

Do *ataque de nervios* and *padecer de nervios* function as culture-bound syndromes and markers of distress among Mexican immigrant mothers? A mixed-method analysis

by

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Dedication

To the belief that scholarship can be utilized as a form of advocacy.

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I share this accomplishment with the numerous people who have provided me with unyielding support to pursue my personal and professional interests. I have worked with excellent mentors who have invested in my professional development and challenged me to be a better researcher, advocate, and clinician. Joe— thank you for making a serious and consistent investment in my growth as a scholar. I have benefited from your expert guidance and rigorous approach to *research*. Jim— you have been one of my most consistent supporters who from the initial recruitment call in 2004 graciously extended your resources asking for nothing in return. You have left an immense imprint. Thank you sincerely. Mike— thank you for modeling how to advocate from the ivory tower and how to work towards institutional change. Rosie and Lorraine thank you both for being active supporters of my interest in community-based research and sharing your insights. To the cultural syndromes lab (Sara, Nico, Crosby, Nataly, Allison, and Priscilla)—I am truly indebted to you. Your commitment and hard work is responsible for the completion of this project. The ability to mentor you in some capacity was a highlight of my graduate training. Donna, Martha, Irma, and Susan—thank you for entrusting me to represent the views and experiences of the women you care so deeply about. To RTK – your instrumental and emotional support has been invaluable. You continue to be a source of inspiration and laughter. I am grateful to have shared this process with you. *A mi familia- millones de gracias por su apoyo eternal. Este éxito es de*

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List of Abbreviations

ATQ Ataque de nervios

PNRV Padecer de nervios

ABSTRACT

Do *ataque de nervios* and *padecer de nervios* function as culture-bound syndromes and markers of distress among Mexican immigrant mothers? A mixed-method analysis

by

Carmela Alcántara

Chair: Joseph P. Gone

Ataque de nervios (ATQ) and *padecer de nervios (PNRV)* are considered culture-bound syndromes with overlapping symptoms of anxiety, depression, and dissociation that are popularly endorsed among Latina/os from Latin America and the Caribbean. *ATQs* are acute experiences involving both typical and atypical panic symptoms, whereas *PNRV* appears to be a diffuse descriptor of nonspecific distress. These affective illnesses have inconsistent associations with mood and anxiety disorders, and vary in function and phenomenology by Latina/o ethnic group. Some researchers suggest that level of acculturation may be the most significant indicator of a tendency to present with *ATQ/PNRV*, but few empirical studies test this hypothesis. Through the use of mixed methods (i.e., integration of quantitative and qualitative methods), this two-study dissertation explores the extent to which *ATQ* and *PNRV* are culture-bound syndromes with identifiable signs and symptoms that are reliably associated with psychopathology and distress among a community sample of Mexican immigrant mothers. Study 1

examined the relationships between acculturative stress, U.S. American/Latino acculturation, anxious predispositions, psychological distress, and lifetime history of *ATQ/PNRV*. Study 2 explored the meanings of *ATQ* and *PNRV* among a sub-sample of respondents with positive histories of *ATQ/PNRV*. In Study 1, survey batteries were administered to the full sample ($N = 82$). In Study 2, a semi-structured psychiatric interview and a qualitative interview about general beliefs of *ATQ/PNRV* were administered to the sub-sample ($n = 22$). Hierarchical logistic and linear regression analyses and thematic content analysis were used. Results from Study 1 indicate that lifetime *ATQ* and *PNRV* were related experiences that were not consistently predictive of distress, with the exception of *PNRV* which was associated with psychological distress. Acculturation was not observed to be a statistically significant predictor of *ATQ/PNRV*. Results from Study 2 suggest that *ATQ* and *PNRV* are not statistically associated with psychiatric disorder. There was also no clear and consistent majority consensus on the signs, symptoms, and causes of *ATQ* and *PNRV*. Thus, *ATQ* and *PNRV* are better conceptualized as interrelated idioms of distress rather than patterned and culturally-bounded experiences of psychopathology. Implications for the study of culture-bound syndromes and psychiatric nosology are discussed.

CHAPTER I

Introduction

In the past 30 years, major advancements have been made in the fields of psychiatry, anthropology, and psychology toward the study and understanding of mental disorders between and within geographic spheres (e.g., East/West), national economic indicators (e.g., developing/developed), socioeconomic statuses (e.g., low/high), genders (e.g., female/male), age cohorts (adolescents/adults), ethnic groups (e.g., Black Caribbean/African American), racial/ethnic categories (Latinos/non-Latino Whites), and tribal regions (e.g., Southwest/Northern Plains), to provide a few examples (e.g., Alegria et al., 2004; Beals et al., 2005; Breslau, Kendler, Aguilar-Gaxiola, & Kessler, 2005; Kleinman, 1988; Kleinman & Good, 1985; Williams et. al., 2007; World Health Organization, 2004). It is within this context that professional psychology and psychiatry appeared to take an unprecedented step toward the consideration of culture in diagnostic formulation and classification with the inclusion of Appendix I to the *Diagnostic and Statistical Manual of Mental Disorders –Fourth Edition (DSM-IV)*; American Psychiatric Association [APA], 1994; Lopez & Guarnaccia, 2000).

Appendix I in the *DSM-IV* provides both an outline for cultural formulation and a glossary of *culture-bound syndromes* that lists 25 recurring, culture-specific patterns of abnormal and distressing behavior that are likely to be encountered within clinical practice settings in North America (APA, 1994). These culture-specific experiences may or may not map onto psychiatric disorders. The term *culture-bound syndrome* as used in the *DSM-IV* then refers to a constellation of symptoms that are patterned and explainable

through a cultural framework (as discussed in Lewis-Fernandez, Guarnaccia, & Ruiz, 2009). Implicit to this definition is a link between a specific patterning of symptoms and pathology. Subsumed within the glossary of *culture bound syndromes* in the DSM are local terms for describing distress that are referred to as idioms of distress. An idiom of distress is an anthropological term that refers to a broad range of expressions of negative feeling states (e.g., anxiety, apprehension, insecurity, etc.; Nichter, 1981) that are commonly endorsed among members of a specific community. Unlike culture-bound syndromes, idioms of distress are not presumed to be patterned or pathological in nature. Of note, the glossary in *Appendix I* groups both culture-bound syndromes and idioms of distress under one heading, and represents a select list of these experiences without clear explanation of the guidelines by which syndromes or idioms were included or excluded (Hughes, 1998). This conflation has led to critiques that the very existence of the glossary of culture-bound syndromes promotes conceptual muddling among the categories (Ancis, Chen, Schultz, 2004).

Another major critique of the Appendix I in the DSM concerns the extent to which idioms of distress are fashioned as culture-bound and syndromal experiences (see Choudhury, & Kirmayer, 2009 for brief discussion about critiques of culture-bound syndromes). The notion of boundedness, in particular, is widely disputed because of the reliance on historical beliefs that presumed that non-Euro Western communities were socially isolated and thus any experience that departed from those endorsed among an identified reference group (i.e., Euro-Westerners) were likely to be considered non-normative and culture-specific, with early variants of culture-bound syndromes referring to “ethnic neuroses/psychoses” (as discussed in Lewis-Fernandez et al., 2009). Similarly,

the glossary of culture-bound syndromes is also criticized for its exclusion of experiences that could be considered specific to Euro-Western developed/industrialized societies such as bulimia nervosa, multiple personality disorder, and chronic fatigue syndrome (e.g., Hughes, 1998; see Keel & Klump, 2003 for meta analytic review of anorexia nervosa and bulimia nervosa). Alternative terms such as popular illness, folk illness, cultural syndromes, culture-related syndrome, and culturally-interpreted symptom have been offered to contest the notion of boundedness (e.g., Hughes, 1998; Low, 1985, Guarnaccia, Lewis-Fernandez, & Rivera Marano, 2003), although the term culture-bound syndrome remains highly popular today.

Placing these critiques aside, the inclusion of the *Appendix I* represented the first time the notion that culture and cultural context could modulate the phenomenology and assessment of psychopathology formally entered conventional psychiatric discourse in a text with widespread dissemination, despite substantive research in decades past in support of the role of culture in psychopathology (for reviews see Kleinman, 1988; Kleinman & Good, 1985; Lopez & Guarnaccia). On one hand, the inclusion of Appendix I was heralded as progressive and yet on the other hand Appendix I, and the DSM-IV more broadly, was highly criticized for its superficial treatment of culture. This was one of the major critiques brought forth by the National Institute of Mental Health Group on Culture and Diagnosis who contested the limited coverage of their recommendations in the DSM (e.g., commentary on cultural considerations of diagnostic categories, placement of cultural formulation in introduction, dispersion of cultural-specific idioms throughout body of text rather than free-standing as in a “museum of exotica”). The limited coverage had drastic implications for the extent to which *emic* and *etic*

perspectives¹ could mutually inform a text that was purported to be atheoretical, descriptive, and universal from the outset (Mezzich et al., 1999). To many in the Culture and Diagnosis Work Group, the published *DSM* was an ill attempt to consider *emic* and *etic* perspectives equally and represented instead an historical product that reflected the relegation of culture to the periphery while reductionist and universalist perspectives were privileged. Nonetheless, the publication of the DSM-IV (along with inclusion of Appendix I) resulted in the proliferation of cultural psychiatric research in the 1990s and 2000s about culture-bound syndromes, such as *ataque de nervios* and *nervios*. *Ataque de nervios* and *nervios* will be treated herein as culture-bound syndromes as a means to engage with the extant empirical work that has considered these experiences as syndromes.²

Throughout Latin America and the Caribbean, *ataque de nervios* and *nervios* are identified as idioms of distress with overlapping symptoms of anxiety, depression, and dissociation (*DSM-IV-TR*; APA, 2000). *Ataques de nervios* [“attack of nerves” in English] are characterized as acute syndromal experiences involving both typical and atypical panic symptomatology such as loss of control, screaming, crying, rage, aggressiveness, amnesia, and ensuing sense of relief (APA; Guarnaccia, De la Cancela, & Carrillo, 1989; Lewis-Fernandez et al., 2002). In contrast, *nervios* [“nerves” in English] appears to be a diffuse descriptor of general psychological distress used by many Latina/o

¹ In psychiatric cultural research, the *emic* perspective privileges the scientific pursuit of within-culture constructs with an end goal of understanding concepts *within* a cultural mode, whereas the *etic* perspective opts for the scientific pursuit of “objective” or universal constructs with the end goal of understanding phenomena common to humankind by drawing comparisons *between* cultures (Berry, 1969; Brislin, Lonner, & Thorndike, 1973).

² Of note, the terms culture-bound syndrome, cultural syndrome, or idiom of distress will be used throughout the literature review in accordance with the term preferred in the empirical studies reviewed.

ethnic groups, with variants of the term used in other cultural groups as well (e.g., *nevra* among Greeks, Clark, 1989; nerves among African American women living in the south, Camino, 1989; nerves among a geriatric sample of primary care recipients, Dahlberg et al., 2009; *nerfiz* in urban Egypt, Krieger, 1989). *Padecer de nervios* is considered the state of “suffering from nervios”. A significant proportion of Latina/os from clinical and community samples report experiences of *ataque de nervios* and *nervios* generally, with the idioms serving as markers of significant distress, and in some cases specific psychiatric disorders. This implies that these categories of experience are heterogeneous in nature and have inconsistent associations with Western derived diagnostic categories. Previous investigations have routinely suggested that degree of acculturation to Latino ways of life may serve as the most significant indicator of a tendency to present and experience distress in culturally consonant terms. Acculturation variables have also been thought to be important in explaining the heterogeneity of the cultural syndromes, yet empirical investigations directly testing this hypothesis are sparse.

Answering calls to investigate cultural syndromes on their own terms (Guarnaccia & Rogler, 1999), this two-study dissertation used quantitative and qualitative methods to examine the extent to which *ataque de nervios* and *padecer de nervios* are culture-bound syndromes with identifiable signs and symptoms that are reliably associated with psychopathology and distress among a community sample of Mexican immigrant mothers living in the United States. Study 1 used quantitative methods to examine (a) the extent to which acculturative stress, Latino/ U.S. American acculturation, anxious predispositions (i.e., anxiety sensitivity, trait anxiety) were predictive of lifetime history of *ataque de nervios* and *padecer de nervios*, and (b) the extent to which *ataque de*

nervios and *padecer de nervios* add incremental validity in explaining acculturative stress and psychological distress beyond anxious predispositions. Study 2 used mixed methods—integration of quantitative and qualitative methods— to explore the meanings of *ataque de nervios* and *padecer de nervios* and their relation to psychiatric disorder among a sample of respondents with positive histories of *ataque de nervios*, and *padecer de nervios*.

Investigations into culture bound syndromes such as *nervios* and *ataque de nervios* present unique opportunities to shed light on the cross-cultural equivalence and validity of DSM diagnostic categories and Euro-Western conventional psychological constructs in other cultural groups because they begin with emic descriptors or cultural syndromes and examine them in conjunction with purported etic or universal psychiatric disorders and constructs. This is particularly important because of the dangers of committing a *category fallacy*: imposing Western diagnostic categories on other groups in the absence of compelling empirical evidence of their validity (Kleinman, 1977). In contrast, there is also the danger of extreme cultural relativism, which renders the experiences of any two cultural groups incommensurable. Either of these two extremes could result in over or under pathologization of individuals and groups. In the absence of rules and guidelines for relating culture bound syndromes and psychiatric disorders, maintaining the *integrity* of the culture bound syndrome is paramount (Guarnaccia & Rogler). Thus, rather than reducing emic categories to extant universal disorders and concepts, the purpose of this dissertation was to study emic descriptors alongside etic constructs to examine possible points of convergence and divergence.

Research studies indicate that Latina/os have psychiatric prevalence rates that are equal to or less than their White U.S. American counterparts yet they are more likely to be persistently ill due to disparities in access to, use, and quality of mental health care (e.g., Miranda et al., 2008). Given that one in three U.S. residents will be Latina/o by 2050 (U.S. Census, 2008), research into pathways to psychiatric morbidity and treatment seeking among Latina/os are critical to eliminating health disparities in the 21st century. These demographic changes also suggest that an increasing supply of culturally competent clinical services will be needed to meet the demand for services; services that incorporate culturally-congruent and relevant concepts and terms concerning mind, body, and disorder will increase likelihood of utilization (e.g., Mezzich, Ruiz, & Munoz, 1999; Vega et al., 2007 for examples specific to Latino mental health). Thus, studies aimed at elucidating culture-bound syndromes and ways in which they may or may not map onto psychiatric disorders are critical to the creation of culturally competent services that work towards eliminating disparities in access to, use, and quality of mental health care services for Latina/os, and thereby improving population health.

CHAPTER II

Literature Review

The literature review is organized in the following manner. First, a brief review of Latino psychiatric epidemiology is provided as a way to draw attention to important questions concerning equivalence and validity of DSM nosology in these communities, with a particular emphasis on anxiety in Mexican communities. The diagnostic class of anxiety disorders was selected for review due to the availability of prior research on the ways in which *ataque de nervios* convergences and divergences from anxiety disorders in particular relative to the other disorder classes. Next, literature from anthropological and psychological studies on *nervios* and *ataque de nervios* is presented. Last, existing approaches to the study and measurement of acculturation as well as current disputes within the field and the related concept of acculturative stress are reviewed. The section concludes with a summary that synthesizes the rationale for the present study.

Latina/o Psychiatric Epidemiology: A Focus on Anxiety Disorders

Social epidemiology research has shown that foreign-born immigrants exhibit lower if not equal rates of physical health and mental health conditions relative to their White U.S.-born counterparts, despite contending with a range of acculturative stressors and living within disadvantaged socioeconomic positions. This protective effect of nativity has often been termed the “immigrant paradox” (e.g., Burnam, Hough, & Escobar, 1987). However, as an immigrant’s time in the U.S. increases, the protective effect of nativity has been shown to decline resulting in poor mental and physical health

outcomes due to what some refer to as the “acculturation hypothesis” (e.g., Vega, Kolody, Aguilar-Gaxiola, Alderete, Catalano, Caraveo-Anduga, 1998). It has also been shown that the effect of socioeconomic status, length of residence in U.S., and acculturative stress on psychological distress among immigrants is greater than the effect observed on physical health (Williams & Mohammed, 2008), meaning that contextual variables play a substantive role in understanding psychiatric risk profiles. Whether physical and mental health declines or improves with length of residence in host country, the magnitude of the change, and the risk or protective factors associated with the mental/physical health over time among Latina/os living in the U.S. is a public health concern given existing health and mental health disparities and the growing Latina/o population in the U.S (Miranda et al., 2008). Latest U.S. Census (2008) statistics indicate Latina/os compose 16.03% of the U.S. population and are expected to double in size by 2050. The past decade has seen an exponential growth in the amount of research available on the psychiatric epidemiology of heterogeneous Latina/o population. This research has allowed the opportunity to explore the extent to which the immigrant paradox and acculturation hypothesis hold true across Latina/os. Major findings are reviewed below in an effort to provide a snapshot of mental health status among Latina/os.

The National Latina/o and Asian American Study (NLAAS) was the first large-scale epidemiological study to assess prevalence rates of psychiatric disorders and to identify social and contextual determinants of psychiatric morbidity in a nationally representative sample of English-speaking and Spanish-speaking Latina/o adults (e.g., Alegria et al., 2004; Alegria, Mulvaney-Day, et al., 2007). Thus, this is one of the first

studies that allow for a systematic examination of Latina/o psychiatric risk profiles across ethnic groups, generational statuses, and socioeconomic statuses. Results from the NLAAS indicate that Latina/os are indeed a heterogeneous group with differential psychiatric risk profiles across ethnic groups.

Latina/os have been found to be at lower risk for psychiatric disorder relative to non-Latino Whites (Alegria, Canino, et al., 2008). Approximately 28% of Latino males and 30% of Latina females met criteria for any lifetime psychiatric disorder. Rates for psychiatric morbidity were found to vary by ethnicity such that Puerto Ricans had the highest lifetime and 12-month prevalence of psychiatric disorder in comparison to Mexicans, Cubans, and Other Latina/os. A protective effect for nativity was observed such that US-born Latina/os were more likely to meet criteria for a lifetime mental disorder than foreign-born Latina/os (e.g., Karno et al., 1987 and Alegria, Canino, Stinson, & Grant, 2006). Both lifetime and 12-month prevalence of psychiatric disorder were higher among third-generation respondents than first and second generation. Self-ratings of English proficiency were associated with increased risk for overall psychiatric disorder, with the exception of depressive disorders among females and anxiety disorders among males. The apparent protective effect of nativity, however, varied by Latino ethnic group and psychiatric disorder (Alegria, Canino, et al., 2008). The protective effect of nativity was consistently observed among the Mexican subgroup for anxiety and depressive disorders, and for Mexican, Other Latino, and Cuban groups for substance use disorders. The immigrant paradox was not observed among the Puerto Rican subgroup.

Cook and colleagues (2009) explored pathways by which time spent in the U.S. was associated with risk for past year psychiatric disorder among a nationally

representative sample of Latina/os. The authors found evidence in support of the acculturative hypothesis. Latinos living in the U.S. for fewer than 10 years had lower prevalence of 12-month psychiatric disorder when compared to U.S-born Latinos and Latinos residing in the U.S. for more than 11 years in unadjusted analyses. However, these differences largely disappeared once all model covariates were entered, with the exception of the relationship between living in the U.S. for at least 21 years and presence of past year anxiety disorder. Of note, Latino immigrants reported less perceived discrimination and family conflict in relation to U.S. born Latinos. Further, changes in levels of perceived discrimination and family conflict (from U.S. born to Latino immigrants in U.S. for at least 11 years) resulted in reduction in predicted probabilities of psychiatric disorder in past-year.

Anxiety among Latina/os. Prevalence rates for any anxiety disorder were 14.7% for Mexican-Americans, in comparison to 21.61% for Puerto Ricans, 15.71% for Cuban Americans, and 14.16% for Other Latina/os (Ortega, Feldman, Canino, Steinman, & Alegria, 2007). Among Mexican Americans, Karno et al. (1987) found that rates of anxiety disorders ranged anywhere from 13.7% to 22.6% depending on US-born or immigrant status. In Vega et al.'s (1998) study with urban and rural Mexican Americans in California, the prevalence rates of phobias and generalized anxiety disorder (GAD) were equal to or higher than rates in the general population. Vega and colleagues also found higher rates of affective and anxiety disorders in women in the sample studied regardless of residential location. Latina/os have also been found to be at greater risk for PTSD in comparison to non-Latina/o white counterparts (e.g., Galea et al., 2002; Pole, Best, Metzler, & Marmar, 2005). It also appears that GAD may be a commonly assigned

diagnosis followed by panic disorder for Latina/o immigrants treated for anxiety (Street et al., 1997 in Hirai, Stanley, & Novy, 2006). Interestingly, somatic symptoms were found to be better predictors of GAD severity than cognitive symptoms. The centrality of somatic symptoms in patients with a history of anxiety disorders was also documented in Diefenbach, Robinson, Tolin, and Blank's (2004) among elderly Puerto Ricans.

Approximately 40% of Mexican immigrants with fewer than 5 years in the United States report clinically significant and impairing levels of anxiety (Hiott, Grzywacz, Arcury, & Quandt, 2006). Hiott and colleagues also found that higher levels of anxiety were associated with social marginalization in men, and stress from separation from family in women. High levels of anxiety were also documented by Hovey and Magana (2002) in their study with Mexican immigrant farm workers. Low self-esteem, ineffective social support, low religiosity, low agreement with the decision to live as a migrant farm worker, and greater acculturative stress were associated with higher levels of anxiety. No significant differences between genders were found along any of the assessed variables. Anxiety disorders are also associated with higher psychological distress, suicidality, service utilization, and lower perceptions of health status and instrumental functioning among older Puerto Rican primary care patients (Diefenbach et al., 2004).

Presence of anxiety disorders has been associated with chronic health conditions. In a recent study of comorbid psychiatric and chronic physical illness among Latina/os, Ortega et al. (2007) found that the lifetime prevalence of any anxiety disorder was associated with self-reported diabetes and cardiovascular disease across all Latina/o ethnic groups after controlling for immigration status, and number of years in the U.S. Anxiety disorders (and not depression) were associated with cardiovascular disease for

Puerto Ricans, diabetes for Cubans, and diabetes and cardiovascular disease for Mexicans. Depression was associated only with asthma across the entire sample. Comorbid anxiety and depression was also associated with asthma.

Alegria, Shrout and colleagues (2007) identified a host of social risk factors associated with past year anxiety disorder. These include family burden, family cultural conflict, perceived discrimination, never being married, and unemployment. Self-perceived high social standing, religious attendance less than once per week, and less than \$15,000 household income were identified as protective factors. Protective effects disappeared after controlling/adjusting for age, and other contextual and status variables (i.e., immigration, enculturation, acculturation, social status, family, variables). These results highlight that factors beyond nativity are influential in leading to heightened or reduced risk of anxiety disorder among Latina/os.

Summary. The prevalence studies reviewed above highlight that Latina/os are heterogeneous with differential psychiatric risk profiles. These large scale psychiatric epidemiology studies provide us with a wealth of information, however, they begin with the critical assumption that the experience of mental distress is universally manifested and can be similarly diagnosed³. The reality is that we know *some* about the patterning of mental disorder across cultures, but we do not know enough to blindly privilege psychiatric categories over other local categories of suffering and assume that our data are accurate depictions of prevalence of abnormal experiences of the mind and body. The literature on *nervios* and *ataque de nervios* are perfect examples of ways in which our

³ Noteworthy exception includes the NLAAS, which included assessment of idioms of distress (e.g., *ataque de nervios*, *neurasthenia*) alongside diagnostic categories (see Alegria, Takeuchi, et al., 2006).

understanding of psychiatric prevalence rates in Latina/os may be convoluted once we consider the meaning, function, and phenomenology of these cultural syndromes, especially when making sense of rates of mood and anxiety disorders

Cultural Syndromes: Nervios and Ataque de Nervios

Nervios and *ataque de nervios* are both culturally meaningful idioms of distress among Latina/os from the Caribbean and much of Latin America (APA, 2000). Early anthropological research established a link between the experience of *nervios* and/or *ataque de nervios* and family disruption or a breakdown in family relationships (Guarnaccia & Farias, 1988; Guarnaccia, De la Cancela, et al., 1989; Guarnaccia, Rivera, Franco, & Neighbors, 1996; Low, 1981). *Nervios* is understood to be a culturally meaningful way of expressing physical and psychological disturbance with variations in folk explanations of etiology (personal, familial, social, and political) and cultural meanings dependent on specific Latina/o ethnic groups (Low, 1994). Similarly, the experience of *ataque de nervios* has been linked to expressions of anger and grief that are a result of ruptures in family networks, the migration-induced experience, and concerns about relatives left in the country of origin (Guarnaccia et al., 1989; Guarnaccia et al., 2003). *Nervios* and *ataque de nervios* can also be viewed as somatic metaphors or commentaries about suffering and perceived lack of control (Csordas, 1990, 1994).

Most of the research conducted on *nervios* and *ataque de nervios* studied these idioms in select Latina/o groups such as Puerto Ricans, Dominicans, Mexicans, Costa Ricans, Ecuadorians, Salvadorians, and Guatemalans. In fact, a stark limitation of this work is that most of the research has been conducted by a handful of researchers using the same data set, sample, and interpretive framework. Limitations aside, some ambiguity

remains around the exact distinctions and definitions of the two cultural idioms, and should be addressed at the outset. The literature presents two possibilities: (1) the two idioms lie on a continuum, where *ataque de nervios* is an acute and more severe condition of *nervios*, and (2) the two idioms both refer to the same manifestation of distress, however the preference in label is ethnicity-specific, with Mexican, Central and South Americans displaying a preference for use of *nervios*, and Caribbean Latina/os (Puerto Ricans and Dominicans) referring to the experience as an *ataque de nervios* (e.g., Guarnaccia, Lewis-Fernández, & Marano, 2003; Low, 1994). The symptoms associated with both *nervios* and *ataque de nervios* also appear to vary within and between Latina/o groups, such that the particular symptoms expressed are contingent upon those most salient within a Latina/o community and individual history (Guarnaccia et al., 1989). Considering that the distinctions between the two cultural syndromes are unclear, both idioms are explored in this project. What follows is an elaboration of each of the idioms of distress written to highlight areas of congruence and incongruence with conventional psychiatric disorders as defined in the DSM.

Nervios

The concept of *nervios* appears to refer to a chronic more generalized sense of emotional and social distress resulting from a range of life stressors popularly endorsed by people of various Latina/o communities (e.g., Baer et al., 2003; Guarnaccia, Good, & Kleinman, 1990; Low, 1994) and other ethnic groups (see Davis & Low, 1989 for a cross-cultural exploration of gender, nerves, and illness across a variety of communities). Prevalence data indicate that anywhere from 15.5% to 62.5% of Latina/o respondents endorse a lifetime history of *nervios*. For example, a prevalence rate of 15.5% was

documented by Salgado de Snyder, Diaz-Perez, and Ojeda (2000) in a Mexican rural community, 35.7% was documented by Hill and Cottrell (1986) in Caribe, an English speaking West Indian community in Costa Rica, 62.5% in an urban Guatemalan sample (Low, 1989), and 30% in a predominantly Mexican-born primary care sample in South Texas (Bayles & Katerndahl, 2009). Women have a greater prevalence of the cultural syndrome than men, and the experience of *nervios* is also associated with higher prevalence (in some cases 3.5 times higher odds) of affective and anxiety disorders (Salgado de Snyder et al.; Guarnaccia et al., 1993; Low, 1989). A strong link between *nervios* and current supra-threshold depressive symptoms and stress has also been documented in a sample of urban Mexican adults (Weller et al., 2008). Weller and colleagues found that a history of *nervios* was related to higher odds for depression relative to a history of *susto* (“fright”). However, most of the sample who had lifetime histories of *nervios* or *susto* did not meet clinical cut-offs for depression on the symptom checklist. The authors argued that absence of *nervios* is most indicative of absence of psychiatric disorder.

The high prevalence rates among women suggest that the experience of *nervios* (and possibly *ataque de nervios*) may be a gendered experience. From an anthropological perspective, *nervios* may serve as a culturally sanctioned means to express distress within asymmetrical power distributions, such that women in marginalized social positions often use the idiom to signal distress (e.g., Low, 1989; Guarnaccia & Farias, 1988). It has also been proposed that the use of *nervios* enables women to co-opt the sick role and relieve themselves of social role obligations and expectations without threatening their social standing (Finerman, 1989). This phenomenon becomes incredibly important

because gendered notions of lived experience within these communities typically involve the religious and cultural sanctioning of suffering and sorrow in women (Low).

The experience of *nervios* has been studied in a few Latin American and Caribbean countries. In Costa Rica, *nervios* is defined as a culturally accepted expression of psychosocial distress, which counters the Costa Rican ideals of *tranquilidad* or tranquility (Barlett & Low, 1980; Low, 1981). In urban Guatemala, *nervios* was predominantly reported by women and treated by sufferers as an illness, and not a symptom. Furthermore, it was associated with experiencing strong affect such as anger and grief, and with reproductive and child rearing concerns (Low, 1989). Among Central American refugees (in particular Salvadorian) living in the United States, Guarnaccia and Farias (1988) also found that *nervios* was associated with disruptions in family, community, and national systems. In addition, among Saraguro Indian women occupying positions of high social status in Andean Ecuador, two classes of *nervios* were identified: a general class linked to suffering that was most commonly experienced in women, and a second class linked to anger that was most commonly experienced by men (Finerman, 1989). In this community, *nervios* was generally rooted in psychosocial afflictions, but associated with activations in a bodily organ called “*pulsario*” or pulsation. Under conditions of extreme distress, the *pulsario* ruptures resulting in the experience of somatic symptoms (e.g., chest pain, nausea). According to Finerman, the symptoms of *nervios* were linked to affective and somatic symptoms of depression. The use of *nervios* may also signal demands for status recognition, cooperation, and control by Saraguros in positions of relative power in the face of difficulties fulfilling gender roles and meeting expectations. In Ecuador, *nervios* among older women was linked to the experience of

menopause and thus characterized as an entirely gendered experience (Barnett, 1989). The experience has also been linked to grief in Mexican American widows (Kay & Portillo, 1989).

Nervios has been conceptualized as an “emotional problem” in Mexican American samples (Newton, 1978) that involves the presence of an incident/trigger that is often accompanied by cognitive, sensory or behavioral changes, loss of control, fear, hopelessness, feeling trapped, and distressing negative emotions (England, Mysyk, & Gallegos, 2007). In some cases, the concept of *nervios* has also been used by Mexican and Puerto Rican respondents to understand schizophrenia spectrum disorders (Jenkins, 1988a; Jenkins, 1988b, Swerdlow, 1992). Among a group of low [U.S.] acculturated Mexican relatives of patients with schizophrenia, Jenkins (1988b) found that the participants attributed their family member’s psychiatric condition to “problems related to *nervios*.” Jenkins also found participants often described *nervios* as a severe condition with a prominent loss of control. Five types of *nervios* were identified, among the most endorsed types included an anger/rage type among men and a tense/uptight type among women. These two types were endorsed among over 60% of the participants. In addition, in Mexican communities, the concept of *nervios* is regarded as an explanation of illness, a symptom, and a state of illness (Baer et al., 2003). Notably, in a study of inter- and intra-cultural variation of descriptions of *nervios*, consensus analysis revealed that Puerto Ricans, Mexicans, Mexican-Americans, and Guatemalans in four respective sites provided similar descriptions of *nervios* (Baer et al.). These descriptions identified emotion and interpersonal conflict as the root of *nervios*, with symptoms being largely nonsomatic in nature. Despite a shared meaning of *nervios*, differences were also found

across groups. For example, *nervios* was the attributed cause of physical conditions such as diabetes in the Mexican and Guatemalan samples. The association between *nervios* and diabetes has also been documented elsewhere (e.g., Cabassa et al, 2008). Among a sample of Latina/o (mostly Mexican born) adults with diabetes, *nervios* was used to describe the ways in which diabetes impacts emotional functioning and leads to a constellation of depressive symptoms (e.g., irritability, anxiety, poor sleep, headaches, stress).

Recent research proposing an explanatory model⁴ of these idioms among island Puerto Ricans expanded extant conceptualizations of *nervios* to include different kinds of affective experiences, such as “being a nervous person” (*ser nervioso*), “suffering from nerves” (*padecer de los nervios*), and experiencing an “attack of nerves” (*ataque de nervios*) (Guarnaccia et al., 2003). The attributed causes and primary sources of treatment were found to vary in relation to the specified experience of *nervios*. Guarnaccia and colleagues found that being *nervioso* or a nervous person was associated with childhood onset and chronicity, and identified as a consequence of suffering or traumatic stressors. Being a nervous person was also generally regarded as a predisposition or enhanced vulnerability that increases the likelihood of being negatively affected by daily stressors and life events. In this case, the family was reported as the primary source of treatment for “nervous people.” *Padecer de los nervios* or suffering from nerves was conceptualized as more of an illness, typically associated with depression. Suffering from nerves was also conceptualized as an inherited predisposition and was associated with

⁴ According to Kleinman (1981) explanatory models are defined as patient and/or practitioner derived explanations of illness and treatment options. Inquiries into patient explanatory models focus on understandings of etiology, onset, course, treatment, and pathophysiology.

adult onset, and the result of a culmination of overwhelming life stressors. Professional help was espoused as the main source of treatment. Central features of *padecer de los nervios* included a sense of lack of control, irritability, sadness, or anxiety. Guarnaccia et al argue for the consideration of these idioms as *nervios-related conditions*, and further for the consideration of the “*estar enfermo de nervios/to be ill with nerves*” as yet another *nervios*-related condition.

Ataque de nervios

Early ethnographic field work revealed that an *ataque de nervios* can best be understood as an expression of psychological distress attributed to a pervasive sense of loss of control and disruptions in four broad domains: emotional, bodily, behavioral, and states of consciousness (Guarnaccia et al., 1996). As mentioned earlier, *ataque de nervios* or attack of nerves was described as an acute episode resulting from severe life events, frequently occurring in those with nervous vulnerabilities such as “being a nervous person” or “suffering from nerves ” (Guarnaccia et al., 2003). Epidemiological studies with island Puerto Ricans indicate that approximately 16% to 23% of community respondents report experiences of an *ataque de nervios* during their lifetime, with high rates of comorbid depression and anxiety (Guarnaccia, Canino, Rubio-Stipec, & Bravo, 1993; Guarnaccia, Rubio-Stipec, & Canino, 1989). About 70% of Latina/os (primarily Dominican and Puerto Rican samples) seeking outpatient treatment at an anxiety disorders clinic also reported experiences of an *ataque de nervios* (Liebowitz et al., 1994; Salman et al., 1998). *Ataques de nervios* were also associated with gender, socioeconomic status, marital status, educational attainment, and age, such that the experience of *ataque de nervios* was endorsed significantly more by women, people over

the age of 45, people with low levels of educational attainment, those having experienced marital afflictions (divorce, separation, widow), and people with low socioeconomic status (Guarnaccia et al., 1989; Guarnaccia, Canino, et al., 1993). People with histories of *ataque de nervios* also had higher service utilization rates, often consulting with medical providers and *espiritas*.

In the first epidemiological study of *ataque de nervios* among Latina/os in the United States, lifetime history of *ataques* was endorsed most frequently among Puerto Ricans (15%) followed by 9.6% of Mexicans, 9% of Cubans, and 7% of other Latinos (Guarnaccia et al, 2009). The lifetime prevalence rates did not change when “syndrome” criteria (i.e., additional endorsement of four *ataque* symptoms) were incorporated. Gender and marital status were the only sociodemographic variables associated with endorsement of *ataque de nervios* and meeting syndrome criteria such that women and those who were widowed/separated/divorced were more likely to report *ataque de nervios* relative to men and those who were married. Contrary to the authors’ hypothesis, greater acculturation to U.S. American life ways was associated with *ataque de nervios*. Acculturation was measured as a function of self-perceived English proficiency, percentage of time spent in US, citizenship, nativity, language of interview, and number of parents born in US. The authors argue that greater percentage of time spent in U.S. and other relevant markers such as English Proficiency may predispose individuals to increased social vulnerability that would in turn contribute to increased distress. Reports of *ataques* (as measured by self-endorsement and syndrome criteria) were significantly associated with a range of affective, anxiety, and substance use lifetime psychiatric disorders (e.g., Major Depressive Disorder, Dysthymia, Social Phobia, Panic Disorder, Generalized Anxiety,

any substance, etc), and clinical severity (e.g., history of suicidal symptoms and psychotic symptoms). Reports of *ataques* were also related to use of primary medical and tertiary mental health services and psychiatric hospitalizations. *Ataques* were identified as strong predictors of lifetime history of any depressive disorder, anxiety disorder, and mental health services use, after presence of other psychiatric disorder. Overall, reports of *ataques* were found to be indicators of psychiatric vulnerability, with increasing vulnerability when moving from endorsement of *ataque* to application of syndrome criteria.

Frequent *ataque de nervios* have also been linked to psychiatric disorders that have strong dissociative symptoms (Lewis-Fernández, Garrido-Castillo et al., 2002), and marginally associated with instances of childhood trauma (Schechter et al., 2000). In a study of Mexican-American victims of disasters and PTSD, *ataque de nervios* emerged as a significant cluster of noncriterion symptoms (Norris et al., 2001). The authors proposed that *ataque de nervios* may be an alternate manifestation of the PTSD hyperarousal criterion. Dissociative predisposition has been found to be related to history of *ataque de nervios*, *padecer de nervios*, and altered perceptions in participants with lifetime history of interpersonal trauma (Lewis-Fernández et al., in press). Severity of trauma was related to current *suffering/or being ill from nervios* and not *ataques*.

Ataques de nervios have also been linked to unexplained neurological symptoms (Interian et al., 2005). In particular, Interian and colleagues found that respondents endorsing at least four unexplained neurological symptoms were more likely to have experienced an *ataque de nervios*. In addition, the authors found that a proxy measure for

ataque de nervios discriminated among Hispanic and non-Hispanic participants, and that the experience of *ataque de nervios* was significantly associated with panic disorder.

The frequent associations between *ataque de nervios*, panic symptoms, and panic disorder led some researchers to conclude that *ataque de nervios* was a cultural label used by Latina/os to refer to panic attacks. However, further research into the phenomenological differences and similarities between panic disorder (as assessed using clinical interviews) and *ataque de nervios* in clinical samples provided mixed results both in favor and against early presuppositions. First, Liebowitz et al. (1994) found that features of the *ataque de nervios* experience overlap with panic attack symptomatology, even in participants without a primary panic disorder diagnosis. Second, Salman and colleagues (1998) found that *ataque de nervios* in participants with a primary diagnosis of panic disorder was experienced with more panic symptomatology. Conversely, in participants with co-morbid *ataque de nervios* and affective disorders, emotional instability and aggressive emotions and behaviors were displayed. Last, Lewis-Fernández et al. (2002, 2009) showed that an absence of a stressful event and a rapid crescendo of symptom development were the main phenomenological differences between *ataque de nervios* episodes that fulfill DSM panic criteria for panic disorder and those that do not in an anxiety disordered sample of Puerto Ricans and Dominicans. Thirty-five percent of the participants had *ataques* that would have met DSM-IV criteria for panic disorder, *except* that the panic episodes were provoked by an important life event, peaked longer than 10 minutes, and were followed by a sense of relief, rather than intense fear or dread. Conversely, *ataques de nervios* that were congruent with panic disorder criteria involved a recurrence of attacks, an experience of fear or nervousness, and subsequent anticipatory

behaviors. Overall, the authors concluded that *ataque de nervios* and panic disorder are labels for overlapping categories of experience, not distinct exclusive hypothetical constructs. Ultimately, *ataques* are not simply culturally infused panic attacks. The authors also speculated that level of acculturation may be a significant factor in how the cultural syndrome is manifested.

Further quantitative work on the symptom profile of *ataque de nervios* found support for both an internalizing and externalizing phenomenological dimension congruent with features from the four domains mentioned previously, but predominantly from the bodily and action domains described in earlier ethnographic work (Febo San Miguel et al., 2006). In particular, the internalizing dimension included panic-like symptoms and other somatic symptoms such as becoming nervous, frightened, trembling a lot, heart palpitations, headaches, shortness of breath, fear of going crazy, vertigo, and feelings of suffocation. Conversely, the externalizing dimension included symptoms such as suicidality, aggressiveness, breaking objects, feelings of anger, crying, screaming, falling to the floor/convulsion, fainting, loss of consciousness, and periods of amnesia. Evidently, the internal factor consisted of primarily panic-like symptoms, whereas the external factor consisted of emotionally labile experiences such as dissociative symptoms, feelings of anger, and suicidality. Febo San Miguel and colleagues argued that the factor analysis supported the heterogeneity of *ataque de nervios* and its strong associations with a history of any anxiety disorder; notably, neither factor was associated with depressive disorders.

Cintrón, Carter, and Sbrocco (2005) also examined the symptom profile of *ataque de nervios*, but this time in relation to anxiety sensitivity, state and trait anxiety, and panic

symptomatology in a community sample of island Puerto Ricans. Three groups were analyzed: 1) people who self identified as having experienced at least one *ataque de nervios*; 2) people with low anxiety sensitivity and no history of *ataques*; and 3) people with high anxiety sensitivity and no history of *ataques*. Results were congruent with previous literature which found *ataque* symptomatology to include symptoms of panic, somatization, depression, and dissociation as measured by self-report surveys. However, a pattern of avoidant behavior common in people with anxiety disorders was not noted. *Ataque de nervios* sufferers were also able to link the onset of the *ataque* with the onset of an interpersonal stressor. Participants with a history of *ataque de nervios* and those with elevated anxiety sensitivity and no history of *ataques* were comparable in measures of anxiety sensitivity, trait-anxiety, depressive and panic symptoms. Notably, the high anxiety sensitivity group with no self-reported history of *ataques* was not evaluated for *ataque* specific symptoms, and thus it is unknown if the two groups would endorse similar symptoms. As such, firm conclusions about the differences or similarities between those two groups cannot be made. These findings lend support to previous research that argued for the symptom-specificity of *ataque de nervios* despite some overlays with panic-related disorders and symptoms. Cintron and colleagues were the first to use an acculturation scale in their design, however because differences between the groups were not found on this indicator, the acculturation variable was dropped from the remaining analyses.

The association between *ataque de nervios* and anxiety sensitivity was examined most recently by Hinton and colleagues (2008, 2009) in a sample of Puerto Ricans seeking treatment at an outpatient clinic. Anxiety sensitivity and predisposition toward

dissociative experiences were both significant predictors of severity of *ataque de nervios*, however, only anxiety sensitivity was an important predictor of past-month experience of *ataque de nervios* (Hinton et al., 2008). Anxiety sensitivity scores were higher among those who endorsed past-month *ataque* experiences. Hinton and colleagues argue that experiences of *ataque de nervios* may predispose individuals toward developing an increased awareness about and catastrophic thoughts about physiological symptoms associated with anxiety, a process they term “syndrome-generated fear of anxiety-related sensations” (pp. 493). Further support for the role of anxiety sensitivity or “fear of arousal symptoms” has been documented by Hinton, Lewis-Fernández and Pollack (2009) who purport that fear of negative emotional states (e.g., anxiety, anger) and fear of psychological and physiological arousal symptoms are central in the development of *ataque de nervios*. Among an outpatient sample of Caribbean Latinos with high-rates of comorbid anxiety disorders, approximately 60% had an *ataque* in the last month and 74% had an *ataque* in the last six months. Fear of being a nervous person, fear of disrupted cognitive processes (e.g., poor concentration), fear of trembling (among others), and key physiological symptoms of *ataque* (e.g., fear of chest tightness, “inner heat”, shortness of breath) were found to discriminate between levels of severity of *ataques* as determined by frequency of *ataques* at two time points (i.e., past month and past 6 months).

The empirical question of whether *ataques de nervios* are culturally-bound to Latina/os and distinct from panic attacks was the focus of recent attention. Keough, Timpano, and Schmidt (2009) found little variability in endorsement rates of lifetime history of *ataque de nervios* as a function of race/ethnicity and gender among a college sample of African Americans, White Americans, and Latina/os. Acculturation was not

found to be a significant predictor of endorsement of *ataques*, panic attacks, or anxiety sensitivity. *Ataques*, unlike panic attacks, were also not found to be significantly associated with anxiety sensitivity or prior experiences of trauma. An assessment of the symptom endorsement patterns revealed that *ataques* were more frequently associated with fear of negative affect (i.e., fear of anger/sadness/guilt, etc), whereas panic attacks were more frequently associated with fear of physiological symptoms (e.g., faintness, rapid heartbeat). Moreover, fewer than four percent of the sample endorsed lifetime experiences of both *ataque de nervios* and panic attacks. In sum, these results lend further support for the distinctiveness of *ataques* and panic attacks.

Summary. *Nervios* and *ataque de nervios* are culturally sanctioned idioms of distress that are interrelated and have shared meanings, functions, and symptom expressions, and great variation across Latina/o ethnic groups and contexts. A common thread is the association to strong emotion such as anger/rage, trauma, perceived control, and distress. The ethnopsychology and ethnophysiology of *nervios* and *ataque de nervios*, meaning the local understandings of how these idioms are etiologically linked to the mind and body, and the social meanings of these experiences, do not appear to be clearly developed or elaborated for many of the samples studied, with the exception of Saraguro Indians. For Mexican communities, in particular, the anthropological literature on *nervios* and *ataque de nervios* is scant and thus unclear regarding the ethnopsychology and ethnophysiology of these idioms. There is some evidence to suggest *ataque de nervios* is indicative of psychiatric vulnerability. Across most studies, *nervios* and *ataque de nervios* were most prevalent in women in late adulthood, with low socioeconomic status, and (in some cases) low acculturation to U.S. American ways of life. It is unclear

what accounts for the heterogeneity of these experiences, although recent attention has focused on the role of psychological acculturation in explaining the variance.

Approaches to Acculturation Theory and Measurement

The concept of acculturation has become increasingly important vis-à-vis discussions of health and mental health in ethnic minority communities. The late 1980s experienced a rise in the study of acculturation as a bona fide psychological construct, as evidenced by the many articles, books, and chapters published during this early naissance period.

According to Berry (2003), definitions of the construct of acculturation frequently have relied on the following definition:

Acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original culture patterns of either or both groups...under this definition, acculturation is to be distinguished from culture change, of which it is but one aspect, and assimilation, which is at times a phase of acculturation. (Redfield, Linton, & Herskovitzs, 1936, p.149)

This early definition differentiated acculturation from assimilation and identified as necessary the continuous contact of two groups. Definitions from the Social Science Research Council (1954) further differentiated between the process of acculturation at the individual and group level and highlighted acculturative change as a result of internal individual changes stemming from cultural adaptation. In this light, the changes occurring at the group level of analysis are considered ecological or cultural acculturation

and changes at the individual level of analysis are considered psychological acculturation (per Berry, 2003).

Psychological acculturation is conceptualized as the behavioral, attitudinal, knowledge, identity, linguistic, and value changes that occur in an individual as the result of long-term contact with another culture (Berry, 1980; Berry & Sam, 1997; Cuellar, Arnold, & Maldonado, 1995; Graves, 1967; Rogler, Cortes, & Malgady, 1991). The process of psychological acculturation complicates the ways in which Latina/o persons make meaning of their cultural behavior (peer group and media preferences), individual behavior (affective, interpersonal, sociopolitical), cultural identity (self-identification and feelings towards self-identification), knowledge (historical and political knowledge, as well as adherence to social customs), language proficiency (use, preferences, and ability), values (beliefs about social roles and relationships, cultural traditions), family dynamics, cognitive style, and coping style (Santiago-Rivera, Arredondo, & Gallardo-Cooper, 2002). Moreover, the process of acculturation has made for constant negotiation and navigation of transnational and cross-cultural contexts that have reconfigured the traditional Latina/o family unit and exposed Latina/os to experiences (often negative) associated with discrimination, poverty, migration, and acculturative stress. These negative experiences have placed Latina/os at greater risk for physical and psychological distress (e.g., Santiago-Rivera et al.; Williams & Mohammed, 2008).

The related term, “acculturative stress”, is often used to refer to the broad negative cognitive, behavioral, and emotional changes (e.g., depressive and anxiety symptoms, psychosomatic symptoms, sense of alienation/isolation, identity confusion, etc.) that are due to and sustained by the process of acculturation (e.g., Berry & Annis,

1974; Berry, 1997). Thus, acculturative stress specifically refers to the proposed negative mental health effects that are linked to an identified immigration related stressor rather than a non-immigration specific stressor (e.g., difficulties adjusting to a chronic medical condition, aging). Acculturative stress has been associated with a host of negative mental health outcomes such as suicidal ideation among Latina/o adolescents and Mexican immigrant adults (Hovey & King, 1996; Hovey, 2000a), anxiety and depressive symptoms among Mexican college students (Crockett, Iturbide, Torres Stone, McGinley, Rafaelli, & Carlo, 2007), perceived experience of daily discrimination among Dominican immigrants (Araújo Dawson & Panchanadeswaran, 2010), reduced levels of family cohesion among Nicaraguan and Cuban adolescents and their parents as well as a trend of higher levels of perceived discrimination among Nicaraguans (Gil & Vega, 1996), sex-role conflict and depressive symptoms among married Mexican-born immigrants (e.g., Salgado Snyder, 1987), and discrepancies between pre-migration and post-migration expectations (Negy, Schwartz, & Reig-Ferrer, 2009) to provide some examples. There is also some support for the protective effect of family support, socioeconomic status (e.g., availability of financial resources), and religiosity on acculturative stress among Mexican immigrant adults (Hovey, 2000b) and for the buffering effect of active coping and parental support on acculturative stress for Mexican college students (Crockett et al.).

The term acculturative stress, however, has been criticized for its presumption of poor negative mental health outcomes, perpetuation of long-standing stereotypes that acculturation causes mental illness, operational ambiguity, and confounding with potential effects of perceived discrimination and low socioeconomic status (to read more on this critique see Caplan, 2007, Rudmin, 2009).

Two major theoretical models have dominated the study of psychological acculturation: the unidimensional model and the bidimensional or multidimensional model (Cabassa, 2003). The unidimensional model posits that individuals from the immigrant group move along a single continuum, with adherence to his/her culture of origin on one pole and adherence to the host or dominant culture on the other pole. From this perspective, acculturation is a “zero-sum” phenomenon (Rogler et al., 1991), where movement along the continuum toward one cultural domain constitutes losses in the other cultural domain. This is akin to descriptions of the process of assimilation, which is characterized by a linear trajectory with movement occurring in the direction of the host culture. Following Redfield et al.’s (1936) definition, we must remember that assimilation is but one aspect of acculturation. Therefore, a major limitation of this perspective is that individuals are restricted to one piece of “cultural luggage” (Cabassa, p.133), leaving no room for the possibility of individuals maintaining aspects of their culture of origin while acquiring aspects of the host culture (i.e., biculturalism).

On the other hand, bidimensional models of acculturation theorize that retention of culture of origin and acquisition of the dominant culture are two orthogonal dimensions, each with its own continuum ranging from more to less cultural immersion in each of the respective dimensions. This framework allows the possibility of carrying multiple pieces of “cultural luggage” and allows individuals to reside along different places along the two continuums. To differentiate between these processes, the term “enculturation” has recently been popularized in reference to the process of retaining one’s values, beliefs, norms, language practices of the culture of origin, whereas the term “acculturation” has been reserved to refer to the acquisition of host culture’s values and

practices (Kim & Ominizo, 2006). Berry and Sam (1997) argue that four acculturation strategies emerge as a result of this bidimensional framework: assimilation, separation, integration, and marginalization. Tadmor and Tetlock (2006) now contend that the choice in acculturation strategy is shaped by perceived accountability to either single (one cultural perspective) or mixed (at least two distinct cultural perspectives) audiences. The authors propose that accountability to a mixed audience produces high dissonance that results in cognitive complexity versus low dissonance and cognitive simplicity when accountable to a single audience.

Reviews of acculturation and well-being among Latina/os have found inconsistent evidence to support the relevance of the concept (when measured with the use of scales) to health and mental health outcomes. Comprehensive reviews have found support for four relationships. First, a direct relationship such that higher levels of acculturation (presumably U.S. American) are associated with more psychological distress, depressive symptoms, early sexual initiation, negative changes in marital relationships, smoking, substance use/abuse, disordered eating patterns/body image, and deviant behavior (i.e., acculturation stress hypothesis). Second, an indirect relationship such that low levels of U.S. American acculturation are associated with worse self-ratings of physical health, somatic symptoms, depressive symptoms, high ratings of family obligation, greater use of psychological control as a parenting strategy among Latina mothers, and increased smoking rates for men. Third, a curvilinear relationship such that mid-values (indicative of elements from both Latina/o culture and mainstream US culture) are associated with overall positive mental health outcomes and psychosocial adjustment; and fourth, no relationship between acculturation and disordered eating behaviors, depressive

symptoms, and anxiety/hostility (see Rogler, Cortes, & Malgady, 1991 and Negy & Woods, 1992 for a review of acculturation and mental health; see Clark & Hofstess, 1998 for an extensive review of acculturation and health variables, and Koneru et al., 2007 for a systematic review of acculturation and mental health; see Ceballo & Hurd, 2008 for discussion of relation between acculturation and parenting strategies/confidence; Alamilla et al., 2010 for discussion of moderation and mediation effects of acculturation and enculturation on the association between perceived racism and anxiety symptoms). These inconsistent results highlight the variability in responses as a function of type of acculturation scale and study sample.

Psychiatric epidemiology survey research has also documented mixed results concerning the effect of crude measures of acculturation (rather than acculturation scales) such as nativity or generational status on health and mental health outcomes in Latina/o communities. In some cases, researchers found a direct relationship between select psychiatric disorders, such as any anxiety disorder and substance use disorders, and an inverse relationship with service underutilization and crude indexes of acculturation such as nativity or generational status, length of residence in the United States, and language use (e.g., Alegria, Canino, Stinson, & Grant, 2006; Lara, Gamboa, Kahramanian, Morales & Hayes Bautista, 2005; Vega, Kolody, Aguilar-Gaxiola, Alderete, Catalano, Caraveo-Anduaga, 1998), whereas other studies do not find significant differences (e.g., Kessler et al., 1994). Whether acculturation serves as a protective factor or a risk factor to immigrant mental health remains an empirical question, with answers likely involving greater consideration of contextual and psychosocial factors. Some examples of these factors include time of migration, differences between the two cultures, socioeconomic

status, availability of social support networks, migration context and reception (e.g., Cortes, 1994).

Although the concept of psychological acculturation has a long history in the social sciences, in particular anthropology, a dispute concerning the construct validity of acculturation as well as the content and predictive validity of measures of acculturation currently occupies center-stage in cross-cultural research⁵. At the construct level, important questions concerning the number of dimensions (unidimensional or bi/multidimensional), direction of movement (i.e. whether reciprocal process, unidirectional or bidirectional), and definitions of culture remain unclear (e.g., Zane & Mak, 2003). At the measurement level, acculturation scales have been critiqued for the lack of content overlap across measures and the lack of consensus about which behavioral and attitudinal domains to explore. For example, a measure with a comprehensive sampling of all of the behavioral and attitudinal domains theorized to be involved in psychological acculturation does not exist, and it is uncertain about the extent to which purported domains vary by ethnic group (Zane & Mak). Moreover, the cultural values domain is largely excluded from most acculturation scales. Other critiques include the lack of clear operational definitions of dimensions, inclusiveness (over and under) of dimensions, tenuous definitions and assumptions about culture, its focus on minority groups, the limiting nature of four acculturation typologies, lack of attention to structural factors, overall fuzziness of the construct (e.g., Abraido-Lanza, Armbrister, Florez & Aguirre, 2006; Escobar & Vega, 2000; Hunt, Schneider, & Comer, 2004; Rudmin, 2003),

⁵ A similar dispute concerning the validity of the concept of acculturative stress is also part and parcel to the controversial debates concerning acculturation.

and overreliance on scales that measure explicit rather than implicit processes associated with psychological acculturation (e.g., Landrine & Klonoff, 1994; Kim et al., 2006). The critiques have led to much deliberation over the merit of the inclusion of acculturation variables in health and mental health research.

The inconclusive results concerning the direction of the effect of acculturation on adjustment along with the construct's conceptual and methodological "fuzziness" are often used to bolster controversial claims for the suspension of acculturation measures until such ambiguity is remedied (Escobar & Vega, 2000; Hunt, Schneider, & Comer, 2004). The utility and validity of acculturation scales is further questioned by their limited power to detect and predict meaningful outcomes in large scale epidemiology research. Greater predictive validity has been found in the use of acculturation proxies. As a result, the haphazard and overzealous use of acculturation proxies (such as generational status and language spoken in the home) has been popularized, especially in public health research. Researchers such as Escobar and Vega make strong recommendations for the use of these proxies, instead of acculturation scales that rely on fuzzy theoretical constructs, in part because of the pragmatic utility and predictive validity these objective indicators have shown in epidemiology research. Given the current state of affairs in acculturation research, greater consideration should be given to how the complex process of psychological acculturation is measured.

It is important to fine tune our measurement and thinking about psychological acculturation due to the demographic shifts of the last few decades. In the United States, one in eight persons is of Latina/o origin, and two in five Latina/os are foreign-born (U.S. Census Bureau, 2002). This implies that Latina/os are actively negotiating, navigating,

and engaging with multiple cultural contexts and spaces in their lives and thus implicitly or explicitly engaging with processes of acculturation and enculturation. Although the outcomes of such psychological processes remain uncertain, complete abandonment of acculturation measurement and theory is a dramatic proposal that could inadvertently serve to stymie much needed advances in theory and measurement. Instead of complete abandonment, one alternative is to deconstruct the measurement of acculturation to the study of specific psychological elements that are theorized to be important to the construct (e.g., identity, values, attitudes), with the need to identify specific elements that are most influential to mental health outcomes (Betancourt & Lopez, 1993; Zane & Mak, 2003). From this “single-element” perspective, individuals can be examined with respect to the theorized domains of acculturation (e.g., cultural values, language use, cultural identity). Another alternative is to opt for the development of experientially driven conceptual models of acculturation that begin by privileging a specific cultural group’s understandings of acculturative domains and the changes in meanings associated with immigration experiences. This approach allows researchers to incorporate contextual variables such as perceived discrimination and idioms of distress in acculturation measures (Cortes, 2003). These alternatives are notable for their suitability in emic research.

Summary. The concept and measurement of psychological acculturation is complex and multi-faceted. Despite the current disputes in the field concerning its measurement and conceptualization, attention to the individual changes (e.g., attitudes, values, identity, etc.) occurring in Latina/os as a result of long term contact with other cultures in the U.S. is important considering the strong and growing Latina/o presence in

the U.S. It is plausible that these individual changes play significant roles in the tendency to use cultural idioms of distress.

Overall Summary

The literature review highlights that monumental strides have occurred to learn about the epidemiology of psychiatric disorders for Latinos living in the U.S., and the experience of cultural syndromes in select Latina/o ethnic groups. In regard to Latina/o mental health and acculturation, we know that at the crudest level, the psychological changes that occur with the acculturation process are important as evidenced by the increased risk of psychiatric disorder with increasing generational status and English proficiency (i.e., the “acculturation hypothesis”). We also know that cultural syndromes such as *nervios* and *ataque de nervios* are often used because they are acceptable and unstigmatized means to express emotional and psychological distress as well as interpersonal disruption, particularly among adult women with profiles of socioeconomic disenfranchisement. In addition, we know that *nervios* and *ataque de nervios* are highly interrelated, contain a marked anxiety and somatic component, and have associations with anxiety and affective disorders. These associations along with the social function these idioms serve pose a threat to the accurate estimation of prevalence rates for psychiatric conditions; leading to possible under- or over-estimations. Moreover, we know that *nervios* and *ataque de nervios* are heterogeneous in meaning and symptom manifestation across and within Latina/o communities and are suggested to vary according to levels of acculturation. These findings suggest that *DSM* categories often miss the nuances behind the function of local categories of suffering or mental illness,

and that the correspondence between psychiatric disorder and cultural syndrome is often not one-to-one.

A caveat is in order, however. Most of what we know about cultural syndromes and psychopathology draws from anthropological research, large scale epidemiology surveys, psychological studies, or psychiatric research that often utilized the methodologies conventional to their fields, and thus rarely used multiple methods of inquiry within a single study. For example, the large scale epidemiology surveys opted for lay administered diagnostic interviews in lieu of clinician administered interviews, which arguably compromised the accuracy of the diagnostic assessments. The anthropological studies privileged ethnographic interviews to study *nervios* and *ataque de nervios*, at the expense of using other methods that could directly engage with psychiatry and other mental health professions. As a result, many more questions remain that require the use of multiple methods to arrive at an answer. The most pertinent of these research questions are: (a) what is the relationship between acculturation, *ataque de nervios*, *padeecer de nervios*, and distress, (b) are *ataque de nervios* and *padeecer de nervios* patterned and syndromal experiences within Latina/o ethnic groups where these topics have been understudied? These are the types of questions that are addressed in this dissertation.

CHAPTER III

The Present Study

This two-study dissertation used quantitative and qualitative methods to examine the extent to which *ataque de nervios* and *padecer de nervios* are culture-bound syndromes with identifiable signs and symptoms that are reliably associated with psychopathology and distress in a community sample of Mexican-born adult mothers living in the United States. Figure 1 (below) is a conceptual model that outlines the postulated associations between the categories of interest: immigration /acculturative stress, psychological acculturation, cultural syndromes, psychopathology, and anxiety. Herein, immigration/acculturative stress is comprised of the societal (e.g., perceived discrimination, political sentiment upon entry, and documentation status); interpersonal (e.g., intergenerational conflict, loss of social support), and environmental (e.g., linguistic barriers, difficulty accessing resources, economic hardship) stressors that immigrants are exposed to while adjusting to the host culture (Caplan, 2007). The experience of immigration/acculturative stress is heightened by the interaction of these societal, interpersonal, and environmental stressors. In this model, immigration/acculturative stress is proposed to impact the experience of psychological acculturation and to shape the discourse of cultural syndromes such as *nervios* and *ataque de nervios*.

In addition, acculturation is understood to be a bi/multidimensional process such that both Latino and U.S. American acculturation are considered important orthogonal factors in the experience of *nervios*, *ataque de nervios*, psychopathology, and anxiety.

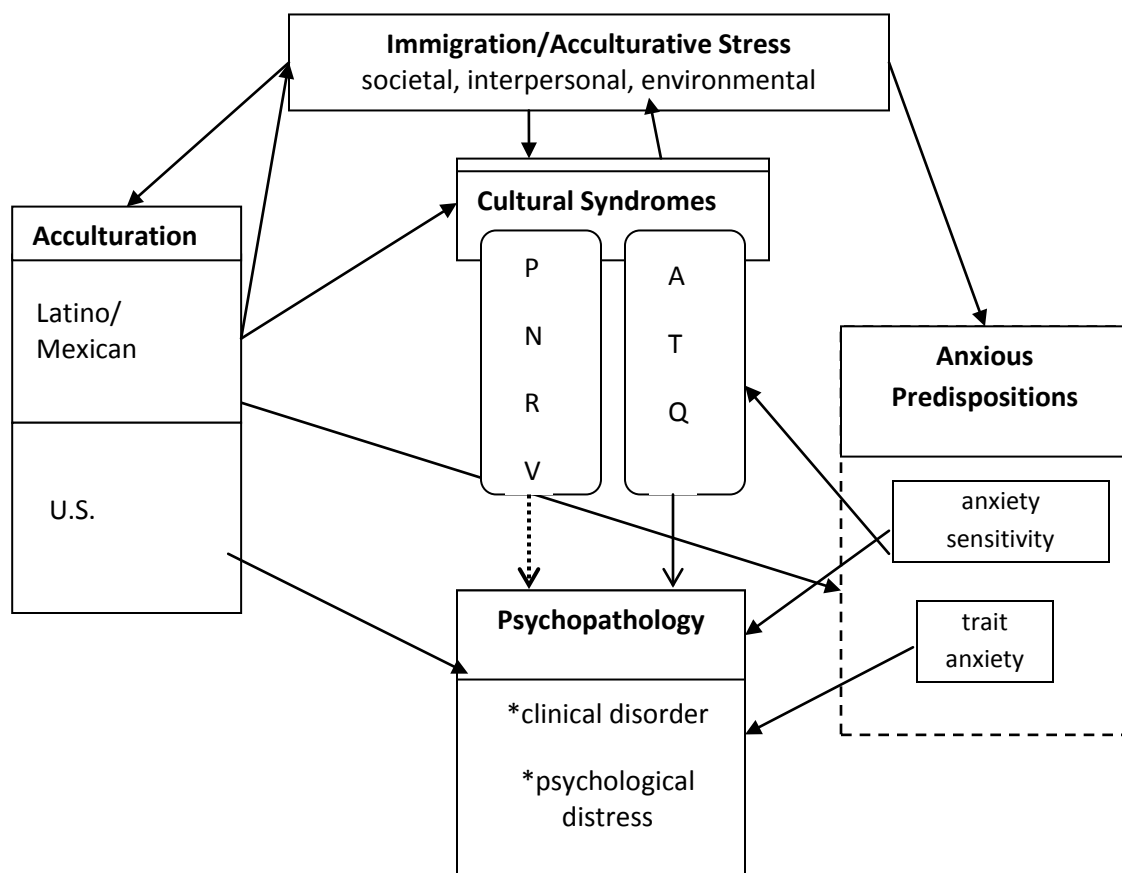


Figure 1 Conceptual Model

Note: PNRV= *padeecer de nervios*; ATQ= *ataque de nervios*

For instance, it is speculated that Latino acculturation will be most influential in the experience of cultural syndromes and anxiety, but not psychopathology. However, U.S. American acculturation is proposed to impact only psychopathology. This claim is congruent with the acculturation stress hypothesis to explain the “Latino or immigrant

paradox”, which presumes that with increasing appropriation of U.S. American cultural values, behaviors, language, and identity, an immigrant’s risk of experiencing mental disorder also increases.

As immigrants contend with stressors unique to their social position, they may also evidence psychological distress expressed and experienced in culturally consonant terms such as *padecer de nervios* or *ataque de nervios*. The conceptual model also illustrates that these cultural syndromes may or may not converge with DSM defined psychiatric disorders. In fact, it is proposed that people with histories of *ataque de nervios* will be more likely to endorse a history of psychiatric disorder, whereas people with histories of *padecer de nervios* may be less likely to have a history of mental disorder. However, the nature of the relationship between *padecer de nervios*, *ataque de nervios*, and psychopathology will be dependent on the particular manifestations and meanings of these cultural syndromes within the Mexican-born sample. The experience of *padecer de nervios* is hypothesized to be associated with general distress and its usage to parallel the popular use of “nerves” and “stress” in the English language to designate a diffuse experience of stress and not psychopathology. Thus, the association between *padecer de nervios* and psychopathology is expected to be tenuous (indicated in the conceptual model by the dashed line). *Ataques de nervios*, on the other hand, are expected to have more reliable and consistent associations with psychopathology. In addition, a relationship between trait anxiety, anxiety sensitivity, and a history of *ataque de nervios* is also expected.

Specific Aims

The specific research questions and hypotheses of each study are described below.

Study 1: Research Questions and Hypotheses

Study 1 explored the interrelationships between five broad categories of interest: immigration/aculturative stress, acculturation (as assessed through multidimensional scales and crude measures of language proficiency), lifetime history of *ataque de nervios/padecer de nervios*, anxiety, and psychological distress. This study addressed three main research questions.

1. Is lifetime history of *ataque de nervios/padecer de nervios* related to acculturative stress, acculturation, and anxiety? It was hypothesized that Mexican acculturation, acculturative stress, anxiety sensitivity, and trait anxiety would be associated with increased odds for having a lifetime history of *ataque de nervios/padecer de nervios* after adjusting for covariates.
2. Is lifetime history of *ataque de nervios/padecer de nervios* predictive of current psychological distress after controlling for anxiety and acculturative stress? It was hypothesized that U.S. American acculturation, lifetime *ataque de nervios*, English Proficiency, anxiety sensitivity, and trait anxiety would be predictive of past-week psychological distress. Increases in U.S. American acculturation and English proficiency were hypothesized to lead to decreased incremental changes in psychological distress. Lifetime *ataque de nervios*, trait anxiety, and anxiety sensitivity were hypothesized to be positively related to increased risk of psychological distress. Lifetime *ataque de nervios* was expected to add

incremental validity in predicting psychological distress. Mexican acculturation was hypothesized not to be related to psychological distress.

3. Is lifetime history of *ataque de nervios/padecer de nervios* predictive of current acculturative stress after controlling for anxiety, age, and English proficiency? It was hypothesized that lifetime history of either *ataque de nervios/padecer de nervios* would be predictive of past three-month acculturative stress, and result in increased odds for acculturative stress. Anxiety sensitivity and trait anxiety were expected to be less robust predictors of acculturative stress than lifetime history of *ataque de nervios/padecer de nervios*.

Study 2: Research Questions and Hypotheses

Study 2 used mixed methods to explore the conceptualizations and meanings of *padecer de nervios* and *ataque de nervios* among a subsample of the same Mexican-born mothers. There were two specific aims and research questions:

1. How are *padecer de nervios* and *ataque de nervios* described in the 21st century by Mexican immigrant mothers living in the United States and contending with a specific set of immigrant/acculturative stressors? It was anticipated that those interpersonal, societal, and environmental stressors most pervasive to an immigrant's experience would configure the function and meaning of *padecer de nervios* and *ataque de nervios* in her life. In other words, it was hypothesized that an immigrant's most central immigration/acculturative stressors would be incorporated in descriptions of *padecer de nervios* and *ataque de nervios*.

2. Is lifetime history of *padeecer de nervios/ataque de nervios* associated with lifetime psychiatric history and psychopathology? It was hypothesized that lifetime history of *ataque de nervios* would be associated with lifetime psychiatric history. Beliefs about *ataque de nervios* were hypothesized to include more references to psychopathology relative to descriptions of *padeecer de nervios*.

CHAPTER IV

Study 1

Method

Participants

Ninety-nine Mexican-born adult mothers of infant, preschool, or elementary school age children were recruited for participation. Adult Latinas were recruited because epidemiological research suggests higher prevalence rates of *nervios* and *ataque de nervios* are found among this age group. Exclusion criteria included non-Mexican ethnicity. Three participants were excluded because of non-Mexican ethnicity, while 17 others were excluded due to incomplete or missing data. A total of 82 participants with complete data were examined in this study. The mean age of participants was approximately 30 years (see Table 1). Approximately 88% ($n = 70$) of participants had an 8th grade educational level, and over 90% ($n = 75$) of the sample was married. The majority of the sample (98.7%, $n = 75$) self-identified as first-generation or foreign-born immigrants⁶.

Setting

Participants were enrolled in an early childhood and family literacy program operated by a not-for-profit community agency in a Midwestern urban city. This community agency

⁶ Missing data for marital status and generational level account for differences in sample sizes. One participant was missing data for marital status, whereas six participants were missing data for generational level.

offers mental health, literacy, housing and economic services for impoverished families living in the catchment area. This study recruited participants from five of the existing English family literacy programs. All five programs were part of the Department of Education's Even Start Family Literacy initiative (U.S. Department of Education, n.d.) in the mid-west and served predominantly Mexican families, with either migrant or immigrant status. To be eligible for participation in the literacy programs, participants were required to be Spanish-speaking with children between birth and ten years old, and/or pregnant. The programs were created with the purpose of helping children and parents improve reading, writing, and English language skills, while promoting active parental engagement in children's education. The sample included Latina mothers in both beginner and advanced English classes.

Measures

Ataques/ Nervios Prescreener. A brief dichotomous survey was included to assess whether participants endorsed lifetime histories of *ataque de nervios* (ATQ) or *padeecer de nervios* (PNRV). In the *Ataques/ Nervios Prescreener* respondents were asked: 1) have you ever had an *ataque de nervios*? and 2) have you ever suffered from *nervios*? Participants were required to circle yes or no to indicate their response to each question.

Acculturation Status. To assess acculturation, a multidimensional scale, the Acculturation Rating Scale for Mexican Americans-Revised or ARSMA-II (Cuellar, Arnold, & Maldonado, 1995) was used. The ARSMA-II and its predecessor the ARSMA (Cuellar, Harris, & Jasso, 1980) are the most frequently used measures to assess acculturation in Mexican American samples (Zane & Mak, 2003). This scale consists of

30 items with demonstrated concurrent, content, convergent, and discriminant validity in a sample of Mexican Americans distributed among five generations. The ARSMA-II assesses extent of involvement in Mexican and Anglo culture by inquiring about cultural practices, language preferences and uses, peer groups, and ethnic identity using a five point Likert-scale corresponding to the extent to which they endorse an item ranging from 1 (not at all) to 5 (extremely often or almost always) . Relevant items are summed to yield independent scores for the Mexican Orientation Subscale (MOS), and the Anglo Orientation Subscale (AOS). The internal consistency of the subscales has ranged from $\alpha = .77$ to $.91$, with adequate one week test-retest reliabilities ($\alpha = .94$ to $.96$). This measure also includes a face page which asks participants for a host of demographic information including age and self-reported generational status and education level. In this sample, Cronbach's alpha coefficients indicated good internal consistency for the AOS subscale ($\alpha = .81$) and adequate consistency for MOS subscale ($\alpha = .67$).

English Proficiency. The Basic English Skills Test or the BEST Literacy test is a commonly used objective performance measure of English proficiency in adult learners of English (as described in Texas Education Agency, 2009). The test is administered by a trained examiner and tests reading (e.g., reading dates on a calendar, newspaper advertisements, and labels/tags on clothing or food items) and writing skills (e.g., addressing an envelope, writing a rent check, completing demographic information). The BEST test was administered bi-annually (Fall and Spring semesters) at the family literacy programs as part of their pre- and post assessment procedures. Three parallel forms are available for use in pre-and post testing. The exam takes one hour to complete. The scaled BEST test scores are then used to determine an individual's corresponding English

as a Second Language (ESL) educational and functioning level as established by the National Reporting System for Adult Education. There are five levels including: Beginning ESL (BEST Scores 0-20), Low Beginning ESL (BEST Scores 21-52), High Beginning ESL (BEST Scores 53-63), Low Intermediate ESL (BEST Scores 64-67), High Intermediate ESL (BEST Scores 68-75), and Advanced ESL (76-78). The BEST test serves as a crude proxy of acculturation to U.S. American life ways. Participants' most recent scores on the BEST exam for the academic year were used in this study. Testing had occurred within one to two months of study participation.

Psychological Distress. To assess psychological distress, the Spanish Version of the Brief Symptom Inventory (BSI; Acosta, Nguyen, & Yamamoto, 1994; Ruipérez, Ibáñez, Lorente, Moroa, & Ortet, 2001) was administered. The Spanish version of the BSI is adapted from the English version. The English version of the BSI is a self-report survey for use with clinical and nonclinical samples that includes 53 items about a range of problems and symptoms (Derogatis & Melisaratos, 1983). The items are rated using a five-point rating scale (range from 0-4) corresponding to frequency of distress in the past week, ranging from *not at all* (0) to *extremely* (4). Responses correspond to nine dimensions of psychopathology symptoms (Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism) and yield three global indices that can be calculated from the raw scores (Global Severity Index, Positive Symptom Total, Positive Symptom Distress Index). Because of the intercorrelations across the nine dimensions assessed in the BSI, the Global Severity Index was used as the composite measure of psychological distress. Standard scores (T-scores) are available for dimension and global indices. Scores on the

Global Severity Index range from 0 to 2.38 in adult females; raw scores above .76 are considered indicative of clinical severity (Derogatis, 1993). The English version of the BSI has adequate internal consistency reliability ($\alpha = .71$ to $.85$) and test-retest reliability ($\alpha = .68$ to $.91$). The English version of the BSI also has good concurrent validity with the Minnesota Multiphasic Personality Inventory. The Spanish version of the BSI also has alpha coefficients ranging from $.70$ to $.95$ across the dimensions and indexes and is considered a valid and reliable assessment tool (Ruipérez et al., 2001). The BSI in this sample displayed good internal consistency ($\alpha = .97$).

Acculturative Stress. To measure acculturative stress, the Hispanic Stress Inventory (HSI; Cervantes, Padilla, & Salgado de Snyder, 1991) was used. The HSI was initially created as a measure of psychosocial stress that could capture the acute and chronic stressors of Latina/o immigrant and U.S.-born Latina/o adults. Two versions of the instrument were created to capture the unique experiences of these two groups (i.e., Immigrant version and U.S.-born version, respectively). The Immigrant version of the HSI was used in this study. This version consists of 73 items about the extent to which participants are distressed by conflict across five domains: Occupational/Economic, Marital, Parental, Family, and Immigration. The items are rated using a five-point rating scale (1 to 5) corresponding to frequency of distress, ranging from *not at all stressful* (1) to *extremely stressful* (5), and summed to yield a composite acculturative stress score. Scores range from 73 to 365; higher scores indicate higher levels of acculturative stress. Standard scores (T-Scores) are available for the five domains. The Immigrant version of the HSI has demonstrated good content and construct validity in a sample of Latina/o immigrants (predominantly of Mexican and Central American ethnicity) living in Los

Angeles, California. The Immigrant version of the HSI has good internal consistency reliability ($\alpha = .77$ to $.91$), test-retest reliability ($\alpha = .61$ to $.86$), and good concurrent validity ($r = .45$, $p < .001$) with the Center for Epidemiological Studies Depression Scale (CES-D). Cronbach's alpha coefficient ($\alpha = .92$) indicated good internal consistency of the scale in this sample.

Anxiety Sensitivity. The Anxiety Sensitivity Index or ASI (Peterson & Reiss, 1992; Reiss, Peterson, Gursky, & McNally, 1986) was used to measure “fear of anxiety symptoms”. The ASI is the most widely used measure to assess anxiety sensitivity (Peterson & Plehn, 1999). The ASI (Reiss, et al., 1986; Reiss, et al., 2008; Peterson & Reiss, 1992) is a 16 item measure that assesses the extent to which a person finds anxiety-related sensations to be fearful or catastrophic in outcome. Questions are asked using a five point Likert-scale ranging from *very little* (0) to *very much* (4). Scores range from 0 to 64. Scores above 24 appear to indicate clinical levels of anxiety (i.e., social phobia, generalized anxiety disorder, panic disorder, posttraumatic stress disorder), with the highest mean levels of anxiety sensitivity for panic disorder followed by posttraumatic stress disorder (Reiss, et al., 2008). Test-retest reliability, internal consistency, and predictive validity of the ASI have been demonstrated to be excellent (Reiss et al.; Peterson & Reiss). Alpha coefficients range from $.79$ to $.90$. Moreover, the Spanish version of the ASI is validated in both clinical and community samples in Spain and Puerto Rico, with proven discriminant, convergent, and concurrent validity (Sandin, Chorot, & McNally, 1996; Cintròn, Carter, et al., 2005). Notably, scores on the ASI have been found to be positively correlated with greater Latino acculturation (Cintròn, Carter, et al.). The internal consistency of the scale is also good ($\alpha = .80$ in nonpatient samples to

.91 in clinical samples). Further tests on the psychometric equivalence of the English and Spanish language versions of the ASI in a Latino sample found evidence for the validity of the translation (Novy, Stanley, Averill, & Daza, 2001). In this sample, good internal consistency reliability was also observed ($\alpha = .82$).

Trait Anxiety. The trait version of the State/Trait Anxiety Inventory or STAI T-Anxiety (Spielberger et al., 1970, 1983) was used to assess proneness to anxiety or trait anxiety. The STAI T-Anxiety scale includes 20 items about an individual's proneness to experience anxiety and tendency to appraise stressful situations as threatening. The STAI-T is widely used in clinical and community psychological research. STAI-T has demonstrated good content and construct validity and reliability in college students, military recruits, medical patients, and working adults. The STAI-T uses a four-point Likert scale, ranging from *not at all/almost never* (1) to *very much so/almost always* (4) to answer a series of "T" statements about how one *generally* feels (e.g., "I feel nervous and restless"). Scores range from 20 to 80; raw scores above 55 are said to be indicative of trait anxiety levels that are two standard deviations above the mean. Standard scores are also available. The English version of the STAI T-Anxiety has good 20 day test-retest reliability among college students ($\alpha = .76$ to $.86$), good internal consistency reliability among working adults ($\alpha = .91$), and good convergent validity with aggression on the Jackson's Personality Research Form ($r = .34$, $p < .05$). The Spanish version of the STAI has demonstrated good internal consistency in an island sample of Puerto Ricans, with alpha coefficients ranging from $.82$ to $.95$ (Spielberger et al., 1971; Virella, Arbona, & Novy, 1994). Good internal consistency reliability was also observed in this sample ($\alpha = .79$).

Procedure

Participation in this study was voluntary and confidential. The study was approved by the University of Michigan Institutional Review Board and the community agency's internal review board. Participants were recruited through flyers and in-person recruitment efforts at the five English family literacy programs described earlier. The principal investigator made in-classroom visits to explain the study, answer questions, and inform potential participants of the survey administration date. Interested students were invited to attend class at the designated day and time if they wanted to participate in the study. On that date, interested students provided written informed consent to participate in the study and to release the results of their BEST test to the principal investigator. Participants at that time were also provided with a list of mental health and community resources in their local area in the event they were interested in seeking services. A team of three undergraduate research assistants along with the principal investigator administered a survey battery with the measures on location at the respective program site. Participants had up to 1.5 hours to complete the survey battery during designated time. Survey packets were available in English if participants expressed a preference for completing the English forms. Every participant completed the surveys in Spanish. Participants were paid \$10 for completion of the survey battery. Data were collected in two time periods between November 2007 and June 2009. Data for 53 participants were collected between November 2007 and May 2008 primarily from two sites that served mothers of preschool children (Cohort 1); this cohort included both immigrants and migrants. An additional 46 participants were recruited in May 2009 and

June 2009 from three additional program sites that served mothers with elementary age children (Cohort 2).

Data Cleaning and Data Reduction

The survey measures were scored according to published conventions, entered into SPSS 17.0, and double-checked for accuracy by a team of undergraduate research assistants. In addition, the principal investigator verified the scoring of a random sample of 25 participants. The acculturative stress variable was recalculated in two meaningful ways. First, due to its broad range (in this sample 73- 197) the acculturative stress composite variable was divided by ten so as to facilitate meaningful interpretation of unit increment changes in the outcome variable. Second, on account of the high inter-correlation among the acculturative domains, the marital conflict and family/cultural conflict acculturative domains were aggregated into one variable, and the economic/occupation domain was excluded from one of the analyses (i.e., the Multiple Analysis of Covariance).

Data Analytic Strategy

A theory-driven and data-driven approach (as discussed in Hosmer & Lemeshow, 2000) to regression model building was adopted in this study. A series of preliminary analyses were conducted. First, individual sample *t* tests were conducted to compare participants who were included in the study ($n = 82$) with those excluded due to missing/incomplete data ($n = 17$), and to determine if there were significant differences between groups on all study variables based on available data. The patterns in missing

data were also explored to identify specific variables for which a significant percentage of participants (at least 10%) were missing responses, and therefore variables for which imputation would be appropriate. Second, individual sample t-tests or Chi-square analyses were also conducted to determine if there were differences on all study variables between Cohort 1 and Cohort 2. Third, descriptive statistical analyses were conducted to examine the sample on identified demographic and study variables.

To address the specific research questions, bi-variate logistic or linear regression analyses were conducted first to determine if (a) lifetime history of ATQ or PNRV was bi-variatly related to distress/stress (e.g., psychological distress, acculturative stress), acculturation (e.g., Mexican; U.S. American, English proficiency), anxiety (e.g., trait anxiety, anxiety sensitivity), and key demographic variables (i.e., age); and (b) current psychological distress or acculturative stress was bi-variatly related to acculturation, anxiety, history of ATQ/PNRV, and key demographic variables. These analyses helped determine potential co-variates and confounds.

Second, hierarchical logistic or linear regression analyses were utilized to determine whether lifetime history of ATQ/PNRV, current acculturative stress, or current psychological distress were still related to anxiety and acculturation after statistically controlling for demographic variables, and to determine the individual contribution of each predictor variable. Collinearity diagnostics including examination of correlation matrices and computation of tolerance and Variance Inflation Factors (VIF) were conducted to assess for multicollinearity problems. Regression analyses were re-conducted excluding those problematic variables. Those variables with VIF values of greater than 3 were eliminated from the regression model for that particular set of

analyses (as discussed in Leech, Barrett, & Morgan 2005). The resulting VIF values and standard errors were then examined to determine if the variable should be included or excluded from the final models. Regression diagnostics (e.g., examination of visual residual plots, measures of influence and leverage such as Cook's Distance and Leverage values) were also computed to examine the data for heteroscedasticity and potential outliers. Visual plots were also used to detect the functional relationship between age and the outcome variables.⁷ Third, to determine if select demographic, anxiety, and history of ATQ differentially predict acculturative domains, a Multiple Analysis of Covariance was conducted. SPSS 17.0 was used for all statistical analyses. The threshold for significance was set at $p < .05$ (two-tailed).

Results

Descriptive Statistics

Table 1 represents the descriptive statistics for the Study 1 sample. Thirty four participants (41.5%) endorsed a lifetime history of ATQ, whereas 48 (58.5%) endorsed a lifetime history of PNRV. Cohort 1 ($n = 48$) and Cohort 2 ($n = 34$) subgroups did not differ significantly from one another on most study variables, with the exception of age, English Proficiency, and Mexican acculturation. Participants in Cohort 1 were: younger ($M = 28.50$, $SD = 5.21$) relative to participants in Cohort 2 ($M = 31.82$, $SD = 5.60$), $t(80) = -2.76$, $p < .01$; had lower English proficiency scores ($M = 56.44$, $SD = 11.94$) in comparison to participants in Cohort 2 ($M = 62.81$, $SD = 12.85$), $t(80) = -2.30$, $p < .05$; and had higher levels of Mexican acculturation ($M = 4.34$, $SD = .33$) than participants in

⁷ Visual plots showed age had a linear functional relationship with all of the outcome variables.

Table 1.

Background Variables for Entire Sample and Data Cohorts

Variable	Overall Sample N=82 M (SD) or N (%)	Cohort 1 n=48 M (SD) or N (%)	Cohort 2 n=34 M (SD) or N (%)	t(df) or X2(df)
<i>Demographics</i>				
Age	29.88 (5.59)	28.50 (5.21)	31.82 (5.60)	-2.76 (80)**
<i>Gender</i>				
Female	82 (100)	48 (100)	34 (100)	
<i>Ethnicity</i>				
Mexican	80 (97.6)	46 (95.8)	34 (100)	1.45 (1)
Mexican & Other	2 (2.4)	2 (4.2)	0 (0.0)	
<i>Educational Attainment</i>				
Primary (0 to 6th)	34 (42.5)	24 (52.2)	10 (29.4)	8.89 (4)†
Secondary (7-8th)	36 (45.0)	20 (43.5)	16 (47.1)	
Preparatory (9-12th)	7 (8.8)	2 (4.3)	5 (14.7)	
University/College (1-2 yrs)	1 (1.3)	0 (0.0)	1 (2.9)	
University/College (3-4 yrs)	2 (2.5)	0 (0.0)	2 (5.9)	
<i>Self Reported Generation Status</i>				
1st Generation	75 (98.7)	43 (97.7)	32 (100)	.74 (1)
2nd Generation	1(1.3)	1 (2.3)		
<i>Marital Status</i>				
Single	6 (7.4)	2 (4.3)	4 (11.8)	1.62 (1)
Married	75 (92.6)	45 (95.7)	30 (88.2)	
<i>History of Ataques</i>				
No	48 (58.5)	28 (58.3)	20 (58.8)	.002 (1)

Yes	34 (41.5)	20 (41.7)	14 (41.2)	
<i>History of Padecer de Nervios</i>				
No	34 (41.5)	17 (35.4)	17 (50.0)	1.74 (1)
Yes	48 (58.5)	31 (64.6)	17 (50.0)	
<i>Distress/Stress</i>				
Psychological Distress (BSI)	.80 (.57)	.82 (.58)	.79 (.55)	.29 (80)
Acculturative Stress (HSI)	11.56 (2.57)	11.33 (2.48)	11.89 (2.70)	-.96 (80)
<i>Anxiety</i>				
Anxiety Sensitivity (ASI)	17.20 (11.07)	15.77 (10.93)	19.21 (11.12)	-1.39 (80)
Trait Anxiety (STAIY-2)	41.44 (10.07)	41 (9.46)	42.06 (11.00)	-.47 (80)
<i>Acculturation</i>				
US American Acc. (ARSMA AOS)	2.08 (.48)	2.13(.52)	2.01 (.41)	1.13 (80)
Mexican Acc. (ARSMA MOS)	4.26 (.41)	4.34 (.32)	4.15(.49)	2.16 (80)*
English Proficiency (BEST Score)	59.08 (12.65)	56.44 (11.94)	62.81(12.85)	-2.30 (80)*

† $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Cohort 2 ($M = 4.15$, $SD = .49$), $t(80) = 2.16$, $p < .05$. These cohort differences are expected given participants in Cohort 1 were mothers of preschool age children and thus likely to be younger and more recent immigrants relative to those in Cohort 2, which would correspond with higher levels of acculturation and lower English proficiency. It should be noted that participants in both cohorts had high mean levels of Mexican acculturation. On average, participants had High Beginning ESL English proficiency levels (BEST Test, $M = 59.08$, $SD = 12.65$), which indicates participants had functional English such that they could understand, speak, read, and write common words, phrases, and sentences.

Participants scored in the non-clinical/normative range for anxiety sensitivity ($M = 17.10$, $SD = 11.07$) and trait anxiety ($M = 41.44$, $SD = 10.07$), but were at the 90th percentile of the normative adult female population for psychological distress on the BSI ($M = .80$, $SD = .57$)⁸.

Missing Data

Preliminary analyses indicated that approximately 24% of participants enrolled in the study had missing or incomplete data. The missing data were examined for patterns for the purpose of identifying specific variables accountable for a significant percentage of missing data. Missing data were found to be equally distributed across study variables, with the exception of the English proficiency variable. Approximately 10% of participants did not have English Proficiency scores owing to never having completed the exam. Regression estimates were used to impute the English Proficiency scores in cases where participants were missing these values ($n = 10$). Sensitivity analyses were also conducted to determine whether deletion of the English proficiency variable would yield

⁸ Statement based on conversion of BSIGSI raw scores to T-scores.

significant changes in regression estimates when compared to inclusion of English proficiency as an imputed variable. Sensitivity analyses indicated that regression estimates did not significantly change, thus the imputed English Proficiency variable was used in all analyses, as it is a more conservative statistical approach. Inclusion of the imputed English proficiency variable resulted in a total sample of 82 participants with complete data. There were no significant differences found between included ($n = 82$) and excluded ($n = 17$) participants.

Bivariate Relationships among Study Variables

Pearson product-correlation analyses and bivariate logistic/linear regression analyses were conducted as an initial step to explore the crude relationships between the outcome and predictor variables. The correlational results are presented in the inter-correlation matrix in Table 2. The bivariate logistic regression analyses (Table 3) corroborated the correlation results. Odds for self-reported lifetime history of ATQ were higher among those with positive histories of PNRV (Odds Ratio [OR] = 4.96; 95% Confidence Interval [CI] = (1.81, 13.59). Odds for lifetime PNRV were higher among those with psychological distress (OR = 6.14; 95% CI = 2.07, 18.16), acculturative stress (OR = 1.23; 95% CI = 1.00, 1.50), and trait anxiety (OR = 1.07; 95% CI = 1.02, 1.12). Bivariate linear regression analyses (Table 4) indicated a relationship between current acculturative stress and past ATQ ($\beta = .21, p < .05$), anxiety sensitivity ($\beta = .45, p < .001$), and trait anxiety ($\beta = .48, p < .001$). Current psychological distress was related to past

Table 2.

Intercorrelations between primary predictor, demographic, and dependent variables (N = 82)

	1	2	3	4	5	6	7	8	9	10
1. Age	1.00									
2. History of ATQ	-0.14	1.00								
3. History of PNVR	-0.13	.36**	1.00							
4. Psychological Distress	-0.05	0.16	.39**	1.00						
5. Acculturative Stress	0.13	0.14	.23*	.55**	1.00					
6. US American Acculturation	0.12	0.04	0.05	-0.06	0.18	1.00				
7. Mexican Acculturation	-0.06	0.16	0.05	-0.05	0.07	0.15	1.00			
8. Anxiety Sensitivity	0.11	0.07	0.09	.54**	.50**	0.14	-0.08	1.00		
9. Trait Anxiety	0.00	0.19	.30**	.67**	.45**	0.00	-0.16	.40**	1.00	
10. English Proficiency	.23*	0.04	-0.03	-0.05	-0.03	0.09	-0.11	0.04	0.12	1.00

Note.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3.

Bivariate Logistic Regression Analyses for Variables Predicting History of Ataque de Nervios (Hx ATQ), Padecer de Nervios (Hx PNRV) (N = 82)

Exploratory Variables	Hx ATQ		Hx PNRV	
	Odds Ratio	95% CI	Odds Ratio	95% CI
<i>Demographic</i>				
Age	0.95	(.88, 1.03)	0.95	(.88, 1.03)
<i>Distress/Stress</i>				
Psychological distress	1.81	(.82, 4.00)	6.14***	(2.07, 18.16)
Acculturative stress	1.12	(.95, 1.33)	1.23*	(1.00, 1.50)
<i>Acculturation</i>				
U.S. American	1.20	(.48, 3.03)	1.22	(.48, 3.11)
Mexican American	2.44	(.74, 8.03)	1.26	(.42, 3.70)
English proficiency	1.01	(.97, 1.04)	1.00	(.96, 1.03)
<i>Anxiety</i>				
Anxiety sensitivity	1.01	(.97, 1.06)	1.02	(.98, 1.06)
Trait anxiety	1.04†	(.99, 1.09)	1.07**	(1.02, 1.12)
<i>History of Cultural Syndromes</i>				
Positive history of PNRV	4.96***	(1.81, 13.59)	---	---
Negative history of PNRV	REF	REF	---	---
Positive history of ATQ	---	---	4.96**	(1.81, 13.59)
Negative history of ATQ	---	---	REF	REF

Note. † $p < .10$, * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 4.

Exploratory Bivariate Linear Regression Analyses for Variables Predicting Psychological and Acculturative Stress (N = 82)

Exploratory Variables	Psychological Distress		Acculturative Stress	
	B (SE B)	β	B (SE B)	β
<i>Demographic</i>				
Age	.01 (.01)	0.10	.06 (.06)	0.11
<i>Distress/Stress</i>				
Psychological Distress	---	---	2.60 (.48)	.49***
Acculturative Stress	.09 (.02)	.49***	---	---
<i>Acculturation</i>				
U.S. American	-.03 (.13)	-0.03	.99 (.69)	0.15
Mexican American	-.08 (.15)	-0.06	.71 (.76)	0.10
English Proficiency	-.01 (.01)	-0.17	-.02 (.03)	-0.09
<i>Anxiety</i>				
Anxiety Sensitivity	.03 (.01)	.51***	.12 (.03)	.45***
Trait Anxiety	.04 (.01)	.68***	.14 (.03)	.48***
<i>History of Cultural Syndromes</i>				
History of Padecer de Nervios	.12 (.03)	.36***	.28 (.15)	0.19
History of Ataques de Nervios	.06 (.03)	0.20†	.31 (.15)	.21*

Note.

† $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

PNRV ($\beta = .36, p < .001$), current acculturative stress ($\beta = .49, p < .001$), anxiety sensitivity ($\beta = .51, p < .001$), and trait anxiety ($\beta = .68, p < .001$). These crude statistics indicate that in unadjusted models⁹, only lifetime PNRV was associated with past ATQ, whereas proneness to anxiety and current psychosocial stress (e.g., psychological distress and acculturative stress) were particularly meaningful in their relation to lifetime PNRV. Of those, past-week psychological distress resulted in a five-fold increase in odds for lifetime PNRV. In unadjusted linear models, lifetime ATQ was a significant predictor of acculturative stress in the past three months, whereas lifetime PNRV was a predictor of past-week psychological distress. This suggests that both lifetime ATQ and lifetime PNRV are indicators of distress vulnerability, with lifetime PNRV being the most consistent indicator of distress. Anxiety sensitivity and trait anxiety were also important indicators of distress in unadjusted models.

Hierarchical Logistic Regression

Is Lifetime History of ATQ/PNRV Related to Acculturative stress, Acculturation, and Anxiety?

Results of the unadjusted models yielded a simplistic picture of the relationship between lifetime history of ATQ/PNRV and study variables. A series of hierarchical logistic regressions were conducted to better understand the relationship between lifetime histories of ATQ/PNRV and main study variables after adjusting for covariates (e.g., age, English proficiency). To examine if acculturative stress, acculturation subscales, and anxiety were related to lifetime histories of ATQ/PNRV after controlling for age and

⁹ The terms “adjusted models” refers to models in which covariates are held constant. The terms “adjusted” and “controlled for” are used interchangeably. The term unadjusted refers to the crude bivariate relationships that do not control for covariates.

English Proficiency, two sets of hierarchical logistic regression analyses were conducted. One set of analyses included lifetime ATQ as the outcome variable and the other lifetime PNRV. Predictors were entered in five blocks: demographic and language proficiency (e.g., age, English proficiency), acculturative stress, acculturation (e.g., U.S. American, Mexican American), anxiety (e.g., anxiety sensitivity, trait anxiety), and lifetime history of ATQ/PNRV, depending on the outcome of interest. Based on the inter-correlation matrix, psychological distress was excluded from this analysis due to high correlation with trait anxiety, and evidence of multicollinearity when included in the analyses.

The variables in the fifth model (Table 5)¹⁰ explained 23% of the variance in lifetime history of ATQ, $X^2(8, 82) = 15.61, p < .05$. As in the unadjusted model, positive history of PNRV was again the only study variable related to higher odds for lifetime ATQ relative to those with negative history of PNRV (OR= 4.02; 95% CI = 1.37, 11.81). Lifetime PNRV uniquely accounted for 9% of the variance and a three-fold increase in odds for lifetime ATQ in the full model. Similarly, the variables in Model 5 (Table 6) explained 28% of the variance in lifetime history of PNRV, $X^2(8, 82) = 19.41, p < .05$. As in the first set of analyses, prior lifetime history of ATQ was related to higher odds for lifetime PNRV relative to those with unremarkable lifetime ATQ history, (OR = 4.31; 95% CI = 1.44, 12.90); and lifetime ATQ was responsible for the majority of the variance that explained lifetime PNRV ($R^2 = 10\%$). Of note, trait anxiety emerged as significant in predicting lifetime history of PNRV in Model 4 (OR = 1.07; 95% CI = 1.01, 1.13) and marginally significant in Model 5 when history of ATQ was included in the model. This

¹⁰ Only the significant hierarchical regression models will be included in Tables 5-8.

Table 5.

Summary of Logistic Regression Analyses for Variables Predicting History of Ataque de Nervios ($N = 82$)

	Model 4		Model 5	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Constant	0.00†		0.00†	
Age	0.94	(.86, 1.03)	0.95	(.86, 1.04)
English Proficiency	1.02	(.98, 1.06)	1.02	(.98, 1.06)
Acculturative Stress	1.06	(.85, 1.33)	1.02	(.81, 1.29)
U.S. American Acculturation	1.13	(.41, 3.17)	1.07	(.36, 3.17)
Mexican American Acculturation	3.04†	(.81, 11.39)	2.70	(.73, 9.98)
Anxiety Sensitivity	1.00	(.95, 1.05)	1.00	(.95, 1.06)
Trait Anxiety	1.04	(.99, 1.10)	1.02	(.97, 1.09)
Positive History of PNRV			4.02*	(1.37, 11.81)
Negative History of PNRV			REF	REF
χ^2 (<i>df</i> , <i>df</i>)	8.74 (1,7)		15.61 (1,8)*	
<i>N</i>	82		82	
Nagerlkerke R^2	0.14		0.23	
-2 Log Likelihood	102.54		95.66**	

Note.† $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hosmer and Lemeshow Goodness of Fit Test indicated good fit for all Models

Table 6.

Summary of Logistic Regression Analyses for Variables Predicting History of Padeecer de Nervios ($N = 82$)

	Model 3		Model 4		Model 5	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Constant	0.34		0.03		0.07	
Age	0.94	(.86, 1.02)	0.95	(.87, 1.04)	0.96	(.88, 1.06)
English Proficiency	1.00	(.97, 1.04)	1.00	(.96, 1.04)	0.99	(.95, 1.03)
Acculturative Stress	1.25*	(1.01, 1.54)	1.16	(.90, 1.50)	1.14	(.88, 1.47)
U.S. American Acculturation	1.09	(.39, 3.03)	1.21	(.41, 3.52)	1.34	(.41, 4.39)
Mexican American Acculturation	1.11	(.36, 3.48)	1.40	(.42, 4.65)	1.00	(.28, 3.57)
Anxiety Sensitivity			0.98	(.93, 1.03)	0.98	(.93, 1.04)
Trait Anxiety			1.07*	(1.01, 1.13)	1.07†	(1.00, 1.13)
Positive History of Ataques					4.31**	(1.44, 12.90)
Negative History of Ataques					REF	REF
χ^2 (<i>df</i> , <i>df</i>)	6.81 (1, 5)		11.96 (1, 7)		19.41 (1, 8)*	
<i>N</i>	82		82		82	
Nagerlkerke R^2	0.11		0.18		0.28	
-2 Log Likelihood	104.46		99.32*		91.87**	

Note.† $p < .10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.Hosmer and Lemeshow Goodness of Fit Tests indicated poor fit for Model 3 (χ^2 , 8, $N = 82 = 17.31$, $p < .05$)

demonstrates that lifetime ATQ is a more robust predictor of lifetime PNRV than trait anxiety in adjusted models. Contrary to this study's hypothesis, Mexican acculturation and acculturative stress were not related to self-reported lifetime histories of ATQ or PNRV. Despite a marginal association between trait anxiety and past lifetime history of PNRV, none of the anxiety variables were strongly and consistently related to prior histories of ATQ/PNRV.

Hierarchical Linear Regressions

Is Lifetime History of ATQ /PNRV Predictive of Current Psychological Distress after controlling for anxiety and acculturative stress?

The next set of analyses explored the extent to which lifetime history of ATQ/PNRV were unique predictors of past-week psychological distress in models adjusting for anxiety, acculturative stress, age, and English proficiency. In the unadjusted models, lifetime ATQ/PNRV appeared to be differential predictors of current psychosocial distress, and anxiety was a significant predictor of psychological distress. Of note, acculturation subscales (i.e., multidimensional scales of acculturation) were excluded from these analyses because they were not statistically related to psychological distress at the bivariate level.

Hierarchical linear regression analyses (Table 7) were used to examine if lifetime history of ATQ/PNRV was predictive of current psychological distress after controlling for age, English proficiency, and acculturative stress. The predictors were entered in four blocks: demographic, English proficiency, and acculturative stress, individual anxiety variables (e.g., anxiety sensitivity, trait anxiety), and lifetime history of ATQ/PNRV. The anxiety variables were entered one at a time to determine their respective contributions.

Table 7.

Summary of Linear Regression Analyses for Variables Predicting Psychological Distress (N = 82)

	Model 3		Model 4		Model 5	
	B (SE B)	β	B (SE B)	β	B (SE B)	β
Constant	-.57 (.34)		-.58 (.34)		-.64 (.33)	
Age	-.01 (.01)	-0.09	-.01 (.01)	-0.09	-.01 (.01)	-0.07
English Proficiency (BEST)	-.00 (.00)	-0.09	-.00 (.00)	-0.09	-.00 (.00)	-0.08
Acculturative Stress	.05 (.02)	0.21*	.05 (.02)	0.21*	.04 (.02)	0.19*
Anxiety Sensitivity	.01 (.01)	.26**	.01 (.01)	.26**	.01 (.00)	.28**
Trait Anxiety	.03 (.01)	.48** *	.03 (.01)	.47** *	.02 (.01)	.43** *
Positive History of Ataques			.01 (.02)	0.02	-.01 (.02)	-0.04
Positive History of Nervios					.06 (.02)	.20*
<i>F</i> (<i>df1</i> , <i>df2</i>)	21.42 (5, 76)***		17.63 (6, 75)***		16.99 (7, 74)***	
<i>N</i>	82		82		82	
<i>R</i> ²	0.59		0.59		0.62	
ΔR^2	.17***		0.00		.03*	

*Note.** $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The variables in the fifth model explained 62% of the variance in psychological distress, $F(7, 74) = 16.99; p < .001$. Positive history of PNRV ($\beta = .20, p < .05$) predicted current psychological distress beyond acculturative stress ($\beta = .19, p < .05$), anxiety sensitivity ($\beta = .28, p < .01$) and trait anxiety ($\beta = .43, p < .001$). However, history of PNRV ($R^2 = 3\%$) accounted for a small proportion of the variance in psychological distress relative to acculturative stress ($R^2 = 31\%$), trait anxiety ($R^2 = 17\%$), and anxiety sensitivity ($R^2 = 10\%$).

These results suggest that the combination of these predictors are useful in understanding who may be at risk for experience of past-week psychological distress among first-generation Mexican-born adult mothers with limited English proficiency. In this sample, three-month acculturative stress was the best predictor of past-week psychological distress. In comparison to the unadjusted models, these results indicate that lifetime history of PNRV explains a significant but small percentage of the variance in past-week psychological distress. Consistent with this study's hypothesis, acculturative stress, anxiety sensitivity, and trait anxiety were predictive of past-week psychological distress. However, U.S. American acculturation was not related to current psychological distress in the unadjusted models. Notably, history of PNRV was not hypothesized to be predictive of psychological distress.

Is Lifetime History of ATQ /PNRV Predictive of Current Acculturative stress after controlling for anxiety, age, and English Proficiency?

The final set of analyses examined the extent to which lifetime histories of ATQ/PNRV were unique predictors of three-month acculturative stress after adjusting for

Table 8.

Summary of Linear Regression Analyses for Variables Predicting Acculturative Stress

	Model 1		Model 2		Model 3		Model 4	
	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Constant	10.39 (1.86) ^{***}		9.20 (1.64) ^{***}		6.48 (1.78) ^{***}		5.96 (1.82)	
Age	.07 (.05)	0.15	.04 (.05)	0.10	.05 (.04)	0.12	.06 (.05)	0.14
English Proficiency (BEST)	-.01 (.02)	-0.07	-.02 (.02)	-0.08	-.02 (.02)	-0.11	-.02 (.02)	-0.11
Anxiety Sensitivity			.11 (.02)	0.50 ^{***}	.08 (.02)	.36 ^{***}	.08 (.02)	.36 ^{***}
Trait Anxiety					.08 (.03)	.32 ^{**}	.07 (.03)	.28 ^{**}
Positive History of Ataques							.06 (.13)	0.05
Positive History of Nervios							.14 (.13)	0.11
<i>F</i> (<i>df</i> 1, <i>df</i> 2)	.85 (2, 79)		9.10 (3, 78) ^{***}		10.11 (4, 77) ^{***}		7.02 (6, 75) ^{***}	
<i>N</i>	82		82		82		82	
<i>R</i> ²	0.02		0.26		0.34		0.36	
ΔR^2			0.24 ^{***}		.09 ^{**}		0.02	

Note.

† $p < .10$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

anxiety, age, and English proficiency. Results from the unadjusted analyses indicated that lifetime ATQ was a significant predictor of three-month acculturative stress, as were trait anxiety and anxiety sensitivity. The unadjusted models, however, do not provide insight into the robustness of these relationships when other meaningful predictors are considered. Of note, the acculturation subscales were not included in the full models because they were not found to be statistically associated with acculturative stress at the bivariate level.

Hierarchical linear regression analyses (Table 8) were used to examine if lifetime history of ATQ/PNRV was predictive of three-month acculturative stress after controlling for age, English proficiency, and anxiety. The predictors were entered in four blocks: age and English proficiency, individual anxiety variables (e.g., anxiety sensitivity, trait anxiety), and lifetime history of ATQ/PNRV. To determine the independent contributions of anxiety sensitivity and trait anxiety to acculturative stress, the variables were entered in separate blocks. Keeping in mind that the measure of acculturative stress was created as a specific indicator of psychosocial stress among Latina/os culture-specific variables were expected to be especially important in predicting stress resulting from transition/adaptation to U.S. American life ways. Variables in the third model accounted for 34% of the variance in acculturative stress, $F(4, 77) = 10.11; p < .001$. Anxiety sensitivity ($\beta = .36, p < .001$) and trait anxiety ($\beta = .32, p < .01$) were predictive of acculturative stress. Lifetime history of ATQ/PNRV was not predictive of acculturative stress when the other predictor variables were held constant. Unlike the unadjusted models, the effect of lifetime ATQ in predicting three-month acculturative stress disappeared when anxious predisposition (as measured by anxiety sensitivity and trait

anxiety) were considered in the adjusted models. Of note, however, anxiety sensitivity accounted for the majority of the variance ($R^2 = 24\%$), whereas trait anxiety accounted for the remaining variance in acculturative stress ($R^2 = 9\%$).

Do Age, Anxiety and Lifetime ATQ Differentially Predict Acculturative Domains?

The hierarchical regression analysis above indicated that age, anxiety, and lifetime ATQ were significant predictors of acculturative stress as measured by a composite score. A secondary analysis was conducted to assess the relationship between the significant predictors of three-month acculturative stress, and the specific domains of acculturative stress (e.g., parental stress, interpersonal conflict, and immigration stress domains). The purpose of this analysis was to arrive at a clearer understanding of the association between select predictors and acculturative domains or specific types of acculturative stress since the associations could vary as a function of type of acculturative domain. A Multivariate Analysis of Covariance (Tables 9, 10) was conducted to determine if age, anxiety, and lifetime history of ATQ differentially predict a linear combination of acculturative domains. These variables were selected based on their significance when regressed on acculturative stress (the composite variable). A significant effect was found for age, Wilks $\lambda = .86$, $F(3, 75) = 4.22$, $p < .01$, multivariate $\eta^2 = .14$; anxiety sensitivity, Wilks $\lambda = .87$, $F(3, 75) = 3.81$, $p < .05$, multivariate $\eta^2 = .13$; and trait anxiety, Wilks $\lambda = .89$, $F(3, 75) = 3.03$, $p < .05$, multivariate $\eta^2 = .11$. Lifetime ATQ was not found to differentially predict acculturative domains. Follow-up univariate ANOVAs (Table 11) indicated that age was predictive of parental acculturative stress, $F(1, 77) = 10.85$, $p < .001$, whereas anxiety sensitivity was predictive of immigration, $F(1, 77) = 9.29$, $p < .01$ and interpersonal stress, $F(1, 77) = 7.45$, $p < .01$. Trait anxiety was also predictive

Table 9

Means and Standard Deviations for Acculturative Domains as a Function of ATQ History

Dependent Variables	Negative ATQ Hx (<i>n</i> = 48)		Positive ATQ Hx (<i>n</i> = 34)	
	Mean	SD	Mean	SD
Parental	15.42	2.67	15.53	2.39
Immigration	35.25	11.13	35.29	10.68
Interpersonal	21.26	5.36	24.09	6.45

Table 10

Multivariate Analysis of Variance for Acculturative Domains

Source	Wilk's λ	F	df	η^2
Age	0.86**	4.22	(3, 75)	0.14
Anxiety Sensitivity	.87*	3.81	(3, 75)	0.13
Trait Anxiety	.89*	3.03	(3, 75)	0.11
Positive History of ATQ	0.93	1.93	(3, 75)	0.07

Note: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Levene's test of equality of error variances was significant for Interpersonal domain $F(1, 80) = 4.02, p = .048$, indicating unequal error variance for that domain.

Table 11

Summary of Multiple Analysis of Covariance for Variables Predicting Domains of Acculturative Stress N=82

Source	Dependent Variable	df	F	η^2	p
Age	Parental	1	10.85***	0.12	0.000
	Immigration	1	0.12	0.00	0.736
	Interpersonal	1	0.72	0.01	0.397
Anxiety Sensitivity	Parental	1	3.03†	0.04	0.086
	Immigration	1	9.29**	0.11	0.003
	Interpersonal	1	7.45**	0.09	0.008
Trait Anxiety	Parental	1	2.45	0.03	0.122
	Immigration	1	4.15*	0.05	0.045
	Interpersonal	1	8.65**	0.10	0.004
Positive History ATQ	Parental	1	0.04	0.00	0.836
	Immigration	1	0.46	0.01	0.500
	Interpersonal	1	2.95†	0.04	0.090
Error	Parental	77	5.30		
	Immigration	77	97.07		
	Interpersonal	77	25.90		

Note: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

of immigration, $F(1, 77) = 4.15, p < .05$, and interpersonal domains, $F(1, 77) = 8.65, p < .01$.

Contrary to this study's hypotheses, lifetime ATQ/PNRV, and Mexican acculturation were not significant predictors of three-month acculturative stress in the full regression models. Instead, anxious predisposition as measured by anxiety sensitivity and trait anxiety were strong predictors of current acculturative stress. In fact, anxiety sensitivity or "fear of fear" emerged as the most robust predictor of experiences of past three-month acculturative stress. When acculturative domains were explored individually, the effect of anxiety sensitivity and trait anxiety were greatest for immigration stress and interpersonal conflict domains.

Summary

Results indicate that acculturation whether measured via multidimensional scales or crude measures (i.e., Best Test of English proficiency) were not statistically significant predictors of lifetime ATQ/PNRV, acculturative stress, or psychological distress. Instead, anxious vulnerability (whether anxious cognitive or behavioral predispositions) were robust predictors in experiences of past-week psychological distress and three-month acculturative stress in both unadjusted and adjusted models. An inconsistent effect of anxious vulnerability and lifetime history of ATQ/PNRV was also found. Positive lifetime histories of ATQ/PNRV were predictive mostly of each other, with the exception of the association between self-reported prior history of PNRV and psychological distress; however, lifetime PNRV accounted for only a small proportion of the variance in past-week psychological distress.

Discussion

This study is the first to examine concurrently the relationship between acculturative stress, psychological distress, multidimensional scales of acculturation (U.S. American acculturation, Mexican acculturation), objective measures of English Proficiency, anxious predispositions (i.e., anxiety sensitivity, trait anxiety), and lifetime ATQ/PNR. The results were mixed concerning the extent to which they supported or contradicted the hypotheses. The results can be organized into three main areas and are discussed below.

First, support for an acculturation stress model of mental health was not found in this sample. The construct of acculturation— whether measured with multidimensional scales or crude indices of adaptation to the U.S. (i.e., English proficiency)—were not significant predictors of any type of distress/stress experience or lifetime histories of ATQ/PNRV. This finding directly contradicted the stated hypotheses. There are four reasons that could account for the lack of significant effects observed. One reason is that the majority of participants in this sample were self-identified first-generation immigrants with high mean levels of Mexican acculturation and low mean levels of U.S. American acculturation. Thus, the low variability in acculturation statuses may have affected the ability to detect statistically meaningful associations between acculturation and any of the outcome variables. A second reason is objective measures of English proficiency may be poor predictors of psychological well-being or distress vulnerability (e.g., reported lifetime ATQ/PNRV). This is the first study to utilize an objective indicator of English proficiency as a crude measure of acculturation. It is possible that *perceptions* of English proficiency rather than *actual* English proficiency levels are more important in detecting

vulnerability/risk to experience of psychosocial distress (see Gee, Ryan, LaFlamme, & Holt, 2006 for discussion of importance of perceived discrimination in study with ethnic/racial groups). From this perspective, it is possible that self-reported English proficiency, rather than objective performance measures, is tied to a host of third-variables such as perceived self-efficacy (e.g., extent to which one feels capable of managing psychosocial stressors, capacity for emotion-regulation, problem-solving), which may mediate the relationship between psychosocial stress and distress. A third reason is that the lack of an observed acculturation effect is due to differences in sample composition. The lack of an acculturation effect in the present study is consistent with recent findings on ATQ among a nonclinical sample of Latina/o college students that did not find a significant association between acculturation and current experience of ATQ (Keough et al., 2009). It is possible that predictive power of acculturation on specified outcomes is more robust among clinical rather than community/nonclinical Latina/o samples. A fourth reason for the lack of an observed acculturation effect may be due to measurement error and psychometric issues. Psychological acculturation is a complex, context-dependent, and multidimensional process that may not be easily and reliably reduced to survey format and thus eludes precise measurement (Zane & Mak, 2003). Alternatively, it is also plausible that the psychometric properties of the multidimensional measure of acculturation used were not robust in this sample as evident by the relatively low Cronbach's alpha for the Mexican acculturation scale (similar concerns are also paramount in the study of ethnic identity; for a review of psychometric concerns in the measurement of ethnic identity see Cokley, 2007).

Second, anxious predisposition when measured by trait anxiety and anxiety sensitivity were consistent and robust predictors of three-month acculturative stress and past-week psychological distress. These findings are consistent with previous research noting an association between anxious predispositions, psychopathology, and psychosocial stress among Latina/os (e.g., Cintron, Carter, et al., 2005, Sandin, Chorot, & McNally, 1996). Of note, however, anxiety sensitivity or tendency to perceive arousal symptoms as catastrophic, more so than trait anxiety, emerged as a particularly important predictor of the experience of acculturative stress. It is possible that this fear of arousal symptoms or negative affective states is tied to the worry/preoccupation about psychosocial stressors captured in the acculturative stress measure. Thus, it is plausible that both measures (i.e., anxiety sensitivity and acculturative stress) are tapping into a fear of uncertainty and perceived lack of control typically discussed in models of normative and pathological worry, and intolerance of negative affect/emotion described in distress models (for a discussion of intolerance of uncertainty in worry see McLean & Woody, 2001; for a discussion on the relation between anxiety sensitivity and intolerance of negative affect and its association to generalized anxiety see Naragon-Gainey, 2010). It is also possible that the measure of acculturative stress served as an inadvertent measure of prospective risk for development of generalized anxiety disorder (GAD) symptoms. For example, the measure of acculturative stress asked participants to rate the extent of distress/preoccupation/worry they experienced in the last three months in relation to a series of psychosocial stressors unique to Latina/o immigrants. Thus, it is plausible that the acculturative stress measure served as a proxy assessment of several GAD criteria such as frequency and nature of worry and clinical or functional impairment

due to worry. In sum, it is very likely that the robust association found between anxiety sensitivity and acculturative stress reflects the association between anxiety sensitivity and sub-threshold generalized anxiety symptoms.

Third, lifetime history of ATQ was largely associated with lifetime history of PNRV, and vice versa, often resulting in three-fold increases in each category in unadjusted and adjusted models. The relationship between lifetime ATQ and PNRV was robust and provides support in favor of the interrelatedness of these conditions and conceptualization as *nervios* (nerves) related conditions as purported by Guarnaccia et al. (2003). This is now the second study to provide quantitative support for the association between these two cultural idioms of distress among Latina/os (the first study to document this relationship was Lewis-Fernández et al., in press). Despite the strength of this relationship, there was evidence for the consideration of ATQ and PNRV as related constructs with distinct associations to types of stress. Lifetime ATQ was predictive of past three-month acculturative stress in unadjusted models, however, this effect disappeared when anxious predisposition and relevant demographic variables were added to the model. Lifetime PNRV, on the other hand, emerged as a significant predictor of past-week psychological distress. It is plausible that lifetime PNRV may be a marker of distress vulnerability, whereas lifetime ATQ may be a marker of socioeconomic position. Limited social, economic, and educational resources may place individuals in disadvantaged social positions and thus at heightened risk for negative mental health outcomes (Alegria et al., 2007); in this case, respondents were more likely to experience acculturation/immigration specific stress as distressing relative to those with more resources. The measure of acculturative stress used in this study assessed level of distress

in relation to a host of domains including occupational and economic stressors (i.e., financial hardship). Although a significant relationship between occupational/economic domain of acculturative stress and lifetime ATQ was not found in this sample when the data were reanalyzed, prior research on the relation between socioeconomic status and ATQ among Puerto Rican samples supports a consistent association between low socioeconomic status and endorsement of experience of ATQ (Guarnaccia et al., 1996). This lends support to the possibility that lifetime ATQ may be a proxy for socioeconomic position, and thus responsible for the effect that was observed in unadjusted models. Nonetheless, lifetime ATQ and PNRV did not add substantive incremental validity to models predicting current distress, with the exception of lifetime PNRV which accounted for a small percentage of the variance in psychological distress. These findings call into question the extent to which ATQ and PNRV are culture-bound syndromal experiences that are reliably associated with distress, much less psychopathology.

Limitations

There are several limitations to this study. First, participants in this study were composed of a small convenience sample of Mexican-born mothers with relatively low levels of U.S. American acculturation and high Mexican acculturation. Thus, the results obtained have limited generalizability to other Latina/o ethnic groups, who range in acculturative statuses. Second, the measure of ATQ and PNRV focused on lifetime experience, not current or past-month experience of ATQ/PNRV. Moreover, the remaining study variables focused on current assessment of anxious predispositions, acculturation status, and current distress/stress. It is plausible that the association between

ATQ/PNRV and distress/stress, acculturation, and anxiety could vary as a function of time; we might note differences in the results if the point of reference is either current or lifetime experience of ATQ/PNRV. Future research should also explore the temporal ordering of relationships between acculturative stress, psychological distress, ATQ/PNRV, acculturation status, and anxiety. Third, lifetime history of ATQ/PNRV was assessed through the use of a dichotomous (yes/no) self-report survey screener, which introduces concerns about reporting biases and accurate/sufficient assessment. Fourth, the study did not explore other contextual factors that could play a significant role in mental health status such as socioeconomic position, available social supports, community resources, perceived discrimination, health status, etc. (e.g., Araujo Dawson & Panchanadeswaran, 2010; Williams & Mohammed, 2008). Future studies should explore the ways in which socioeconomic status shapes the experience of distress (Adler, Boyce, Chesney, Cohen, Folkman, Khan, & Syme, 1994) and the usage of cultural idioms to communicate distress.

CHAPTER V

Study 2

Purpose

Study 1 used quantitative methods to examine the relationship between acculturative stress, psychological distress, acculturation, anxious predispositions, and lifetime history of ATQ and PNRV. Study 1 found that lifetime ATQ and PNRV were not consistently associated with distress measures (e.g., neither acculturative stress nor psychological distress), with the exception of lifetime PNRV and psychological distress. Acculturation was also not reliably associated with lifetime ATQ or PNRV. These findings were in stark contrast to the stated hypotheses and thus puzzling given prior research that has shown consistent associations with psychopathology. The purpose of Study 2 was to unpack the potential reasons for the observed inconsistent associations between lifetime ATQ/PNRV and psychopathology via the examination of participants' descriptions of general beliefs, perceived causes, and symptoms of ATQ and PNRV. In this way, Study 2 allowed one to examine directly conceptualizations of ATQ and PNRV and the extent to which ATQ and PNRV were understood as syndromal and/or non-normative.

Method

Participants

Twenty-two Mexican-born mothers residing in a Midwestern urban city participated in Study 2. Participants in this study were recruited based on their positive endorsement of lifetime history of ATQ or PNRV on the *Nervios/Ataques Prescreener* used in Study 1. Participants were recruited from Cohort 1, and thus were enrolled in two of the five English family literacy program sites that served immigrant and migrant mothers of preschool age children.

The specific attributes of the sample are listed in Table 12. The mean age of participants was 30 years. Approximately 95% ($n = 21$) of participants had at most an 8th grade educational level, and 100 % ($n = 22$) of the sample was married. Over 31% ($n = 7$) endorsed positive lifetime history of ATQ, whereas 68% ($n = 15$) endorsed positive lifetime history of PNRV. Approximately 54.54% ($n = 12$) of participants had positive lifetime psychiatric histories. Of those with positive histories, 71.4% had a lifetime history of ATQ and 46.7% had a lifetime history of PNRV. Among those with positive psychiatric histories, 91.67% ($n = 11$) met criteria for a lifetime mood disorder, whereas 31.8% ($n = 7$) met criteria for an anxiety disorder, with a high degree of overlap¹¹. The average number of children was 2.57 in this sample, and 86.4% ($n = 19$) spent majority of their lives in Mexico. Participants with lifetime histories of ATQ appeared to have episodes that were more severe ($M = 9.71$; $SD = 3.35$) in comparison to those with PNRV histories ($M = 7.20$; $SD = 3.80$), as measured by number of ATQ/PNRV symptoms. Seven participants positively endorsed the panic attack screener; however, only one participant (EMIC 24) met diagnostic criteria for a panic attack despite the high severity

¹¹ Only one participant with lifetime history of anxiety disorder did not also have a positive mood disorder history.

Table 12.

Attributes File of Study 2 Participants (*n* = 22)

<i>Participant</i>	<i>AGE</i>	<i>#Chld</i>	<i>Hx ATQ</i>	<i>Hx PNRV</i>	<i># ATQ Sxs</i>	<i># PNRV Sxs</i>	<i>P.Attack</i>	<i>PA Screen</i>	<i>LTHxMood</i>	<i>LTHxAnx</i>	<i>LTPSY</i>
EMIC01	31	4	No	Yes		3	No	No	No	No	No
EMIC03	31	3	No	Yes		8	No	No	Yes	No	Yes
EMIC04	29	3	No	Yes		5	No	No	No	Yes	Yes
EMIC06	29	3	Yes	---	6		No	No	No	No	No
EMIC13	29	2	No	Yes		11	No	No	Yes	No	Yes
EMIC15	41	3	Yes	No	10		No	No	Yes	Yes	Yes
EMIC17	37	2	Yes	---	8		No	No	Yes	No	Yes
EMIC19	35	3	No	Yes		3	No	No	No	No	No
EMIC23	33	4	Yes	No	6		No	Yes	No	No	No
EMIC24	30	3	Yes	---	14		Yes	Yes	Yes	Yes	Yes
EMIC31	30	2	No	Yes		1	No	No	No	No	No
EMIC36	23	2	No	Yes		12	No	No	Yes	No	Yes
EMIC38	22		No	Yes		9	No	No	No	No	No
EMIC39	29	2	Yes	---	10		No	Yes	Yes	No	Yes
EMIC42	29	2	No	Yes		7	No	Yes	Yes	Yes	Yes
EMIC44	34	3	No	Yes		9	No	No	No	No	No
EMIC45	30	2	No	Yes		9	No	Yes	No	No	No
EMIC47	26	2	No	Yes		13	No	Yes	Yes	Yes	Yes
EMIC48	23	1	No	Yes		11	No	Yes	Yes	Yes	Yes
EMIC50	33	2	No	Yes		3	No	No	No	No	No
EMIC52	37	3	Yes	---	14		No	No	Yes	Yes	Yes
EMIC54	27	3	No	Yes		4	No	No	No	No	No

Note:

#Chld = Number of Children; PA Screener = Panic Attack Screener in SCID; LTHxMood = Lifetime History of Mood Disorder; LTHxAnx = Lifetime History of Anxiety Disorder; LTPSY= Lifetime Psychiatric History

of self-reported episodes of ATQ and PNRVs. This is likely due to participants' negative endorsement of an abrupt crescendo and brief duration of panic symptoms.

Measures

Experience of ataque de nervios/padecer de nervios. To explore respondents' experiences of ATQ and PNRV, a modified version of the Explanatory Model Interview Catalogue (EMIC) for research of *nervios* and *ataques de nervios* (Guarnaccia & Lewis-Fernández, n.d.) was administered. The EMIC is adapted from the framework created by Weiss (1997), which provides a systematic outline for the study of explanatory models of illness. The EMIC is a semi-structured interview designed to examine key features of cultural syndromes, through the querying of symptoms, perceived causes, and help-seeking. For the purpose of this study, Part I, Part II (questions 1b, 1c, 2b, 2c, 3b, 3c, 7) and Part III (question 8) were selected for analysis. Part I included a series of 10 questions about participants' social demographic information. Part II (questions 1b-3c) inquired about general beliefs about and probable causes of ATQ and PNRV in an open-ended format. Participants were asked to answer a series of questions including: (a) *For you, what does it mean to have a "nervous attacks"/ "suffer from nerves"?*, (b) *How would you describe a person that has "nervous attacks"/"suffer from nerves"?*, and (c) *What do you think is the most probable cause "nervous attacks"/"suffer from nerves"*. Part II (Question 7) and Part III (Question 8) queried participants' about perceived symptoms and causes of their "best remembered/worst experience" of ATQ or PNRV in a closed-ended format. Participants were asked: *"During your (first/best remembered or worse) "nervous attack", did any of these things occur to you or did you do some of the following things?"*; participants were then asked to recall if they experienced any of the

26 identified prototypical symptoms of ATQ and PNRV, which included a combination of panic attack symptoms and *ataque*-specific symptoms. Participants were also asked if they experienced any of the 42 identified causes of ATQ/PNRV.

Sections of the EMIC used in this study were modified in three ways. First, questions about episodes of ATQ and *PNRV* were changed from inquiries of first and most recent episodes to inquiries about participants' "best remembered or worst" episode. This modification was made to mimic the question prompts in the panic attack section of the clinical interview (i.e., SCID, view description below) which asks respondents a series of questions about symptoms during their "best remembered" panic attack. Second, an additional section was created inquiring about experiences of "suffering from nerves" or PNRV. This section was included because of the preponderance of the idiom *nervios* among Mexicans. This modification enabled respondents who reported no history of ATQ with the possibility of describing episodes of PNRV, including perceived causes and symptoms, allowing for comparisons across both culture-bound syndromes. The section includes a symptom checklist of PNRV adapted from Bear et al. (2003), Low (1989), and Guarnaccia and Lewis Fernandez, (n.d.). Third, additional items about perceived causes of *nervios/ataque de nervios* were included in Part III to reflect biomedical attributions. EMIC interviews were audio-recorded for transcription and analysis. Average length of time to complete the interview was 1 hour 46 minutes.

Current and lifetime psychopathology. To evaluate current and lifetime history of mental illness, the Bilingual version of the Structured Clinical Interview for DSM-IV (SCID) [Module A (Mood Episodes); Module B/C (Psychotic Symptoms); Module D (Mood Disorders); and Module F (Anxiety Disorders)], was administered. The SCID is a

semi-structured diagnostic interview designed to help clinicians make reliable psychiatric assessments of patients and nonpatients. The diagnostic interview asks questions corresponding to specific diagnostic criteria. Through the use of a decision-tree strategy, the SCID serves as a guide for researchers and clinicians as they evaluate diagnostic hypotheses, allowing them to make systematic inferences about the presence or absence of particular mental disorders for past month and lifetime occurrence (Spitzer, Williams, Gibbon, & First, 1992). The scale has test-retest reliability in nonpatient samples comparable to those obtained from other structured diagnostic instruments, mean kappa of .37 for current and .51 for lifetime disorders (Williams et al., 1992). The SCID is the “state of the art” diagnostic instrument for the assessment of major Axis I *DSM* disorders. SCID interviews were audio-recorded for transcription analysis. Average length of time to complete the interview was 1 hour 38 minutes.

Procedure

Participation in this study was voluntary and confidential. The study was approved by the University of Michigan Institutional Review Board and the community agency’s internal review board. Women who positively endorsed lifetime histories of ATQ or PNRV in Study 1 were contacted for participation in this study. If they agreed to participate, a mutually agreed upon day and time was selected for the first interview to occur. At that time, participants provided informed written consent to participate in the study, and consented to having their responses audio-recorded. Participants at that time were also provided with a list of mental health and community resources in their local area in the event they were interested in seeking services for any of the topics discussed

in the interviews. The sequence of interviewing was predetermined such that the SCID was administered first followed by the EMIC; the interviews were scheduled on different days. The principal investigator, a fluent, native speaker of Spanish, conducted both interviews in Spanish. Participants received \$20 for completion of the SCID, and \$20 for the completion of the EMIC, yielding a possible compensation of \$40 for participation in this study. All interviews occurred on site at the literacy program or at the local public library. Data were collected between February 2008 and July 2008.

Data Cleaning and Data Reduction

Once participants were enrolled in Study 2 ($n = 22$), they were each asked about their general beliefs of ATQ and PNRV. Participants were also asked to if they ever experienced an ATQ or PNRV in their lifetime. This was the second time participants were asked to disclose histories of ATQ/PNRV. Seven participants endorsed ATQ, while 15 endorsed PNRV, which represents a change in endorsement responses when the pre-screener was used ($n = 11$ for ATQ vs. $n = 20$ for PNRV). Participants' were asked about the perceived symptoms/causes of their best-remembered/worst experience of ATQ/PNRV as endorsed in the EMIC (not the pres-screener). If participants endorsed past experiences of both ATQ and PNRV, they were queried about their "best remembered/worst" experience of ATQ¹².

The EMIC interviews were transcribed by undergraduate research assistants who were fluent in Spanish. The transcripts were then checked once for accuracy by a research assistant blind to the first transcription, and double-checked by the principal

¹² Four participants (EMIC 06, 17, 24, 39) endorsed lifetime experiences of ATQ and PNRV. They were queried about lifetime ATQ.

investigator. To derive clinical diagnoses, the SCID interviews were scored by the principal investigator and then checked for accuracy by an advanced undergraduate research assistant. When discrepancies were found, the original audio-recording was reviewed to reconcile the discrepancies.¹³

Data Analytic Strategy

Participants' responses to the open-ended (General Beliefs) and closed-ended (Best Remembered/Worst Experience) sections of the EMIC were analyzed separately in an effort to explore the potential role of question format in reporting bias. To systematically analyze the open-ended responses about participants' general beliefs, NVivo, a qualitative software program, was used to organize, code, and search the text data. An excel sheet containing participants demographic information and past psychiatric history was uploaded into NVivo. The transcripts were also uploaded into NVivo and coded using the data software. The text data were coded by the principal investigator. The analysis was informed by three approaches including the qualitative computing framework as outlined by Bazeley (2007) and Miles and Huberman (1994), the constant comparative analytic framework as described by Lincoln and Guba (1985; which builds on the work of Glaser &Straus, 1967), and conversion mixed method analysis techniques (as described in Teddlie & Tashakorri, 2009). In this way, the text data were coded first for descriptive distinct units (e.g., "free nodes" in NVivo) reflective of the "smallest piece of meaningful information". This resulted in a total of 167 free

¹³ Discrepancies were identified and reconciled in 3-4 cases.

nodes. Second, the nodes were examined for the presence of patterns or themes that could be grouped according to shared similarities/properties and conceptual relationships (i.e., “tree nodes” in NVivo). A total of 4-6 tree nodes were produced dependent on set of research questions. Where appropriate, participant quotes are included to illustrate identified thematic categories. Original quotes are in Spanish immediately followed by underlined English translation.

To illustrate how participant responses were coded, a participant’s response to the question “*How would you describe a person who has an ataque de nervios?*” appears below followed by explanation of the ways in which it was coded for free nodes and tree nodes in NVivo.

Participant: *Que actúa diferente a las demás personas. O sea, su comportamiento, sus acciones son diferentes a lo normal. Someone who acts different from other people. For example, their behavior, their actions are different than what’s normal.*

Interviewer: *Y que es lo normal? And what is normal?*

Participant: *Pues estar bien, tranquilo, sonreír... Ya, cuando estas gritando, o enojada, o llorando o haciendo algo en exceso pues ya es un ataque. Well, being tranquil, smiling... Already, when you are shouting, or angry, or crying, or doing something in excess that is already an ataque.*

This passage was coded as having seven free nodes including “abnormal, shouting, extreme, excessive, excessive behavior, negative emotion, and not tranquil”. Many of these free nodes were dropped from the final analysis. For the purpose of this analysis, these free nodes were organized into two tree nodes including abnormality and irritability.

Participants’ responses to the closed-ended questions about perceived symptoms and causes of their “best remembered/worst” experience of ATQ/PNRV were entered into SPSS to facilitate generation of frequency counts. A conservative, 40% endorsement

rate was selected as the cut-off by which to determine whether a particular symptom or cause was meaningfully endorsed by a critical mass of participants. This percentage was chosen after purview of the qualitative literature on ATQ/PNRV revealed little consensus regarding criteria for determining representative signs and symptoms. There was evidence of use of 10% - 30% endorsement as criteria for determining if an item was minimally considered related to the syndrome. A conservative 40% endorsement rate was used in these analyses. In addition, a series of chi-square analyses were computed to determine if lifetime history of ATQ/PNRV were statistically related to lifetime psychiatric history.

Results

General Beliefs

Signs and Symptoms of ATQ and PNRV

The first step in learning about participants' explanatory models of ATQ/PNRV was to explore their general beliefs about these conditions. Table 13 lists the general beliefs about the signs and symptoms of *ATQ* and *PNRV* as described by the full sample ($n = 22$) in the open-ended section of the EMIC pertaining to questions 1b-2c of Part II. These questions asked participants to answer what it means to have *nervous attacks* (ATQ) and to *suffer from nerves* (PNRV), and to describe a person who has ATQ or PNRV. Six tree nodes and 62 free or distinct nodes were identified. Tree nodes are italicized and preceded by a number; the individual nodes are listed below the tree node.

Most of the free and tree nodes identified were not endorsed by the majority of participants. A higher percentage of respondents described ATQ as an abnormal

Table 13.
Signs and Symptoms of Ataques (ATQ) and Padecer de Nervios (PNRV) (n = 22)

Themes	ATQ n (%)		PNRV n (%)	
<i>1 : Abnormality</i>	9	40.91%	7	31.82%
Abnormal	9	40.91%	5	22.73%
excesivo-broad (excessive)	8	36.36%	4	18.18%
extremo (extreme)	4	18.18%	0	0.00%
fuera de lo normal (out of the norm)	4	18.18%	1	4.55%
<i>2: Course</i>				
Acute	4	18.18%	0	0.00%
Chronic	0	0.00%	12	54.55%
Cumulative	4	18.18%	1	4.55%
enfermedad (sickness)	1	4.55%	7	31.82%
<i>3 : External Symptoms</i>	10	45.45%	9	40.91%
<i>Behavioral</i>	10	45.45%	9	40.91%
comportamiento excesivo (excessive behavior)	2	9.09%	0	0.00%
conduct bad act	1	4.55%	1	4.55%
domestic violence	1	4.55%	2	9.09%
impulsiva (impulsive)	2	9.09%	1	4.55%
suicid-homi ideation	1	4.55%	0	0.00%
violencia (violence)	3	13.64%	1	4.55%
<i>4 : Internal Symptoms</i>	17	77.27%	19	86.36%
<i>anxiety</i>	9	40.91%	13	59.09%
demasiada ansiedad (excessive anxiety)	1	4.55%	0	0.00%
demasiado preocupación (excessive worry)	2	9.09%	3	13.64%
demasiado susto (fright)	1	4.55%	1	4.55%
el panico (panic)	0	0.00%	2	9.09%
<i>Phobia</i>	2	9.09%	3	13.64%
fear of evaluation by others	1	4.55%	0	0.00%
fearful interaction with others	0	0.00%	1	4.55%
temor de estar en la casa (fear of being at home)	0	0.00%	1	4.55%
temor de estar fuera de casa (fear of being out of home)	1	4.55%	0	0.00%
temor de lugares encerrados (fear of enclosed spaces)	0	0.00%	1	4.55%
tener una fobia (have a phobia)	0	0.00%	1	4.55%
preocupacion (worry)	2	9.09%	4	18.18%
<i>Physiological</i>				
Somatic	6	27.27%	9	40.91%
manos ansiosa (anxious hands)	1	4.55%	2	9.09%
reaccion del cuerpo (bodily reaction)	1	4.55%	0	0.00%

sintoma fisicos (physical symptoms)	5	22.73%	2	9.09%
<i>depressive</i>	4	18.18%	11	50.00%
aislado (isolated)	0	0.00%	2	9.09%
appetite disruptions	0	0.00%	1	4.55%
deprimida (depressed)	0	0.00%	4	18.18%
desesperacion (despair)	1	4.55%	3	13.64%
falta de dormir (lack of sleep)	0	0.00%	5	22.73%
inquieta (agitation/restlessness)	1	4.55%	6	27.27%
lack of concentration	1	4.55%	3	13.64%
llorando (crying spells)	2	9.09%	0	0.00%
suicid-homi ideation	1	4.55%	0	0.00%
<i>hyper-arousal</i>	15	68.18%	11	50.00%
<i>falta de dormir (lack of sleep)</i>	0	0.00%	5	22.73%
<i>Hypervigilance</i>	0	0.00%	3	13.64%
fear of deportation	0	0.00%	1	4.55%
miedo (fear/increased alertness)	0	0.00%	2	9.09%
<i>Irritability</i>	14	63.64%	7	31.82%
alterada (on edge)	2	9.09%	0	0.00%
corajuda (anger/rage)	5	22.73%	4	18.18%
estar de mal humor (be in bad mood)	1	4.55%	1	4.55%
gritar (shout/scream)	10	45.45%	2	9.09%
molesta por todo (annoyed by everything)	3	13.64%	1	4.55%
no estar a gusto (dissatisfied)	0	0.00%	2	9.09%
lack of concentration	1	4.55%	3	13.64%
violencia (violence)	3	13.64%	1	4.55%
<i>5: Loss of Control</i>	8	36.36%	3	13.64%
falta de control (loss of control)	8	36.36%	3	13.64%
falta de control- nervios (loss of control- nervios)	0	0.00%	1	4.55%
falta de control- otros (loss of control-others)	1	4.55%	0	0.00%
falta de control propia (loss of control-self)	8	36.36%	2	9.09%
falta de control situacion (loss of control-situation)	1	4.55%	0	0.00%
<i>6: Use-Need Treatment</i>	3	13.64%	7	31.82%
ayuda espiritual (spiritual help)	1	4.55%	0	0.00%
internamiento (hospitalization)	1	4.55%	1	4.55%
needs treatment	2	9.09%	6	27.27%
uso de medicamentos (use of medications)	2	9.09%	4	18.18%

experience ($n = 9$; 40.91%) with a marked irritability component ($n = 15$; 68.18%) relative to PNRV (abnormal $n = 5$, 22.73%; irritability $n = 7$, 31.82%). In particular, shouting was identified as more characteristic of ATQ ($n = 10$; 45.45%) versus PNRV ($n = 2$, 9.09%). Nevertheless, a substantive majority of participants did not identify ATQ and PNRV as experiences that were overtly pathological or abnormal. Irritability was evident in descriptions of both ATQ and PNRV; however, presence of shouting appeared to differentiate among the signs of irritability displayed in ATQ and PNRV. On the other hand, PNRV was more frequently described as a chronic condition ($n = 12$; 54.55%) with marked depressive features ($n = 11$; 50.00%). ATQ was not described as chronic ($n = 0$; 0%) and less frequently described as containing depressive symptoms ($n = 4$; 18.18%). In this sample, PNRV was most clearly linked to a chronic experience of depressive symptoms. Behavioral disruptions, internal symptoms (which included both anxiety and depressive symptoms), and hyper-arousal symptoms were endorsed somewhat equally by participants when describing both categories.¹⁴

Most participants did not identify loss of control as a salient feature of experiences of ATQ ($n = 8$; 36.36%) or PNRV ($n = 3$; 13.64%). However, a few participants ($n = 3$; 21.93%) described the association between loss of control and irritability in their general beliefs about ATQ. As participant EMIC 24 describes when discussing ATQ:

¹⁴ Chi-square tests of goodness-of-fit were performed to examine if endorsement of select symptom thematic categories in open-ended descriptions of ATQ and PNRV was equally distributed in the sample. ATQ contained fewer references to depressive symptoms, $X^2, (1, N = 22) = 8.91, p < .01$, whereas PNRV contained fewer references to shouting, $X^2, (1, N = 22) = 14.73, p < .001$. General beliefs of PNRV were more likely to contain references to depressive symptoms than were descriptions of ATQ, $X^2, (1, N = 22) = 4.89, p < .05$.

Eso se debe a cuando uno se enoja mucho ya que tienen un ataque de nervios ya muy fuerte que uno ya se enoja y... si uno no se controla mejor o se pone a llorar uno de coraje porque no se puede desquitar. Pero a veces cuando si te enojas mucho y que ya te agarraron los nervios que no te puedes controlar, darle sus nalgadas a los niños. Lo que se pien- pone uno como a temblar, y muy irritable, muy- en ese momento si se enoja uno. Eso es todo. Un ataque de nervios pues así furiosa, enfurecida, que grita, forcejea. No sé, yo pienso que ya es un ataque muy severo, muy profundo.

[Ataque] that is due to when one becomes angry a lot and you have a very strong ataque de nervios and one becomes very angry and... if one cannot control oneself better or one starts to cry out of rage because you were not able to retaliate. But, sometimes when you become very angry and the nervios takes you that you cannot control yourself, and you hit your children. What happens- one starts to shake, and become very irritable, in that moment yes, you become angry. That is all. An ataque de nervios is that furious, infuriated, that you shout, you are forceful. I don't know, I think that it's already a very severe ataque, very intense.

-EMIC 24 on describing ATQ

The quote above demonstrates the association between loss of control, strong emotion such as anger, and aggressive behavior in the experience of ATQ. For some participants ($n = 5$; 22.72%), however, loss of control was not tied to overt mention of affective states, as one participant (EMIC 44) described: *“En qué... ser nerviosa a lo mejor lo puede uno controlar. Pero un ataque siento que no. Que te da a si... de la nada. Y te agarra el nervio y no lo puede uno controlar, siento. In that? To be nervous probably [means it] can be controlled. But an ataque I feel that, no. That it comes all of a sudden... out of nowhere. And the nervio [nerve] takes you and you cannot control it, I feel.”* Nonetheless, an element of disinhibition was observed in beliefs about ATQ.

Descriptions of PNRV, in contrast, often ($n = 7$; 31.82%) contained explicit references to the term “depression/ *depresión*” and neurovegetative symptoms. A participant (EMC 48) described PNRV as the following: *“Cuando tienes depresión. Cuando estas triste siempre. Qué es una persona aislada, triste. When you have depression. When you are always sad. You are an isolated person, sad.”* Another

participant (EMIC 04) described impact of PNRV on sleep and cognitive processes. She stated “ *Yo pienso que una persona que no se concentra como para dormir y ya no se puede concentrar mucho para hacer su trabajo. Ya es una persona que ya está padeciendo de los nervios. I think that a person who cannot concentrate like to sleep and cannot concentrate a lot to do his/her work. It’s already a person who is suffering from nervios.* Another described related feelings of despair and restlessness often occurring during experiences of PNRV:

Pues como diario estar... quizás moviéndose mucho o haciendo como el otro día, como tu dijiste, como cosas que... tu lo vez normal pero otra gente luego lo nota que te mueves mas o estas mas como desesperado. No estás tan tranquila. Well daily... being... perhaps moving a lot or doing like the other day, like you said, like things that... you see them as normal but other people notice that you are moving more frequently or that you are desperate. You are not that tranquil.

-EMIC 36 on describing PNRV

Yet for a moderate percentage ($n = 9$; 40.91%) of participants, PNRV was described as a somatic condition, which departed from clear references to depressive symptoms. As one participant described (EMIC 45): “*Qué te duela la cabeza muy seguido. Este... que te suden las manos. That your head aches constantly. That.... That your hands sweat.*” The quotes above capture the ways in which participants’ general beliefs about PNRV are linked to disrupted/agitated states for a minority of participants, and to depression for a slight majority of participants.

Probable Causes of ATQ and PNRV.

Participants’ general beliefs about probable causes were also explored in Study 2. Table 14 lists the coded responses to the open-ended question about the probable causes

Table 14.
Probable Causes of Ataques (ATQ), and Padeecer de Nervios (PNRV) (n = 22)

Themes	ATQ n (%)	PNRV n (%)	
<i>1 : Acculturative-Immigration Stress</i>	7	31.82%	
<i>Environmental Factors</i>	11	50.00%	
el clima (climate)	1	4.55%	
inseguridad- vecindad (unsafe neighborhood)	0	0.00%	
not tranquil life style	1	4.55%	
nuevas experiencias (new experiences)	0	0.00%	
unknown surroundings	2	9.09%	
1	4.55%	0	0.00%
<i>Interpersonal Factors</i>	4	18.18%	
family stress	7	31.82%	
1	4.55%	4	18.18%
problemas familiares (familial problems)	0	0.00%	
2	9.09%	2	9.09%
interpersonal conflict	1	4.55%	
0	0.00%	0	0.00%
marital stress	1	4.55%	
0	0.00%	2	9.09%
maternal role stress	2	9.09%	
<i>Occup-Economic Factors</i>	3	13.64%	
4	18.18%	4	18.18%
fear of deportation	2	9.09%	
0	0.00%	0	0.00%
no manejar (unable to drive)	1	4.55%	
1	4.55%	1	4.55%
problemas economicos (economic problems)	1	4.55%	
0	0.00%	1	4.55%
work-related stress	0	0.00%	
<i>2: Estres/Stress</i>	8	36.36%	
10	45.45%	2	9.09%
estrés/stress	2	9.09%	
2	9.09%	1	4.55%
presión/pressure	2	9.09%	
1	4.55%	1	4.55%
simultaneous stressors	1	4.55%	
<i>3 : Genetic Factors</i>	0	0.00%	
4	18.18%	0	0.00%
herencia/hereditary	0	0.00%	
4	18.18%	4	18.18%
<i>4 : Trauma</i>	10	45.45%	
1	4.55%	4	18.18%
Abuse	0	0.00%	
1	4.55%	1	4.55%
accident inv family	3	13.64%	
0	0.00%	0	0.00%
algún accidente/an accident	3	13.64%	
1	4.55%	1	4.55%
child kidnapping	3	13.64%	
0	0.00%	0	0.00%
muerte (death)	3	13.64%	
0	0.00%	0	0.00%
neg. childhood exp	1	4.55%	
1	4.55%	1	4.55%
profound shock	3	13.64%	
0	0.00%	0	0.00%
Robbery	2	9.09%	
0	0.00%	0	0.00%
violaciones (rape)	1	4.55%	
0	0.00%	0	0.00%
witness trauma	1	4.55%	
1	4.55%	1	4.55%

of ATQ and PNRV (Part II, questions 3b and 3c). There were no casual factors that were identified by the majority of participants. Trauma related experiences were most frequently ascribed as a probable cause mostly in descriptions of ATQ ($n = 10$, 45.45%) in contrast to PNRV ($n = 4$, 18.18%)¹⁵. The most frequently endorsed types of traumatic events included robberies, death, and unexpected accidents involving family members. A participant (EMIC 17) elaborates about the role of trauma in generation of ATQ:

¿La causa más probable? Pues ya cuando sucede por ejemplo un accidente, y... un accidente que uno este... ahí o que vaya- que vaya a suceder algo grave y ya tratándose ya casi como de... muerte yo digo. Por ejemplo cuando chocan o lo hacen en el choque o una persona tuya de tu familia le sucede algo grave. Es cuando ya puede uno- le va a dar un ataque de nervios.

The most probable cause? Well, when something happens, for example an accident... an accident that one is... there, or that something serious happens related like to death, I say. For example when there is a crash or it occurs in the crash or something serious happens to one of your people... from your family. That is when one can- you are going to have an ataque de nervios.

-EMIC 17 on causes of ATQ

A higher percentage of participants attributed PNRV to acculturative-immigration stressors ($n = 11$, 50%), of which, interpersonal factors were among the highest endorsed ($n = 7$, 31.82%). Acculturative-immigration stressors were also linked as probable causes of ATQ, but to a lesser extent ($n = 7$, 31.82%). However, interpersonal factors were less dominant ($n = 4$, 18.18%) in ATQ. Notably, in some instances, the type of the acculturative-immigration stressor attributed as a probable cause differed qualitatively by category. For example, separation from family and lack of communication with family members was an acculturative stressor more common in responses about probable causes of PNRV ($n = 4$; 18.18%), but less so in ATQ ($n = 1$; 4.55%),. A participant elaborates:

¹⁵ A chi-square test of independence was also performed to examine the relation between select causal themes and category (ATQ vs. PNRV). References to traumatic events were also less likely to be ascribed to descriptions of PNRV, X^2 , (1, $N = 22$) = 8.91, $p < .01$.

Padecer de los nervios... como te digo... no hay apoyo familiar, no estás- no estás siendo feliz,... no estás en lo que a ti te gusta. No ves nada de lo que tú quisieras ver, tu familia, tu lugar en donde tú naciste, gente. Todo desconocido entonces. Así.

Suffer from nerves... how can I tell you... there is no familial support, you are not- you are not being happy... you are not in what you like. You don't see anything that you would like to see, your family, the place where you were born, people. Everything is unknown, then. Like that.

-EMIC 24 on acculturative stress and PNRV

In comparison, acute interpersonal conflict and marital stress was more frequently referenced in descriptions of ATQ ($n = 2$; 28.57%) than PNRV ($n = 0$; 0%). A participant (EMIC 13) elaborates:

Pues como mi hermana de- creo que cuando le dio o sea el primer ataque de nervios que le dio, tuvo un problema, cuando teníamos la tienda de abarrotes, con una señora. al mismo tiempo, su novio la dejó. Entonces aun fueron dos cosas como que al mismo tiempo se hicieron difíciles para ella. Y eso fue lo que paso. Porque yo pienso que cuando son o sea problema así que vienen dos al mismo tiempo a la mejor más o uno fuerte. Pues, y la persona... pues, o el cuerpo no-no-no...no aguanta o no alcanza a digerir ¿verdad? Cada cosa. Y es donde revienta el cuerpo ¿verdad? Los nervios y todo.

Well my sister, I think that when she had her first ataque de nervios, she had a problem, when we had the grocery/general store, with a woman. At the same time, her boyfriend left her. Then there were two things at the same time that were difficult for her. And that is what happened. Because I think that when there are problems like that, that comes two at the same time, or more, or one strong one. Well, the person, or the body, cannot withstand it or cannot digest [direct] it, right? Everything. And that is when the body bursts, right? The nervios [nerves] and all.

-EMIC 13 on interpersonal conflict and ATQ

In this example, the onset of ATQ was precipitated by an acute interpersonal conflict versus a chronic stressor such as separation from family in the context of immigration. The quotes above illustrate how participants' link trauma and acculturative stress, respectively, to experiences of ATQ and PNRV. An emphasis on interpersonal stress resulting either from traumatic experiences or separation from family due to migration/immigration to the U.S. was observed in many but never the majority of

instances.

Beliefs Derived from Best Remembered/Worst Experience

Signs and Symptoms of ATQ and PNRV

The second aim involved exploring participants' specific symptom and causal attributions based on their best-remembered/worst experiences of ATQ/PNRV. Table 15 lists the frequency counts of the symptoms of participants' best-remembered/worst experience of ATQ and PNRV as endorsed by participants in the closed-ended (yes/no) section of the EMIC. This section refers to the questions in Part II (Question 7) and Part III (Question 8), which asks participants: *During your (first/best remembered or worse) "nervous attack", did any of these things occur to you or did you do some of the following things?"* in reference to a series of symptoms. The symptoms were separated into three categories to facilitate comparison to previous literature about these conditions: prototypical ataque symptoms (as defined in the literature by Guarnaccia et al., 1996 and Lewis-Fernandez et al., 2002), prototypical panic symptoms, and other symptoms. Participants endorsed five of the 13 (38.46%) prototypical ATQ symptoms listed when describing their worst experience of ATQ, whereas only four of the 13 (30.77%) prototypical ATQ symptoms were endorsed by participants when describing PNRV¹⁶. Screaming/shouting was the only prototypical ataque symptom uniquely attributed to experiences of ATQ in this subgroup ($n = 3$; 42.9%). Even so, the majority of participants did not endorse most of the prototypical ataque symptoms. ATQ was predominated by a symptom profile consisting mostly of prototypical panic or physiological symptoms

¹⁶ This refers to symptoms endorsed at the 40% rate.

Table 15.
Signs and Symptoms of Best-Remembered/Worse Ataques and Padeecer de Nervios

Symptom	ATQ Yes <i>n</i> (%)	PNRV Yes <i>n</i> (%)
<i>Prototypical Ataque Symptoms</i>		
agresiva (aggressive)	1 (14.3)	1 (6.7)
rompió (broke things)	1 (14.3)	1 (6.7)
pensó suicidarse (suicidal ideation)		1 (6.7)
histérica (hysteria)	2 (28.6)	1 (6.7)
intento suicidarse (suicidal attempt)		
nerviosa (nervous)	7 (100.0)	15 (100.0)
lloro/llanto (crying spells)	5 (71.4)	9 (60.0)
coraje (anger)	4 (57.1)	9 (60.0)
grito (screaming)	3 (42.9)	2 (13.3)
miedo/susto (fear)	5 (71.4)	11(73.3)
desmayo (fainted)	1 (14.3)	1 (6.7)
perdió cncmto (loss of consciousness)		
amnesia (amnesia)		1 (6.7)
<i>Prototypical Panic Symptoms</i>		
tembló (trembled a lot)	6 (85.7)	2 (13.3)
asfixiado/sofocando (feeling suffocation)	3 (42.9)	1 (6.7)
calentón pecho (hot flushes)	2 (40.0)	
falta respiración (out of breath)	3 (42.9)	4 (26.7)
latió corazón (heart palpitations)	6 (100.0)	7 (46.7)
pecho aprtd/dolor (chest pain)	4 (57.1)	6 (40.0)
mareos (dizziness)	2 (28.6)	1 (6.7)
irreal cosas alrededor (derealization)	3 (42.9)	3 (20.0)
irreal propio cuerpo (depersonalzation)	2 (28.6)	2 (13.3)
miedo de morir (fear of dying)	1 (14.3)	3 (20.0)
miedo de volver loca (fear of going crazy)	1 (14.3)	4 (26.7)
miedo perder control (fear losing control)	2 (28.6)	1 (6.7)
<i>Other</i>		
desesperada (despair)		9 (60.0)
vista nublada/opacada (blurry vision)	1 (16.7)	1 (6.7)
dolor cabeza/celebro (headache)	3 (50.0)	9 (64.3)
molesto ruidos (sensitivity to sound)		3 (20.0)
encontró manchas (found stains) other		

Note.

*12 of 13 prototypical panic symptoms listed (parasthesias excluded from EMIC interview protocol)

(endorsed 58.33% of panic symptoms listed versus PNRV which contained 16.67% of panic symptoms). Trembled a lot ($n = 6$; 85.7%), feeling of suffocation/choking ($n = 3$; 42.9%), hot flushes ($n = 2$; 40%), shortness of breath ($n = 3$; 42.9%), heart palpitations ($n = 6$; 100%), and derealization ($n = 3$; 42.9%) were uniquely ascribed to descriptions of ATQ, not PNRV. PNRV contained a narrower symptom profile than ATQ, with fewer references to acute physiological sensations.

Perceived Causes of ATQ and PNRV.

Cognitive, interpersonal, acculturative-immigration, affective, physiological/physical, and traumatic factors were among the most frequently ascribed thematic causes of participants' best-remembered/worst experience of ATQ and PNRV (Table 16). The most highly endorsed causes for each category included anger for ATQ ($n = 5$; 71.4%), and thoughts ($n = 10$; 66.7%) and immigration to U.S. ($n = 9$; 64.3%) for PNRV. Traumatic events were also commonly endorsed causal factors in both ATQ and PNRV, although the majority of participants did not endorse these experiences. Physical abuse was identified as a probable cause of ATQ ($n = 3$; 42.9%), whereas natural/environmental disaster was more frequently associated with PNRV ($n = 6$; 42.9%). This finding stands in direct contrast to what was observed in the open-ended responses, where trauma was more popularly endorsed as a causal factor in experiences of ATQ and not PNRV. Of note, folk etiological explanations (e.g., excess of hot and cold in the body; supernatural causes) were not critically endorsed as probable causes among this subgroup.

Table 16.

Causes Attributed to Best-Remembered/Worse Ataques/Padecer de Nervios (Survey Responses)

Causes	ATQ Yes <i>n</i> (%)	PNRV Yes <i>n</i> (%)
<i>Cognitive</i>		
Sus pensamientos/Your thoughts	4(57.1)	10(66.7)
Su mente/Your mind	3(42.9)	4(28.6)
<i>Interpersonal</i>		
conflicto familiar/family conflict	4(57.1)	7(46.7)
separación de su esposo(a)/compañero(a)/separation from spouse	3(42.9)	6(42.9)
Recibir malas noticias/Receiving bad news	3(42.9)	8(53.3)
muerte de un familiar/death of a family member	3(42.9)	6(40.0)
conflicto con los hijos/conflict with your children	4(57.1)	5(33.3)
divorcio de su esposo(a)/divorce from your spouse	2(28.6)	6(42.9)
otro problema familiar/another family problem	1(14.3)	5(33.3)
uso del alcohol por un familiar/use of alcohol by a family member	1(14.3)	3(20.0)
comportamiento familiar borracho/behavior of family member when drunk	1(14.3)	3(20.0)
uso de drogas por un familiar/ use of drugs by a family member	0(0)	1(7.1)
<i>Affective</i>		
Corajes/Anger	5(71.4)	6(40.0)
Tristezas/Sadness	3(42.9)	7(46.7)
Un susto/a fright	2(28.6)	4(26.7)
Alguna otra emoción/Another type of emotion	1(14.3)	3(21.4)
<i>Physiological/Physical</i>		
Un desgaste/Wearing down	4(57.1)	7(46.7)
Alguna debilidad/Some disability	3(42.9)	5(33.3)
Otro desbalance/Another imbalance	1(14.3)	3(20.0)

Alguna enfermedad/Some sickness	1(16.7)	1(7.1)
<i>Environmental (Immigration-Acculturative)</i>		
Inmigración a los EEUU/Migration to the US	3(42.9)	9(64.3)
problema de dinero/money problem	3(42.9)	6(40.0)
discriminación/Discrimination	2(28.6)	2(13.3)
problema en el trabajo/problem at work	0(0)	3(20.0)
<i>Traumatic Event</i>		
abuso físico/physical abuse	3(42.9)	0(0)
Algún desastre/ Some disaster	2(28.6)	6(42.9)
abuso sexual/sexual abuse	1(14.3)	1(6.7)
<i>Genetic/Biological</i>		
Herencia/Inheritance	2(28.6)	2(13.3)
Congénito/Congenital	0(0)	1(7.7)
Un desbalance químico/ A chemical imbalance	0(0)	1(7.1)
Neurotransmisores/Neurotransmitters	0(0)	0(0)
<i>Personality</i>		
Su personalidad/Your personality	2(28.6)	1(7.1)
<i>Folk</i>		
exceso de calor en el cuerpo/excess of heat in the body	1(14.3)	2(14.3)
Los muertos/The dead	0(0)	2(13.3)
Brujería/Witchcraft	1(14.3)	1(6.7)
exceso de frío en el cuerpo/excess of cold in the body	0(0)	1(7.1)
Los espíritus/ The spirits	1(14.3)	0(0)
Satanás u otro demonio/Satan or another demon	1(14.3)	0(0)
Un empacho/Indigestion	0(0)	0(0)

Problema de gas/Gas Problems	0(0)	0(0)
movimiento de aires por cuerpo/movement of winds in body	0(0)	0(0)
Quedar pasmada(o)/Having a shock	0(0)	0(0)
Mal de ojo/Evil eye	0(0)	0(0)
Envidia/Envy	0(0)	0(0)
Los santos/The saints	0(0)	0(0)

Relation to Psychopathology

The final set of analyses examined the extent to which past history of ATQ/PNRV was reliably associated with history of DSM-defined psychopathology. To examine the relation between lifetime history of ATQ/PNRV and lifetime psychiatric history a series of Chi-square tests of independence were performed. Results (Table 17) indicate that lifetime history of ATQ/PNRV was not related to lifetime psychiatric history, X^2 , (1, $N = 22$) = 1.18, $p = .28$; lifetime mood disorder, X^2 , (1, $N = 22$) = 1.89, $p = .17$; or lifetime anxiety disorder X^2 , (1, $N = 22$) = .58, $p = .45$. In sum, lifetime ATQ and lifetime PNRV were not reliably and significantly associated with psychopathology in this sample.

Summary: Signs and Symptoms, Causes, Psychopathology

General beliefs about ATQ and PNRV indicated that there was no clear consensus about whether these experiences were considered pathological. Less than 50% of the sample ascribed the conditions as abnormal, although ATQ tended to be described more frequently with references to abnormality. ATQ appeared to be regarded more frequently as a pathological condition (yet by fewer than 50% of respondents), often containing a marked irritability component with references to frequent shouting. None of these attributions, however, were endorsed by the majority of participants (with exception of irritability). PNRV was more frequently linked to depressive symptoms and a chronic course by approximately half of the participants. The association between depressive symptoms and PNRV was also statistically significant. These results suggest that ATQ and PNRV are most distinguishable on basis of their reference to depressive symptoms, and yet only 50% of the sample made these attributions.

Table 17

Crosstabulation of Lifetime ATQ/PNRV and Lifetime Psychiatric History by Disorder Class

	Lifetime ATQ		χ^2	Lifetime PNRV		χ^2
Lifetime Psychiatric Disorder	Yes	No	1.18	Yes	No	1.18
Yes	5	7		7	5	
No	2	8		8	2	
	Lifetime ATQ		χ^2	Lifetime PNRV		χ^2
Lifetime Mood Disorder	Yes	No	1.89	Yes	No	1.89
Yes	5	6		6	5	
No	2	9		9	2	
	Lifetime ATQ		χ^2	Lifetime PNRV		χ^2
Lifetime Anxiety Disorder	Yes	No	0.58	Yes	No	0.58
Yes	3	4		4	3	
No	4	11		11	4	

Note: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

A broad range of factors were identified as causes in participants “best-remembered/worst” experiences of ATQ and PNRV, to include cognitive, interpersonal, affective, physiological/physical, acculturative-immigration, and traumatic factors. Folk explanations (e.g., supernatural beliefs; beliefs about excess of hot or cold in body) were not endorsed as causal explanations for ATQ or PNRV, which suggests this sample may be less likely to adhere to traditional Mexican explanatory models of mental illness. Responses to the open-ended format about probable causes of ATQ and PNRV suggest that interpersonal stress was more frequently linked to PNRV, whereas interpersonal trauma (and in particular physical abuse) was a hallmark causal factor of ATQ in a substantive minority of participants; this finding was also supported in the statistical analyses. Again, these distinctions were not consistent across question formats and were not consistently endorsed by the majority of the sample.

Despite these associations, Chi-square analyses revealed that lifetime history of ATQ and lifetime history of PNRV were not statistically related to lifetime psychiatric history. The lack of effect was also observed when lifetime psychiatric history was explored by disorder class (anxiety vs. mood disorders). This finding contradicted the stated hypothesis and provides preliminary evidence that these idioms may not be reliably related to psychopathology.

Discussion

The purpose of this mixed-method study was to explore how a group of first-generation Mexican-born mothers living in a Midwestern urban city conceptualized ATQ and PNRV, and the extent to which these conceptualizations were related to psychopathology. To date, the majority of qualitative and quantitative research on this

topic has focused exclusively on the study of a single culture-bound syndrome in a single ethnic community (e.g., ATQ among Caribbean Latina/os, PNRV among Mexicans and Central Americans) at a single time point. This is one of the first studies to systematically and simultaneously explore Mexican-born participants' models of ATQ and PNRV. It was hypothesized that general beliefs about ATQ would include more references to psychopathology than beliefs about PNRV, and be associated with psychiatric disorder. It was also hypothesized that an immigrant's most salient interpersonal, societal, and environmental stressors would be incorporated into general beliefs about ATQ and PNRV. Results of this study were mixed vis-à-vis the stated hypotheses. Results provide evidence for the consideration of ATQ and PNRV as mostly related "*nervios* (nerves) conditions" (Guarnaccia et al., 2003), that are often used to communicate emotional distress; there were some minor points of distinction. Surprisingly, neither lifetime ATQ nor lifetime PNRV was statistically related to DSM disorder. The results and broader implications can be organized into three main findings and are discussed briefly below.

Ataque de nervios and *padeecer de nervios* emerged as *nervios*-related conditions, or more accurately idioms, with more similarities than differences. First, psychosocial stress, mostly interpersonal stress, was described as a causal factor in experiences of ATQ and PNRV. This finding is unsurprising and converges with existing literature that has documented a consistent relationship between interpersonal disruption and experiences of ATQ and PNRV (e.g., Guarnaccia et al. 1996, 2003; Baer et al., 2003; Low, 1981). In addition, both idioms were described using a wide range of strong affective and behavioral components, and thus did not provide evidence for clear and consistent demarcations across the two idioms that held across question format (e.g.,

open-ended and closed ended). The most probable points of distinction concerned the extent to which a chronic course and depressive symptoms were linked to PNRV, and irritability/shouting and interpersonal trauma to ATQ. These probable points of distinction converge with prior research that has demonstrated an association between traumatic events, dissociative processes, and ATQ (Schechter et al., 2000; Lewis-Fernandez, Roberto, et al., 2002; Hinton et al., 2008); and an association between PNRV and depressive symptoms (Baer, 2003; Guarnaccia et al., 2003; Weller et al., 2008). Nonetheless, the endorsement rates for trauma and irritability in ATQ and depressive symptoms in PNRV did not consistently exceed 50% across question formats. This suggests that the idioms are not distinct and discrete or bounded syndromal experiences but rather fuzzy and amorphous experiences that are less so about the specific patterning of symptoms, and more about the context in which the idiom is used. In other words, it is plausible that whether one uses PNRV or ATQ is more consistently related to a shared meaning about the presence of a stressor rather than shared meaning about the specific symptoms experienced. In this way, presence of stress (interpersonal disruption) and distress stand in sharp contrast to Latina/o cultural notions of *tranquilidad* or tranquility and wellness. Prior research has shown a link between *nervios*-related conditions and lack of tranquility (Low, 1981; Guarnaccia et al., 2003). Tranquility has been thought of as a cultural value or metaphor representing balance and healthy living, concerning independence/individualism vis-à-vis interdependence/collectivity (Low, 1981, pp. 40) and notions of perceived control. Thus, it is possible that among a group of Mexican mothers ATQ and PNRV are idioms of distress that are used to signal departure from tranquility.

Second, conceptualizations of ATQ and PNRV in this sample departed from extant literature on account of the no-to-low endorsement rates of hysteria, suicidal ideation, and dissociative symptoms (e.g., loss of consciousness, amnesia). One possible explanation for the difference may have to do with generational differences among study samples. Experiences of ATQ have been found to be associated with female gender and age, with higher prevalence of ATQ found among older adult women (Canino et al., 2000). Of note, the mean age in this study was 30 years old and most of these participants did not espouse folk explanations (e.g., excess of hot and cold in body; supernatural factors) as causes for ATQ or PNRV, despite their self-reported first-generation immigrant statuses. These observations suggest that this sample represents a contemporary and relatively young group of Mexican adult females with less *traditional* folk beliefs of mental illness, which may make them less likely to use the term hysteria to represent distress experiences and less likely to adhere to past generations' models of mental illness that used *nervios*-related idioms to communicate a specific patterning of distress. The low endorsement may also be due to differences in sample composition and severity levels. It is likely that among clinical samples seeking psychiatric treatment the tendency to endorse dissociative processes and suicidality would be much higher due to severity of experiences. Future studies should also explore role of dissociative capacity/predisposition in experience of past-month (current) ATQ and PNRV among clinical and nonclinical samples.

Third, ATQ and PNRV did not have consistent and reliable associations to psychopathology. Lifetime ATQ and lifetime PNRV were not statistically related to lifetime psychiatric history. Moreover, participants' general beliefs about ATQ and

PNRV revealed that there was no clear consensus about the extent to which these experiences were pathological or abnormal. Less than the majority of participants ascribed ATQ and PNRV as abnormal. These findings provide further support for considering these experiences as idioms rather than culturally bounded syndromes.

Limitations

There were several limitations to this study. First, participants in this study were self-reported first generation Mexican immigrants, thus the results have limited generalizability to Latina/os from other ethnic groups, social positions, and immigration generational statuses. Moreover, as immigrants, participants in this sample occupied a challenging social position at the time the data were collected due to the salience of hotly contested political debates concerning immigration policy and legislation about the extent to which benefits and services should be granted to undocumented and documented immigrants (and their children) (e.g., Bazar, 2008; Cenicerros, 2008; Einhorn, 2007; Wolf, 2008). Thus, this study was conducted during a time when anti/pro-immigrant sentiment was highly salient and variable as a function of geographic location. This again limits the potential for generalization to groups living in states with different migration reception and integration contexts (e.g., difference in attitudes, perceptions, and laws related to documented and undocumented immigrants). Nonetheless, this was the first study to replicate prior research on *nervios*-related conditions among a group of Mexican immigrant mothers, which is itself a notable contribution to the field.

Second, the principal investigator administered and coded the interviews, which may introduce questions about the trustworthiness and reliability of data due to absence

of multiple administrators and coders. However, this study used a simple coding approach to identify descriptive themes rather than interpretive themes among symptom and causal attributions; thus, lessening validity and reliability concerns. Third, the interviews were administered in a particular sequence such that the SCID was administered first followed by the EMIC, without attention to counterbalancing interview administration order. It is possible that the psychopathology-focus of the SCID may have influenced participants' responses on the EMIC. Future studies should explore the potential effect of interview order on response patterns.

Fourth, a 40% endorsement rate was selected as the arbitrary cut-off to determine whether a theme was deemed representative of a category; changes in endorsement rate could dramatically alter the results. However, as was explained earlier, 40% endorsement rate was conservative relative to endorsement rates found in most of the literature. Fifth, as noted earlier, participants appeared to change their responses when asked about lifetime experiences of ATQ and PNRV by the principal investigator in a face-to-face interview, in comparison to paper-and-pencil survey. In particular, participants tended to deny experience of both ATQ and PNRV. This may represent the stigma attached to endorsement of both *nervios*-related conditions and social desirability effects; these effects may be heightened when placed in situations where disclosure to another person is expected (i.e., interview contexts). Stigma related to mental health problems to include *nervios*-related conditions could lead participants to be less likely to endorse experiences of ATQ/PNRV in face-to-face interviews. It also points to the instability in conceptualizations and meanings of ATQ and PNRV.

Sixth, only participants with positive lifetime histories of ATQ or PNRV were recruited for participation. It is possible that screening participants in this way may have inadvertently primed participants to frame their experiences of distress in *nervios*-related idioms. Future studies should explore conceptualizations of ATQ and PNRV among participants with and without prior histories of ATQ and PNRV and in studies that do and do not overtly reference *nervios* idioms. This would allow researchers to systematically explore whether conceptualizations change as a function of prior experience with the cultural syndrome and priming effects. Last, this study did not examine current experiences of ATQ and PNRV in past month in relation to past-month psychiatric morbidity, which could alter the types of endorsement patterns observed. Future studies should explore how beliefs vary as a function of current psychopathology.

CHAPTER VI

OVERALL DISCUSSION

The chief aim of this two-study dissertation was to explore the extent to which *ataque de nervios* (ATQ) and *padecer de nervios* (PNRV) were culture-bound syndromes that were predictive of distress reactions among a sample of relatively young, contemporary Mexican immigrant mothers. Study 1 used quantitative methods to examine the relationship between acculturative stress, psychological distress, acculturation (via use of multidimensional scales and objective measures of English proficiency), anxious predispositions, and lifetime ATQ and PNRV. Study 2 used mixed-methods to explore conceptualizations of ATQ and PNRV, and association to psychiatric disorder. The results from Study 1 and Study 2 present strong evidence that calls into question claims that ATQ and PNRV are culture-bound syndromes that are reliably associated with psychopathology among Mexican immigrant mothers. The implications of these results are discussed below.

In Study 1, lifetime history of ATQ was the most robust predictor of lifetime history of PNRV, and vice versa. Contrary to the study's hypothesis, lifetime history of ATQ was not consistently predictive of distress. However, lifetime history of PNRV was consistently related to distress. Study 2 allowed greater insight into the reasons for these trends and inconsistencies. Results from Study 2 showed that lifetime history of ATQ/PNRV was not associated to psychiatric disorder in statistically meaningful ways. Moreover, there was no clear and consistent majority consensus on the signs, symptoms,

and causes of ATQ and PNRV; and neither ATQ nor PNRV were considered pathological by a substantive majority. In other words, there did not appear to be any clear evidence for the syndromal patterning of experience for ATQ and PNRV or overwhelming evidence that these experiences are considered pathological. Across studies, the interrelatedness of and variability within both ATQ and PNRV was much more evident.

There was also some evidence that the discourse of ATQ and PNRV among this sample may on a much broader level invoke conceptual models that differentiate between state level anxiety/negative affect and trait level anxious/depressive dispositions (i.e., neuroticism/negative emotionality). Herein, neuroticism/negative emotionality refers to distress vulnerability and tendency to experience negative affect (as described in Naragon-Gainey, 2010). For example, in Study 1 lifetime PNRV emerged as a significant and consistent predictor of psychological distress versus lifetime ATQ which was not consistently associated with stress/distress. Lifetime PNRV was also associated with trait anxiety in unadjusted models. Moreover, in Study 2, PNRV was most closely thought to be linked to depressive symptoms and to have a chronic course, although these beliefs were only upheld by 50% of the sample. It is plausible then that lifetime PNRV may refer to a distress vulnerability or neuroticism/negative emotionality (with likely mechanisms including distress tolerance, fear of negative affect) that could place individuals at heightened risk to experience chronic depressive symptoms in context of multiple stressors. This suggests that the *nervios* discourse in this sample may function similarly to *nerves* discourse in English, whereby idioms such as “*nervous Nelly*” or “*worry wart*” that refer to dispositional neuroticism-like traits (trait anxiety) are at one of the spectrum,

and acute, episodic idioms such as “*nervous breakdown*” or “*nervous wreck*” are at the opposite end of the spectrum. Similarly, *nervios*-discourses among Mexican mothers may include references to PNRV on one pole to represent dispositional vulnerability related to distress intolerance or fear of negative affect, and reference to ATQ on the other pole to refer to acute, intense, negative affective states. It is plausible then that the interrelationships between PNRV and ATQ can be understood as functioning similarly to the relationships observed between trait and state anxiety. Future studies into the ethnopsychology and ethnophysiology of these idioms among Mexican immigrants may shed light on the conceptual models of distress vulnerability or fear of negative affect/arousal. Of note, this two-study dissertation was composed of a sample of Mexican immigrant mothers, such that the results presented herein may be reflective of gendered notions of ATQ and PNRV. Future research should explore the role of gender in shaping and modulating conceptual models of distress related to experiences of ATQ and PNRV as well as beliefs of ATQ and PNRV.

Overall, results from Study 1 and Study 2 when taken in tandem pose explicit challenges to the notion that ATQ and PNRV are “culture-bound syndromes” as represented in the majority of cross-cultural psychiatry literature, precisely because of the demonstrated failure to display incremental validity in predicting current distress, associations to psychopathology, and syndromal coherence. What emerges instead is that ATQ and PNRV may be more accurately described as idioms of distress that are less tied to psychopathology proper among this young sample of Mexican mothers. Nichter (1981) initially described an idiom of distress as a term that refers to the expression of “a broad range of feeling states, vulnerability, apprehension, inadequacy, dissatisfaction,

suppressed anger, and other anxiety symptoms” (pp. 25) that are understood only in relation to particular stressors. On the other hand, culture-bound syndromes are defined in the DSM as “recurrent, *locality-specific* patterns of aberrant behavior and troubling experience that may or may not be linked to a particular DSM-IV diagnostic category” (APA, 2000, pp.898). The broadness in emotional states in descriptions of ATQ and PNRV, and inconsistent associations between lifetime ATQ/PNRV and distress observed across studies lend support to categorizing and conceptualizing these experiences as idioms of distress rather than culture-bound syndromes. This recommendation is in line with prior research that has questioned the notion of boundedness and instead opted for use of terms such as cultural-related syndrome, cultural syndrome, or culturally-interpreted symptoms (e.g., Guarnaccia et al., 2003; Hughes, 1998; Low, 1985).

In addition, Study 2 was one of the first studies to attempt to replicate prior research conducted in Puerto Ricans in a Mexican sample using the same instruments and procedures (i.e., based on research by Guarnaccia et al., 2003). This process revealed concerns about the extent to which studies on culture-bound syndromes in general systematically document the criteria by which a behavior is deemed aberrant and a pattern. For example, a 40% endorsement rate was selected in Study 2 as the arbitrary cut-off by which an identified symptom was regarded as potentially representative of the idiom of distress. There were no clear guidelines or precedents in the literature on ATQ and PNRV that explicitly discussed the rationale for inclusion/exclusion of specific symptoms. The variability then makes it difficult to compare across studies and calls into question the basis by which conclusions about these experiences were drawn. Similar critiques concerning the uniformity, validity, and methodology used to study the

purported syndromes have been raised in prior research (e.g., for brief reviews see Aderibigbe & Pandurangi, 1995; Ancis, Chen, & Schultz, 2004, Hughes, 1998). In the absence of criteria and guidelines, one is left to wonder about the other 23 culture-bound syndromes in the DSM-IV and the extent to which the “syndromal” experiences are indeed substantiated patterns that could be replicated in relevant groups by other researchers. Studies on culture-bound syndromes and idioms of distress must be explicit about the criteria or guidelines through which determinations about behavior and types of behavior are made.

CHAPTER VII

CONCLUSION

Ataque de nervios and *padecer de nervios* are listed as idioms of distress within the glossary of culture-bound syndromes in Appendix I of the DSM-IV (APA, 2000) that have been shown to have inconsistent associations with DSM diagnostic categories, and often include a broad range of symptoms, most notably anxiety, depressive, and dissociative symptoms. Despite its explicit designation as idioms of distress, *ataque de nervios* and *padecer de nervios* are treated as culture-bound syndromes in the extant literature. The question at the outset of this two-study dissertation was whether *ataque de nervios* and *padecer de nervios* are indeed fashioned as syndromal experiences that are in some way predictive or reliably associated with distress among a sample of young Mexican immigrant mothers. A secondary question concerned the extent to which acculturation was a significant predictor of *ataques de nervios* and *padecer de nervios*. The results from these studies indicate that *ataque de nervios* and *padecer de nervios* are *not* culture-bound syndromes, but idioms of distress that are not statistically associated or conceptually linked to diagnostic psychopathology in consistent ways. Crude or multidimensional scales of acculturation were also not found to be significant predictors of a tendency to use the idioms, which points to ongoing conceptual and measurement issues concerning the concept of acculturation.

The results across studies also highlight broader issues about the study of culture-bound syndromes in cultural psychiatry such as the need for greater transparency and

accountability about the criteria by which behaviors are determined aberrant and symptom manifestation as patterned and culture-bound. Moreover, a related issue concerns the unintended consequences of the very existence of the “Glossary of Culture-Bound Syndromes” section of Appendix I in the DSM. The Glossary in Appendix I inadvertently promulgated the notion that the 25 idioms, or experiences listed are indeed syndromes and culture bound, when the research evidence in some cases pointed to the contrary (e.g, for a brief discussion of this topic see Choudhury & Kirmayer, 2009; Hughes, 1998). This resulted and results in the reification of culture-bound syndromes and the expectation that the symptoms subsumed under the alleged culture-bound syndrome heading will cohere in some meaningful and predictable way. This is gravely problematic, however, because it creates perfect opportunities for committing a category fallacy or imposing [in this case culture-bound] categories on other groups in the absence of compelling empirical evidence of their validity as syndromal experiences; Kleinman (1977) initially discussed the dangers of imposing Western diagnostic categories on other groups and this same rationale can be applied to the study of culture-bound syndromes across ethnic groups.

Even so, *ataque de nervios* and *padecer de nervios* were found to be idioms of distress that were often used in the face of psychosocial stressors, idioms that included a range of negative feeling states that did not consistently converge with psychopathology. This establishes the likelihood that these idioms will be encountered in clinical and nonclinical settings to communicate disruptions in interpersonal, economic, and general psychosocial domains regardless of observed linkages to psychopathology. Moreover, in cases where these idioms are not used, its absence may signal absence of

psychopathology and/or presence of resiliency/protective individual level factors that promote adaptive psychosocial functioning. Thus, results from this study continue to support the notion that thorough clinical assessments by mental health practitioners should include assessment of idioms of distress and tendency to use these idioms, but cautions strongly against making assumptions about the nature to which these idioms are culture-bound and indicative of psychopathology. It also continues to support the notion that much can be gleaned from focusing on idioms of distress in the study of cross-cultural psychiatric research by virtue of the potential to examine the purposeful ways in which idioms are used or not used to articulate disruption, well-being, and health statuses, and association with psychopathology.

These results also have important implications for professional psychiatric nosology and the ways in which culture-bound syndromes should be incorporated and treated in the revised edition of the DSM (i.e., *DSM V*). Three recommendations for the forthcoming DSM V can be offered based on these results. First, revise Appendix I, and in particular the introductory text within the glossary of culture-bound syndromes, for clarity and precision regarding the distinctions between the definition of culture-bound syndrome and idiom of distress. Explicit discussion of the exclusion/inclusion criteria used to categorize experiences into syndromes and idioms would promote greater transparency and clarity about the distinctions. Second, clarify whether *ataque de nervios* and *padeecer de nervios* in particular should be treated as idioms of distress or culture-bound syndromes. That is, provide direct instruction about whether syndromal coherence is expected when studying these experiences. Third, offer guidelines for the study of culture-bound syndromes/cultural syndromes and idioms of distress such as mandating

the use of a minimum endorsement rate to determine inclusion of a select symptom as characteristic of an idiom/syndrome. Efforts to improve the existing psychiatric nosology must engage more substantively with the notion that cultural influences modulate the phenomenology of mental disorder, including the development/revision of classification systems. At a very minimum then inclusion of culture-bound syndromes, idioms of distress, or culture-specific experiences of psychopathology within professional psychiatric nosology (DSM-V) serves as a critical reminder of the ways in which our current classification system falls short of its aspirational and untenable universalistic aspirations.

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