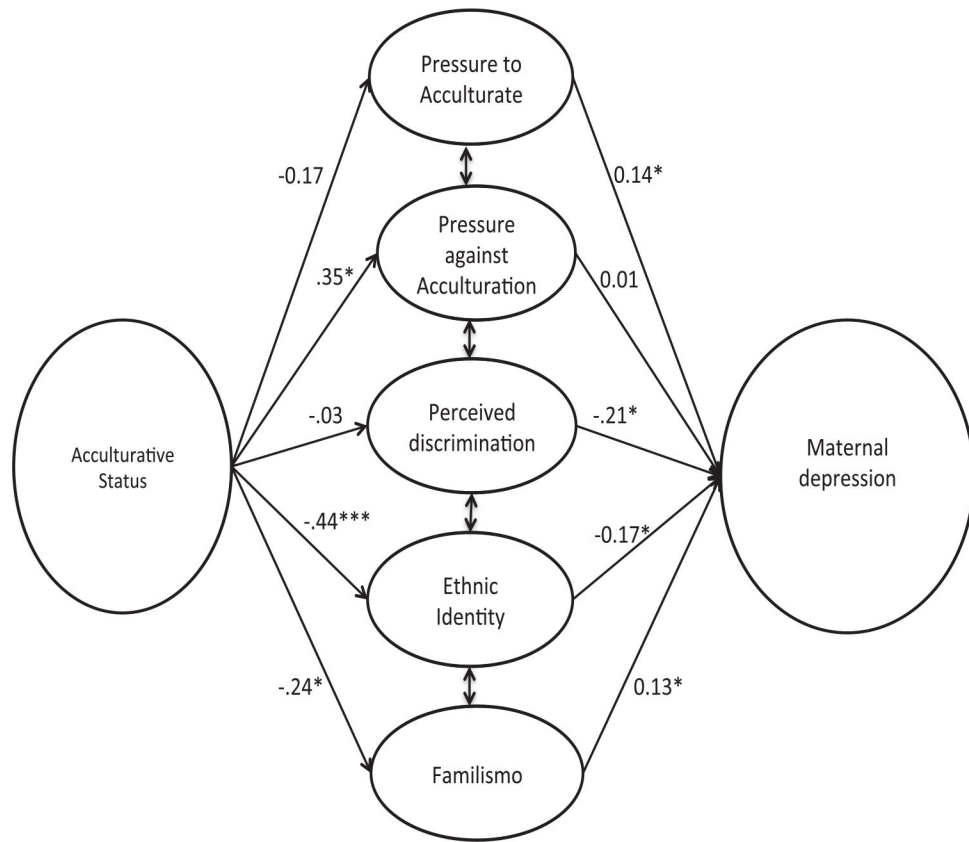


Figure 2. Results of a mediated model linking acculturative status and maternal depression. * $p < .05$. *** $p < .001$.

Table 1

Demographic Characteristics of the Sample, by Acculturative Status Cluster

| Demographic characteristics | Full sample | | More acculturated | | Less acculturated | | p value |
|----------------------------------|-------------|------|-------------------|------|-------------------|------|---------|
| | M | SD | M | SD | M | SD | |
| Age | 32.41 | 6.55 | 32.93 | 7.75 | 32.07 | 5.69 | .49 |
| Household size | 4.85 | 1.47 | 4.71 | 1.70 | 4.94 | 1.30 | .39 |
| # adults in household | 2.18 | .76 | 2.19 | .95 | 2.17 | .61 | .86 |
| # children in household | 2.66 | 1.17 | 2.47 | 1.04 | 2.78 | 1.25 | .16 |
| Age at arrival (if foreign-born) | 20.24 | 6.34 | 8.60 | 7.40 | 21.06 | 5.44 | .00 |
| | % | | % | | % | | |
| Born in Mexico | 64% | | 12% | | 99% | | .00 |
| Married | 54% | | 62% | | 49% | | .19 |
| Less than high school education | 38% | | 10% | | 56% | | .00 |
| Employed outside home | 53% | | 71% | | 42% | | .00 |
| Lives in poverty | 37% | | 15% | | 51% | | .00 |
| Uses Food Stamps | 44% | | 34% | | 50% | | .13 |
| Uses public health insurance | 76% | | 64% | | 83% | | .03 |
| Language use at home (Spanish) | 55% | | 6% | | 88% | | .00 |
| Language use at home (English) | 13% | | 33% | | 0% | | .00 |

Note. Group differences based on t-tests and chi-squared tests.

Table 2

Descriptive Statistics of Study Variables, by Acculturative Status Cluster

| Study variables | Full sample | | More acculturated | | Less acculturated | | p value |
|--|-------------|-----|-------------------|-----|-------------------|-----|---------|
| | M | SD | M | SD | M | SD | |
| Cultural Stressors | | | | | | | |
| Perceived discrimination | 1.49 | .39 | 1.52 | .48 | 1.48 | .32 | .84 |
| Acculturative stress: Pressure to acculturate | 1.02 | .71 | .54 | .41 | 1.34 | .69 | .00 |
| Acculturative stress: Pressure against acculturation | .78 | .52 | .96 | .69 | .66 | .32 | .01 |
| Cultural Assets | | | | | | | |
| <i>Familismo</i> | 4.24 | .47 | 4.11 | .52 | 4.32 | .42 | .03 |
| Ethnic identity | 3.70 | .46 | 3.59 | .38 | 3.78 | .49 | .00 |
| Maternal depression | 1.82 | .30 | 1.83 | .31 | 1.81 | .29 | .60 |

Note. Group differences based on t-tests and chi-squared tests.

Table 3
Standardized Regression Estimates and Confidence Intervals From the Mediation Model (Model 1)

| Variables at baseline | Variables at follow-up | | | | | | |
|--------------------------------------|------------------------|----------------------|----------------------|----------------------|---------------------|----------------------|--|
| | PD Est. [95% CI] | PaA Est. [95% CI] | PtA Est. [95% CI] | Fam Est. [95% CI] | EI Est. [95% CI] | Dep Est. [95% CI] | |
| Acculturative status | -.03 [-.16; .09] | .35* [.10; .61] | -.17 [-.47; .13] | -.24* [-.50; .02] | -.44* [-.73; -.14] | .14* [-.02; .30] | |
| Perceived discrimination (PD) | .41* [.23; .59] | | | | | -.21* [-.39; -.03] | |
| Pressure against acculturation (PaA) | | .44* [.19; .68] | | | | .01 [-.15; .17] | |
| Pressure to acculturate (PtA) | | | .62* [.41; .82] | | | .14* [.01; .27] | |
| <i>Familismo</i> (Fam) | | | | .50* [.32; .69] | | .13* [.00; .25] | |
| Ethnic identity (EI) | | | | | .28* [.00; .55] | -.17* [-.32; -.01] | |
| Maternal depression (Dep) | | | | | | .40* [.22; .57] | |

Note. Models controlled for maternal age, poverty status and education level. Significant estimates indicated by an asterisk.

Table 4 Standardized Regression Estimates and Confidence Intervals From the Moderated Mediation Model (Model 2)

| Variables at baseline | Variables as follow-up | | | |
|--------------------------------------|------------------------|----------------------|----------------------|----------------------|
| | PD Est. [95% CI] | PaA Est. [95% CI] | PtA Est. [95% CI] | Dep Est. [95% CI] |
| Acculturative status | -.03 [-.15; .09] | .36 [.11; .61] | -.17 [-.46; .13] | .14* [-.03; .31] |
| Perceived discrimination (PD) | .41 [.23; .59] | | | -.23* [-.43; -.03] |
| Pressure against acculturation (PaA) | | .43 [.19; .68] | | .04 [-.19; .26] |
| Pressure to acculturate (PtA) | | | .62 [.42; .82] | .14* [.02; .25] |
| <i>Familismo</i> (Fam) | | | | .13* [.01; .26] |
| Ethnic identity (EI) | | | | -.15* [-.32; .03] |
| PaA × Fam | | | | .25 [-.19; .70] |
| PaA × EI | | | | -.17 [-.71; .37] |
| PtA × Fam | | | | -.01 [-.25; .24] |
| PtA × EI | | | | -.12 [-.32; .08] |
| Maternal depression (Dep) | | | | .41* [.23; .59] |

Note. Models controlled for maternal age, poverty status and education level. Significant estimates indicated by an asterisk.