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Cultural Correlates of PTSD in Latinos Residing in the U.s.

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ABSTRACT

CULTURAL CORRELATES OF PTSD IN LATINOS RESIDING IN THE U.S.

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The present study examined the associations between cultural variables (i.e., acculturative stress, discrimination, social support, migration planning, and reasons for migrating) and exposure to trauma and PTSD in a sample of Latinos (N=2,554) residing in the United States, who participated in the National Latino and Asian America Study (NLAAS). Results showed that there were significant positive associations between trauma exposure and migrating because of political reasons, migrating in search of medical attention, migrating due to marital or family problems, and forced migration, suggesting they may be risk factors for being exposed to trauma. There was a negative association between trauma exposure and migrating in search of a better future, indicating it may be a protective factor against being exposed to trauma. Family and friend demands was positively associated with both trauma exposure and PTSD severity, indicating it may be the case that demands from family and friends could in themselves constitute trauma or that once trauma has occurred there are more perceived family and friend demands, thus exacerbating PTSD symptom severity. There was also a positive association between acculturative stress and PTSD, indicating that either acculturative stress worsens PTSD or that having PTSD makes it harder to adjust to life in the U.S. (i.e., acculturative stress). Overall, the results from the present study indicate cultural factors play a role in exposure to

trauma, as well as subsequent development of PTSD. Study strengths, limitations, and future directions are discussed.

Keywords: acculturative stress, discrimination, social support, migration planning, reasons for migrating, trauma, PTSD, Latinos

To

my family and friends –

you filled me

with the strength to

write this

even when

I thought I could not.

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Cultural Associations to PTSD in Latinos

Latinos are the largest and fastest growing minority group in the U.S. (Ayón, Marsiglia, & Bermudez-Parsai, 2010). The U.S. Census estimates approximately 16% of the total population identifies as being of Hispanic or Latino origin[1] (i.e., U.S.-born Latinos, Latino immigrants, Latino refugees; Ennis, Rios-Vargas, & Albert, 2011). Though this group is a significant subset of the total population, there are marked disparities in use of mental health services for Latinos compared to other racial and ethnic groups. Specifically, data indicates poor Latinos (i.e., family income < $15,000 per year) have lower access to specialty care than poor non-Latino whites (Alegría, Canino, Ríos et al., 2002). Additionally, there exists a gap in the literature regarding the epidemiology of many psychiatric disorders within racial and ethnic minority groups, including post-traumatic stress disorder (PTSD; Alegría, Takeuchi, Canino et al., 2004).

An empirical question when discussing epidemiology of mental health in understudied populations is the role that sociocultural factors play in the development and maintenance of mental health problems. To that end, the present study will conduct secondary analyses of data on Latinos residing in the U.S. (i.e., U.S.-born Latinos, Latino immigrants, Latino refugees) derived from the National Latino and Asian American Study (NLAAS), a nationally representative epidemiological survey of U.S. Latinos. Specifically, we seek to evaluate relationships among cultural variables (i.e., acculturative stress, discrimination, social support, migration planning, and reasons for migrating), exposure to trauma as well as PTSD symptoms

[1] Though much of the scientific literature has equated the terms Latino and Hispanic, they are not interchangeable. Latino refers to an individual with origins in Latin America. Thus, Spaniards are not Latinos, but Brazilians are. Hispanic refers to an individual whose origins are from a country that largely speaks Spanish. Thus, Spaniards are Hispanics, but Brazilians are not. Thus, not all Hispanics are Latinos, although many are. For the purposes of the present paper, we opt to use the term Latino to refer to individuals who identify as Latino or Hispanic as the literature has excluded Spaniards.

in a sample of Latinos residing in the U.S. A better understanding of possible cultural and contextual influences on epidemiology of PTSD can aid in more accurate identification of the disorder, which in turn has the potential to guide prevention efforts as well as provide considerations for the treatment of the disorder within this population.

Demographic Information for Latinos Residing in the U.S.

Results from the 2010 Census (Ennis, Rios-Vargas, & Albert, 2011) indicated approximately 50.5 million individuals identified as "Hispanic or Latino" (16% of the total U.S. population). Of those, approximately 63% (n = 31,798,258) identified as Mexican, 9.2% (n = 4,623,716) identified as Puerto Rican, 3.5% (n = 1,785,547) identified as Cuban, and 24.3% (n = 12,270,073) identified as "other Hispanic or Latino". Among the "other Hispanic or Latino" category, approximately 2.8% of the total U.S. sample (n = 1,414,703) identified as Dominican, 7.9% (n = 3,998,280) identified as Central American (excluding Mexico), 5.5% (n = 2,769,434) identified as South American, 1.3% (n = 635,253) identified as Spaniard, and 6.8% (n = 3,452,403) identified as "all other Hispanic or Latino".

Race was an additional factor the Census asked, as Latinos can be from any race. Approximately 53% (n = 26,735,713) of those identifying as Hispanic or Latino also identified as white, 2.5% (n = 1,243,471) identified as black or African American, 1.4% (n = 685,150) identified as American Indian and Alaska Native, 0.4% (n = 209,128) as Asian, 0.1% (n = 58,437) as Native Hawaiian and Other Pacific Islander, 36.7% (n = 18,503,103) as "some other race", and 6% (n = 3,042,592) as "two or more races".

From 2000 through 2010, more than half of the total U.S. population growth was due to an increase in the Latino population (from 35.3 million to 50.5 million). To put this into perspective, the Latino population comprised 15.2 million of the 27.3 million increase in the total

U.S. population. Moreover, this was equivalent to a 43% increase in the Hispanic population, which was approximately four times the total U.S. population growth from 2000 to 2010. Currently comprising approximately16% of the total population (Ennis, Rios-Vargas, & Albert, 2011), Latinos are one of the fastest growing populations (Motel & Patten, 2012), with communities from some nationalities growing faster than others. Namely, individuals from Mexican origin increased 54% (n ≈ 11,200,000), Cubans increased 44% (n ≈ 600,000), Puerto Ricans increased 36% (n ≈ 1,200,000), and those who reported being from other origins increased 22% (n ≈ 2,300,000; Ennis, Rios-Vargas, & Albert, 2011). Additionally, Latinos are predominantly concentrated in southern and western areas of the U.S. The majority (approximately 75%) reside in eight states: California (27.8%), Texas (18.7%), Florida (8.4%), New York (6.8%), Illinois (4%), Arizona (3.8%), New Jersey (3.1%), and Colorado (2.1%).

Trauma

Defining Trauma

The definition of trauma has undergone many revisions in psychology since the 19th century (Jones & Cureton, 2014). Arguably, the most common definition of our time operationalizes trauma as an event or situation (e.g., sexual assault, war) that elicits a pathologic stress response (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). The problem of not having a unified definition of trauma is evident in the fact that the definition of trauma has changed through various renditions of the DSM (Diagnostic and Statistical Manual of Mental Disorders) due to updates in empirical knowledge and conceptual refinements (Brett & Ostroff, 1985). For the purposes of the present paper, we utilize the DSM-IV-TR (APA, 2000) definition as the data for the present study was collected utilizing this framework. A second reason for adopting the DSM-IV-TR definition, rather than the more current DSM-5 (APA, 2013) definition, is that most

relevant research available for review was conducted utilizing definitions from DSM-IV-TR or the even earlier DSM-III-R (1980). Accordingly, we adopt the following definition:

> A direct personal experience of an event that involves actual or threatened death or serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about an unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate (APA, 2000, p. 463).

Under this definition, exemplar traumatic events include:

> Military combat, violent personal assault (sexual assault, physical attack, robbery, mugging), being kidnapped, being taken hostage, terrorist attack, torture, incarceration as a prisoner of war or in a concentration camp, natural or manmade disasters, severe, automobile accidents, or being diagnosed with a life-threatening illness. For children, sexually traumatic events may include developmentally inappropriate sexual experiences without threatened or actual violence or injury. Witnessed events include, but are not limited to, observing the serious injury or unnatural death of another person due to violent assault, accident, war, or disaster or unexpectedly witnessing a dead body or body parts. Events experienced by others that are learned about include, but are not limited to, violent personal assault, serious accident, or serious injury experienced by a family member or a close friend; learning about the sudden, unexpected death of a family member or a close friend; or learning that one's child has a life-threatening disease (APA, 2000, p. 463-464).

Prevalence of Trauma Exposure

Traumatic events are quite common. Utilizing data from the National Comorbidity Survey (NCS), Kessler and colleagues (1995) reported that 60.7% of men and 51.2% of women reported at least one lifetime traumatic event. The most common traumatic events included: witnessing someone being killed or injured (35.6% = men, 14.5% = women); being in a life-threatening accident (25% = men, 13.8% = women), being involved in a fire, flood or natural disaster (18.9% = men, 15.2% = women). In addition to experiencing the aforementioned traumatic events at higher rates, men (compared to women) also reported being more likely to experience the following: physical attacks, combat experience, being threatened with a weapon, or being held captive or kidnapped (Kessler et al., 1995). By contrast, women (compared to men) were more likely to experience the following traumatic events: rape, sexual molestation, childhood neglect, and childhood physical abuse.

Breslau and colleagues (1998) similarly examined rates of exposure to trauma and found differential prevalence rates. The most prevalent traumas included: injury or shocking experience (59.8%); sudden, unexpected death of a close friend or relative (60%); and learning about trauma to others. The least prevalent traumas were: military combat (1.5%); being held captive, tortured or kidnapped (1.8%); or having a child diagnosed with a life-threatening illness. Overall, the lifetime prevalence rate of exposure to at least one trauma was 89.6%.

Posttraumatic Stress Disorder

Defining PTSD

As with the definition of trauma, the criteria for PTSD have also changed through various editions of the DSM. For the purposes of the present paper the focus will be on DSM-IV-TR (APA, 2000) criteria. It is important to note, however, the DSM-IV-TR diagnostic criteria are

somewhat outdated as DSM-5 was published in 2013. Still, the clear majority of our knowledge regarding PTSD has been carried out utilizing the DSM-IV-TR definition of PTSD.

PTSD Diagnostic Criteria in DSM-IV-TR. Refer to Appendix A for a complete list of PTSD Diagnostic Criteria in DSM-IV-TR. Under DSM-IV-TR (APA, 2000), for individuals to be diagnosed with PTSD, they must have direct exposure to a traumatic event (i.e., Criterion A) – "The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (i.e., A1) and "The person's response involved intense fear, helplessness, or horror" (i.e., A2; APA, 2000)[2]. PTSD is the only DSM disorder that specifies a pre-existing event (Mol et al., 2005).

The rest of the diagnostic criteria focus on the symptoms following the traumatic event. PTSD is conceptualized as a stress response that includes: re-experiencing symptoms (i.e., Criterion B), avoidance/numbing symptoms (i.e., Criterion C), and arousal symptoms (i.e., Criterion D). The affected individual must experience one of the following symptoms under the re-experiencing cluster: recurrent and intrusive distressing recollections of the event (i.e., B1); nightmares (i.e., B2); flashbacks (i.e., B3); psychological distress due to reminders of trauma (i.e., B4); and physiological reactivity due to reminders of trauma (i.e., B5). Additionally, the person must experience three of the following symptoms under the avoidance/numbing cluster: avoidance of thoughts, feelings, or conversations related to trauma (i.e., C1); avoidance of activities, places, or people related to the trauma (i.e., C2); inability to recall an important aspect of the trauma (i.e., C3); anhedonia (i.e., C4); feeling of detachment or estrangement from others (i.e., C5); restricted range of affect (i.e., C6); and sense of a foreshortened future (i.e., C7). The

[2] The DSM-IV-TR Criterion A2 related to the subjective nature of the traumatic event (i.e., "the person's response involved intense fear, helplessness, or horror") was eliminated in DSM-5.

person must also meet two of the following arousal cluster symptoms: sleep disturbance (i.e., D1); irritability or outbursts of anger (i.e., D2); difficulty concentrating (i.e., D3); hypervigilance (D4); and exaggerated startle response (i.e., D5).

In addition to the previously mentioned criteria, symptoms must be present for at least one month, as well as cause clinically significant distress (e.g., social, occupational, or other functioning.

PTSD Prevalence and Severity

PTSD in the Total U.S. Population. Data from the NCS indicate the lifetime prevalence rate of PTSD (utilizing DSM-III-R) was approximately 7.8% (Kessler et al., 1995). Additionally, results indicated higher prevalence rates in women (e.g., women were twice as likely as men to meet diagnostic criteria for PTSD); previously married individuals (i.e., widowed, divorced, separated) compared to individuals not previously married; and married men compared to never married men.

Years later, the replication of the NCS (NCS-R) revealed a 6.8% lifetime prevalence rate (Kessler, Berglund et al., 2005), and a 3.5% twelve-month prevalence rate of PTSD (Kessler, Chiu, Demler & Walters, 2005). Of those 3.5%, there were similar rates across PTSD severity categories (i.e., mild: 30.2%; moderate: 33.1%; serious: 36.6%; Kessler, Chiu, Demler & Walters, 2005). Data from the NCS-R indicates the projected lifetime risk of PTSD, as of age 75 based on age-of-onset distribution, is 8.7% (Kessler, Berglund et al., 2005). Furthermore, lifetime risk is constant across cohorts (i.e., cohorts were defined as follows: 18 through 29, 30 through 44, 45 through 59, and 60 years or older), thus indicating no cohort effects in the development of PTSD.

PTSD in Latinos. There is mixed evidence regarding the prevalence of PTSD in Latinos residing in the U.S. Contradictory reports are outlined below. It is important to note, however, there are significant differences in populations utilized in the studies outlined below that may limit generalizability of findings of studies not utilizing a nationally-representative sample of Latinos residing in the U.S.

Kulka (1990) reported on data from the National Vietnam Veterans Readjustment Study (NVVRS), a nationally representative sample of male combat veterans. Results indicated the unadjusted rate for current PTSD was 27.9% for Hispanics as compared to 20.6% for non-Hispanic Blacks and 13.7% for non-Hispanic Caucasians. Furthermore, Hispanic veterans still had the highest rate of PTSD after adjusting for level of combat exposure and other predictors.

In a sample of Hispanic, black, and white treatment-seeking veterans (N = 5,475), Rosenheck and Fontana (1996) examined the relationship between PTSD and ethnocultural factors (e.g., sociodemographic status and baseline clinical presentation, self-identified service needs, past service use, prospectively examined use of team services during the year after first contact with the program, clinical improvement as assessed by team clinicians at the time of the last clinical contact). Their results indicated Puerto Rican veterans had more severe PTSD symptoms than Caucasian or Black veterans.

Pole and colleagues (2001) conducted a study examining PTSD rates in a sample of urban police officers that were Latino, or non-Hispanic white or black. The following domains were assessed: PTSD symptoms, peritraumatic dissociation, exposure to duty-related critical incidents, general psychiatric symptoms, response bias due to social desirability, and demographic variables. Results indicated Latinos had highest number of PTSD symptoms (i.e., higher PTSD severity) in comparison to whites and blacks. While these effects were small, they

remained after other controlling for other relevant variables. The authors point to the fact that there were significant demographic differences between whites, blacks, and Latinos such that Latinos had less education. It is important to note the PTSD severity in these samples might be particularly high due to the nature of the work of urban police officers that expose them to many of the possible traumatic events that have been linked to PTSD (e.g., mutilation, carnage, death, threats to their lives, threats to the lives of others, large scale disasters, witnessing aftermaths of sexual assaults, witnessing hostage situations).

Contrary to the previous articles cited, Alegría and colleagues (2008) reported on evidence suggesting Latinos reported lower PTSD compared to non-Latino whites. Specifically, Alegría and colleagues compared data from the NLAAS (Latinos) and the NCS-R (non-Latino whites), which are both nationally-representative epidemiological datasets. Results suggested the lifetime prevalence for PTSD in NLAAS Latino subjects was 4.4%, compared to 7.3% in NCS-R non-Latino white subjects, and that this difference was significant. Alegría and colleagues further report on the differences in PTSD between U.S.-born Latinos and Latino immigrants utilizing data from the NLAAS. Results indicated U.S.-born Latino subjects were at significantly higher risk for PTSD in comparison to immigrant Latino subjects (5.9% versus 4%, respectively).

Most Distressing Traumas among Individuals with PTSD

Not all traumatic events are created equal, such that some traumas are more distressing than others. Accordingly, empirical evidence suggests there is a differential rate of PTSD development depending on type of trauma. In fact, the DSM (APA, 1980; APA, 2000; APA, 2013) states that traumas that are interpersonal, intentional and/or of human design (e.g., torture, sexual violence) may elicit symptoms that are more severe or longer-lasting. Moreover, the potential to develop symptoms increases as the intensity of and physical proximity to the stressor

increases (APA, 2000). The proximity effect was demonstrated empirically through studies following the 9/11 attacks. For example, one study provided evidence that PTSD prevalence was higher for students attending a college in New York state compared to Georgia and North Dakota (e.g., Blanchard et al., 2005).

Worst Traumas by Type. Kessler and colleagues (1995) examined the most prevalent *worst* traumas within people who met criteria for lifetime PTSD, utilizing data from the NCS. Results suggested that out of the traumas deemed most distressing, the most prevalent for men included combat exposure (28.8%) and witnessing someone being badly beaten or killed (24.3%). For women, the most prevalent distressing traumas associated with PTSD were rape (29.9%) and sexual molestation (19.1%). It is important to consider the base rates of the aforementioned experiences, as exposure to these are risk factors for developing PTSD that may differentially affect men and women. Additionally, they noted lifetime prevalence rates, in the general population, for these four events. For men, combat exposure had a lifetime prevalence rate of 6.4% and witnessing someone being badly beaten or killed had a lifetime prevalence rate of 35.6%. For women, rape had a lifetime prevalence rate of 9.2%, and sexual molestation had 12.2%. Thus, these findings suggest that women are more commonly exposed to traumas that have high probabilities of being linked with PTSD.

Conditional Risk by Trauma Type. Utilizing data from the NCS, Kessler and colleagues (1995) indicated rape was the trauma with the highest conditional probability for the basis of the PTSD assessment (i.e., most distressing trauma) for both men and women. Specifically, 65% of men and 45.9% of women who reported an instance of rape as the most distressing trauma met criteria for PTSD. On the other hand, sexual molestation in men and childhood neglect in women have the lowest conditional probabilities of being the basis of PTSD

assessment. The authors further reported that while men experienced a higher probability of at least one trauma, women were more likely to experience more severe traumas (i.e., traumas with higher probability of PTSD development). Moreover, when examining the overall most distressing traumas, women had a higher proportion of PTSD. Stated another way, women who experience trauma are more likely than men to develop PTSD.

The Detroit Area Survey examined conditional risk for PTSD by sex, race, education, income, marital status, and residence (i.e., urbanicity). Breslau and colleagues (1998) found the conditional risk of PTSD following exposure to trauma was 9.2%. The authors also explored conditional risk for various trauma type categories (e.g., assaultive violence, other injury or shock, trauma to others, unexpected death). Results indicated assaultive violence had the highest conditional risk (20.9%), followed by sudden unexpected death (14.3%), other injury or shock (6.1%), and trauma to others (2.2%). The assaultive violence traumas with the highest conditional risk for PTSD included being held captive, tortured or kidnapped (53.8%); rape (49%); and being mugged or threatened with a weapon (31.9%).

It is important to note, however, these data are limited in their ability to discern the extent to which trauma exposure, trauma type, gender, and severity are confounded. One explanation is that different trauma types evidence differential conditional probabilities by gender because they are differentially the most distressing event for men and for women, thus suggesting that men and women have vulnerabilities for different trauma types. Alternatively, these results may be due to differences in base rates of exposure to these types of trauma that may vary by gender or environment (e.g., the individual resides in an urban setting versus a suburban one). To highlight this point, it may be expected that because women report more instances of rape than combat, rape might evidence higher conditional risk for development of PTSD because it is more

prevalent. However, unless we are able to control for exposure to trauma (i.e., all participants experience the same amount of trauma) and subsequently we evaluate for PTSD symptoms, we cannot definitely know what drives these differences in conditional risk. However, conducting a randomized controlled trial (RCT) would be impossible to conduct on practical and ethical grounds

Duration of an Index Episode. Utilizing NCS data, Kessler and colleagues (1995) found, on average, PTSD symptoms decreased most steeply during the first 12 months following the traumatic event, and then more gradually for the following six years. Individuals who sought treatment experienced a median time to remission of 36 months, compared to 64 months in those who never sought treatment. Data also indicated there was a subsample of individuals who did not reach remission many years following the most distressing trauma, independent of seeking treatment.

Data from the Detroit Area Survey of Trauma provides useful information on duration of PTSD for a complete list of traumas, not just the most distressing. Breslau and colleagues' (1998) findings suggest approximately 26% of individuals remitted by six months, and approximately 40% at 12 months. Moreover, median time to remission was 24.9 months. In approximately one-third of individuals, PTSD symptoms were present for over 60 months. For women, the median duration of PTSD was 48.1 months, in comparison to 12.1 months in men. As mentioned by Kessler and colleagues (1995), this might be due, in part, to women's exposure to more distressing trauma.

Galea and colleagues (2002) interviewed a random sample of inhabitants of Manhattan (living south of Canal Street near the World Trade Center) five to eight weeks following the attacks, and estimated approximately 7.5% of Manhattan adults had developed PTSD. However,

follow-up studies indicated a steep decline in prevalence at six months to 0.6% (Galea et al., 2003), which might indicate rapid resolution of probable PTSD. It is important to note, however, this was a telephone survey of inhabitants residing in New York City, and these results do not account for treatment they might have received during the follow-up period. Additionally, results are comprised of cohorts at three different time points, but not follow-up data for the same individuals. As such, there might have been differences in prevalence rates of cohorts, not due solely to natural resolution of PTSD symptoms.

Cultural Variable Correlates of PTSD in Latinos

According to the NLASS research team (e.g., Alegría, Vila, Woo et al., 2004; Alegría, Takeuchi, Canino et al., 2004), it is important to understand the social and cultural factors that may increase the risk for psychological problems. Furthermore, the theoretical framework proposes context (e.g., social position, environmental context, psychosocial factors) is directly linked to psychiatric problems and service utilization. Thus, the present study seeks to further understand primarily the role of psychosocial factors (e.g., acculturative stress, discrimination, migratory history) in development and maintenance of PTSD symptoms.

Acculturative Stress

Lara and colleagues (2005) describe that literature on acculturation and assimilation has included both unidirectional as well as bidirectional models. Unidirectional models conceptualize immigrants as moving across a linear continuum whereby they move from completely unacculturated to completely acculturated. In this way, recent immigrants become incorporated into the host culture by adopting majority cultural patterns. Bidirectional models, on the other hand, conceptualize integration of the old culture with the new culture (i.e., biculturalism). Bidirectional models have posited there might be different acculturation

categories including: (a) assimilation (i.e., completely adopting the new culture); (b) separation (i.e., rejection of new culture and maintenance of old culture), (c) integration (i.e., embracing both cultures), and (d) marginalization-exclusion (i.e., being excluded by both cultures).

Empirical evidence examining the association between acculturation and PTSD is limited. Ortega and colleagues (2000) examined the relationship between indicators of acculturation (e.g., language spoken at home currently, language spoken at home as a child, number of parents born in the U.S., nativity) and PTSD prevalence in a sample of Latinos (i.e., Mexican-Americans, Puerto Ricans, other Hispanics). Results were mixed. Having at least one parent who was born in the U.S. was associated with less PTSD for Mexican-Americans and other Hispanics, but not for Puerto Ricans. Additionally, speaking English at home as a child was predictive of higher levels of PTSD in other Hispanics, but not for Mexican-Americans and Puerto Ricans. Lastly, results indicated currently speaking more English at home was predictive of higher rates of PTSD for other Hispanics and Mexican-Americans, with no information available for Puerto Ricans.

Following Hurricane Andrew, which hit the coast of Florida in 1992, Perilla and colleagues (2002) evaluated prevalence of PTSD in Latinos, blacks and whites residing in the affected area. Results indicated Latinos showed the highest rates (38%), compared to blacks (23%), and whites (15%). The authors proposed differential exposure and differential vulnerability as possible explanations for these findings. Although both claims had merit, neither completely accounted for the differences in PTSD prevalence among racial/ethnic groups. One other explanation the authors discussed was the role of acculturation whereby they hypothesized individuals who were less acculturated may have more risk factors for the development of PTSD.

For example, they hypothesized family obligations (i.e., more collectivist) may bring about stress or distress. However, their data is limited as they did not have a formal measure of acculturation.

Alternatively, some research has indicated PTSD symptoms may inhibit acculturation to the new culture. Specifically, research by Silove and colleagues (2005) found, in a sample of Yugoslavian individuals enrolled in a group/family cultural transition program, individuals who did not have PTSD or depression made gains in psychosocial functioning through the course of the program compared to individuals who did have PTSD or depression. The latter group tended to drop-out early or evidenced poor outcomes.

Discrimination

The concept of discrimination is a complex one. Discrimination can occur as a result of personal or group characteristics (e.g., age, gender identity, sexual orientation, skin color, ability status, legal documentation status, socioeconomic status, religion, etc). Discrimination can also be present in numerous domains, such as at work, at school, and in public. There are also time-based constraints, such as those based on sociopolitical context (i.e., recent presidential administration being elected) and cohort effects, there may be differences in base rates of discriminatory experiences. Furthermore, there is an element of appraisal of exposure to discriminatory experiences, such that given the same event one individual may interpret the event as discrimination whereas another may not.

Encountering discrimination based on race, ethnicity, language ability, cultural customs and traditions is an experience that, by and large, many Latinos residing in the U.S. have undergone (Hovey, Rojas, Kain, & Magaña, 2000). Generally, the process of adapting to a new culture (i.e., assimilation) is met with discrimination and prejudice from the prominent group (Portes & Zady, 2002). Research has indicated discrimination can have deleterious effects on

overall psychological well-being. For the purposes of the present study we seek to understand the relationship between discrimination and PTSD.

Latinos face high levels of perceived and actual discrimination (Hovey, Rojas, Kain, & Magoña, 2000), which have been linked to chronic stress and even traumatic stress (Aruajo, 2009; Gee, Ryan, Laflamme, & Holt, 2006; Moradi & Risco, 2006; Umaña-Taylor & Updegraff, 2007; Yip, Gee & Takeuchi, 2008). Similar to other minority groups, Latinos tend to experience elevated percentages of discrimination compared to whites (Hovey, Rojas, Kain, & Magaña, 2007). This is particularly alarming as some have proposed discriminatory events are correlated with higher rates of PTSD. For example, Ruef and colleagues (2000) found evidence in their veteran sample indicating individuals who experience greater racial discrimination experienced higher rates of PTSD.

Furthermore, though other minority groups experience similar rates of discrimination, some literature suggests it is more functionally impairing to Latinos given elevated PTSD rates (Pole et al., 2005). Pole and colleagues (2005) propose that one explanation might be that Latinos receive less parental preparation for coping with such treatment. Though this logic might not apply to U.S.-born Latinos, it is a plausible scenario for immigrants into the U.S. who did not experience such treatment growing up in their home countries. Thus, when confronted with the reality that minorities are readily the recipients of such treatment in the U.S., some might not have habituated to this sort of treatment, thus having more negative appraisal. That is to say, perhaps other minority groups that are not largely composed of immigrants (e.g., African Americans) have had more time to habituate to the racist climate as well as acquired more skills to cope with that sort of treatment over time. This hypothesis is presented with the caveat that

qualitative and quantitative assessment of coping mechanisms, and their relationship to discrimination and development of PTSD is needed to better evaluate its validity.

As previously mentioned, discrimination (e.g., workplace racism) can lead to chronic stress – a potential barrier to coping well following a traumatic event. Pole and colleagues (2005) have proposed that though Latinos experience high levels of discrimination, it is possible that hyperarousal symptoms (e.g., hypervigilance, hypersensitivity) could be related to higher perceived discrimination. Thus, the implication is that because of repeated experiences with discrimination, Latinos might learn to be more vigilant towards threatening scenarios. This would be an adaptive mechanism in order to navigate a threatening or hostile world. Once exposed to trauma, it is possible Latinos might experience more hyperarousal symptoms. However, to our knowledge, there is no empirical evidence to support this claim either. Again, qualitative and quantitative assessment of the relationships among hyperarousal symptoms and discriminatory experiences, and PTSD is needed.

Circumstances of Exit

The circumstances of exit (i.e., migration journey) an individual experiences migration may encompass many factors. To name a few, factors that may be critical in one's decision to migrate could be the degree of choice in migrating (i.e., whether one "wanted to or had to" migrate), the degree to which one is able to plan their migration, and the reasons for migration (e.g., employment, education, healthcare, to rejoin family members, fleeing political violence). Migration stress varies by individual depending on circumstances of exit, coping mechanisms, and resilience factors (e.g., Bhugra, 2014).

It is conceivable that if an individual 'has to" migrate and they did not have much ability to plan for their migration, this may result in, or at the very least represent, stress and at the very

extreme levels traumatic stress for the individual. Many have indicated the migration passage can be fraught with possibly traumatic circumstances such as physical dangers that include gross deprivation, rape and murder (e.g., Vega, Hough, & Miranda, 1985). There is evidence to suggest that individuals who are forced to migrate (e.g., asylum seekers, refugees, displaced persons) have significant mental health concerns (e.g., depression, PTSD), which may be in part related to their migration experiences. Previous studies have indicated refugee samples evidence heightened risk for development of PTSD and depressive disorders (e.g. Cardozo et al., 2000; Kinzie, 2006; Mollica et al., 1998).

Fortuna and colleagues (2014) utilized the NLAAS dataset to carry out a set of analyses that examined the extent to which political violence, psychosocial trauma, and mental health services were related in a subset of Latino immigrants residing in the U.S. Their findings highlight PTSD was correlated with history of trauma stemming from political violence encountered before immigrating to the U.S, which may have been linked to the circumstances for their exit to the U.S. One important piece of information their work highlighted is that many non-clinical samples of immigrants to the U.S. from Latin America have experienced political violence (11%). However, it is important to note other studies have found higher estimates within community health centers (e.g., 54%; Eisenman et al., 2003). Additionally, their analysis outlined possible traumatic events immigrants to the U.S. might encounter in their home countries. For example, several countries have endured oppressive dictatorships (e.g., Cuba, Dominican Republic, Guatemala), civil war (e.g., El Salvador, Nicaragua), combat between guerrillas and their government (e.g., Mexico), and combat between opposing guerillas (e.g., Peru). Fortuna and colleagues' (2014) work found that such experiences give rise to violent traumatic experiences (e.g., rapes, molestations, beatings, bombings, witnessing deaths). As the

empirical evidence has demonstrated, violent events (such as those previously mentioned) have been linked to PTSD symptoms. It is important to highlight the point that while violence exposure in one's home country might be present, exposure to violence in the U.S. is also possible (e.g., police brutality, witness gang violence). Thus, this association might be difficult to disentangle.

Social Support

Social support can be garnered through interactions with family members, friends, and co-workers. There are different types of social support captured by numerous scales, which makes consensus on the concept difficult. For example, House (1981) proposed four types of support, comprising emotional support (e.g., providing, empathy, caring, love, trust, esteem, concern, and listening), instrumental support (e.g., providing aid in kind, money, labor, time, or any direct help), informational support (e.g., providing advice, suggestions, directives, and information for use in coping with personal and environmental problems), and appraisal support (e.g., providing affirmation, feedback, social comparison, and self-evaluation). Wong, Yoo and Stewart (2005) proposed five types of social support in Chinese and Korean immigrants – tangible (e.g., financial aid and other material aid), information/advice (e.g., receiving information and advice), emotional support (e.g., help coping with negative feelings), companionship (e.g., spending time with family and friends), and language support (e.g., receiving help from another individual to navigate language barriers). The topic is further complicated by differences in expression of social support, which may be influenced by cultural norms, traditions, and context. Additionally, it is also important to consider the effect of frequency and quality of social support.

Despite lack of consensus about the topic, social support (i.e., social involvement) has been proposed as a significant protective factor against the effects of traumatic stress (e.g., Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). While some literature has proposed Latinos are more *collectivistic* such that they are more prone to having closer relationships with family members, other research has proposed the opposite may be true in social relationships outside of Latinos' families.

Ruef and colleagues (2000) found Latinos reported less camaraderie and support from fellow soldiers, in comparison to whites and blacks. Additionally, Pole and colleagues (2005) proposed that lack of social support experienced by Latinos (outside of the family unit) is one key factor driving up the rates of PTSD as well as severity. Specifically, they found that compared to white or black urban police officers, Hispanics had both elevated PTSD rates and reported significantly less social support. The investigators posit that prior-to-trauma low levels of social support might be a barrier to securing post-trauma social support and thus lead to avoidant coping (Pole et al., 2005). Additionally, Escobar and colleagues (1983) found Hispanic patients that reported less social support (e.g., poor familial and social relationships) experienced more severe PTSD symptoms. It could be the case that Latinos experienced higher levels of discrimination, leading to alienation, and thus less social support.

Aims of the Present Study

Findings regarding whether prevalence of PTSD in Latinos is higher or lower compared to other racial and ethnic groups (most notably non-Latino whites and blacks) is mixed. In addition, some research suggests that U.S.-born Latinos have higher rates of PTSD in comparison to Latino immigrants (Alegría et al., 2008). The review of the relevant literature has highlighted several sociocultural factors that might, in part, explain these trends. Of relevance to

the present paper are the roles that acculturative stress, discrimination, circumstances of exit, and social support play in exposure to trauma and subsequent development of PTSD symptoms. Although existing literature supports the hypothesis that these sociocultural factors are significantly related to exposure to trauma as well as PTSD symptoms, to our knowledge, no studies have looked at both risk for trauma and risk for PTSD and their relationship to the aforementioned cultural variables concurrently. One possibility is that sociocultural variables may influence the risk of exposure to trauma by either increasing the risk of exposure to trauma (e.g., circumstances of exit consisting of fleeing a war-torn country), and thereby making it possible for the person to develop PTSD, or decreasing such risk and thereby buffering the person from the possibility of PTSD (e.g., migrating because an individual "wanted to" in pursuit of higher education and having an international student Visa). A second possibility is that sociocultural variables act as buffers (e.g., social support) or risk factors (e.g., discrimination) for PTSD once the individual has been exposed to a traumatic event. Third, it is possible that some sociocultural factors influence both exposure to traumatic events and subsequent responses to those traumatic experiences.

Primary Aims

In order to evaluate the aforementioned associations, the primary aim of the present study is to:

1. Test a structural equation model that proposes relationships among sociocultural variables (i.e., acculturative stress, discrimination, migration decision-making, and reasons for migration) and exposure to trauma (i.e., trauma types reported) in Latinos residing in the U.S., and PTSD symptom severity (i.e., number of PTSD symptoms

reported). (Detailed information can be found in section entitled "*A Priori* Model Hypotheses".)

Secondary Aims

In the event of a poor fit of the data to our *a priori* model, a secondary aim of the present study is to:

2. Propose and test alternative models of cultural correlates of exposure to trauma and the development of PTSD by removing non-significant contributions and/or latent variables in the *a priori* model (i.e., theory trimming), to determine if this increases model fit.

In the event of a good fit of the data with the *a priori* model, an exploratory aim of the present study is to:

3. Propose and test alternative models that provide at least as good of a fit in order to reduce confirmation bias in our conclusions.

***A Priori* Model Hypotheses**

Our conceptual model is presented in Figure 1. We developed this model based on a literature review examining previous theoretical and empirical studies elucidating the relationship among cultural variables, exposure to trauma, and development of PTSD. These are detailed below.

Hypothesis 1: Cultural Factors will be Related to Exposure to Trauma, and PTSD. Arguably, the most important part of the present study is its ability to determine relationships between cultural variables and exposure to trauma, and subsequent development of PTSD symptoms. Below we detail theoretical justifications for these interrelationships.

Hypothesis 1a: Acculturative Stress is Related to Exposure to Trauma and PTSD. As outlined in the literature review for the present study, acculturative stress has been identified as a

correlate of PTSD. We do not hypothesize that by virtue of experiencing higher levels of acculturative stress, an individual is more likely to be exposed to traumatic events, and therefore PTSD. However, we do hypothesize acculturative stress will covary with both trauma exposure and PTSD severity. Stated another way, high scores on acculturative stress will be related to high scores in reported trauma types, and also high number of PTSD symptoms endorsed. Thus our *a priori* model includes curved bidirectional arrows between acculturative stress and trauma exposure, and acculturative stress and PTSD severity.

Hypothesis 1b: Discrimination is Related to Exposure to Trauma. Being exposed to a discriminative event may elicit a wide range of reactions. If an event is appraised to not be discriminatory, it may be discounted or ignored by the recipient. However, it may also be the case that if that event was appraised as discriminatory, at the very least it may be experienced as stressful and at an extreme level it could result in traumatic stress (depending on the event). It is conceivable a discriminatory experience could result in fear for one's safety and/or that of another individual. In our model, we hypothesize a direct relationship between discrimination and exposure to trauma, such that higher levels of discrimination result in higher numbers of reported trauma types (i.e., trauma exposure). Thus, discrimination is directly related to exposure to trauma, and indirectly related to PTSD severity, via its effect on trauma exposure. Our model includes a straight, unidirectional arrow from discrimination to trauma exposure.

Hypothesis 1c. Circumstances of Exit (Migration Decision-Making; Reasons for Migration) is Related to Exposure to Trauma. In our review of the literature, we found a link between migration decision-making and PTSD. Previous research has indicated individuals fleeing their home country due to political instability and therefore "have to migrate" are more likely to experience PTSD (e.g., Fortuna et al., 2014). Moreover, the actual process of migrating

in itself could be traumatic (e.g., crossing the U.S.-Mexico border by foot and be kidnapped by smugglers). Additionally, not being afforded the chance to plan one's migration may result in increased exposure to trauma (e.g., if an individual had to abruptly leave one's home and loved ones). Thus, migration decision-making is directly related to exposure to trauma, and indirectly related to PTSD severity, via its effect on trauma exposure. This is demonstrated by a straight, unidirectional arrow from migration decision-making to trauma exposure.

Additionally, we hypothesize that the more reasons someone has to migrate (i.e., pressure to migrate), the higher their chances might be that they could be exposed to trauma. For example, no access to good paying jobs, political corruption, gang activity and inadequate access to medical care may combine to compel a person to migrate. The more such reasons, the more desperate they may be to migrate and this kind of desperation could put them in harm's way. Thus, reasons for migration is directly related to exposure to trauma, and indirectly related to PTSD severity, via its effect on trauma exposure. This is demonstrated by a straight, unidirectional arrow from reasons for migration to trauma exposure.

Hypothesis 1d. Social Support is Related to Exposure to Trauma and PTSD. Previous research has indicated strong social support may act as a buffer against the development of traumatic stress following exposure to trauma (e.g., Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). Specifically, it may be the case that having a strong social network may equip an individual with supports (e.g., instrumental, emotional) that bolster psychological well-being. For example, if an individual experiences a traumatic event and has a strong social network, they may be able to receive emotional support from individuals in their network (e.g., validation, warmth), that may decrease the impact of the traumatic event and result in less PTSD symptoms. In our model, we hypothesize social support will covary (negatively) with both trauma exposure

and PTSD severity, such that it results in a buffering effect. This is depicted in our model through the use of curved, bidirectional arrows between social support and trauma exposure, and social support and PTSD severity

Hypothesis 2. Relationship between Exposure to Trauma and PTSD. Anecdotal clinical and scientific evidence suggest not every instance of exposure to a traumatic events results in traumatic stress. However, in order to qualify for a diagnosis of PTSD, there must be a precipitating traumatic event. In the present study, we were interested in examining if there was a relationship between higher numbers of trauma types reported and number of PTSD symptoms reported. It is our hypothesis that there will be a positive relationship such that as number of trauma types reported increases, so does number of PTSD symptoms reported (i.e., PTSD severity). While our model only encapsulates PTSD symptoms arising from worst trauma, we will treat this as a proxy for propensity for lifetime PTSD. Additionally, this model does not capture whether individuals reach diagnostic threshold as symptoms of duration and impairment are not included. However, PTSD severity will serve as a proxy for PTSD diagnosis. Thus, our model depicts a direct relationship between trauma exposure and PTSD severity using a straight, unidirectional arrow from trauma exposure to PTSD severity.

Methods

Dataset

Data for the present study comprised data generated in NLAAS – a stratified area probability sample design of persons 18 years of age and older in the non-institutionalized population of the U.S. The NLAAS was carried out as part of the Collaborative Psychiatric Epidemiology Surveys (CPES), which comprises the NCS-R, the National Survey of American Life (NSAL), and the NLAAS. The NLAAS sample is composed exclusively of Latinos and

Asians, as the other previously mentioned epidemiological surveys encountered difficulties with recruiting large subsamples of individuals who identified as Latino and Asian. NLAAS data was collected from May 2002 through December 2003.

The NLAAS researchers were particularly interested in investigating the relationships among cultural and contextual influences, psychiatric disorders, and service use (Alegría et al., 2004). Specifically, the NLASS had three broad aims to (a) estimate lifetime and 12-month prevalence of psychiatric disorders and rates of service utilization, (b) estimate relation of social position, environmental context, and psychosocial factors with the prevalence of psychiatric disorders and rates of service utilization, and (c) compare lifetime and 12-month prevalence of psychiatric disorders and service utilization with the other nationally-representative epidemiological survey samples of non-Latino whites (from the NCS-R) and African Americans (from the NSAL).

Data collection was carried out by the University of Michigan's Institute for Social Research (ISR) using trained, multilingual interviewers to administer the NLAAS battery. Materials were provided to Latino study respondents in English or Spanish, depending on their language of preference. All study materials were translated into Spanish using a standard translation and back translation protocol (i.e., English to Spanish to English).

Sampling

In order to recruit a nationally representative household sample of Latinos residing in the U.S., the NLAAS researchers used a complex sampling procedure. Specifically, primary sampling units were selected based on probabilities proportional to population size (Pennell et al., 2004). Thus, data collection was carried out in specific geographic areas (i.e., sampling units) across the U.S. Refer to Figure 2 for a map of NLAAS recruitment areas (Pennell et al., 2004).

Additionally, household members were sorted based on various demographic factors (e.g., age, gender, race/ethnicity). Study eligibility was determined through a series of demographic questions delivered by trained assessors through home visits for each living adult residing in the household. In cases where several household members met eligibility criteria, one individual was randomly selected from a sequential listing of eligible household members. Once selected, every effort was made to retain the selected individual, not allowing substitutions. Written informed consent was required of all study participants.

Trained Assessors

NLAAS trained assessors collected data from May 2002 through December 2003 specifically from a nationally representative sample of adults (≥18 years) from four Latino groups: Cuban, Mexican, Puerto Rican, and other adults of Latino descent (Pennell et al., 2004). Data was collected through in-person interviews utilizing computer-assisted interviewing (CAI); telephone interviews (through a toll-free line provided by the NLAAS research team) were available for participants who requested such accommodations (e.g., when there was a concern for lack of privacy of in-person interviews, when interviews lasted more than one session, when travel to the participant's home was difficult). NLAAS trained assessors comprised a group of 275 individuals, primarily women (71.4% of assessors), with either a college degree (35.7% of assessors) or at least some college (40% of assessors). The majority of assessors were either white (43.5% of assessors) or Latino (36.7% of assessors). Data collection was overseen by the Survey Research Center (SRC) of the ISR at the University of Michigan, yet trained assessors were directly supervised by team leaders and regional field managers who were responsible for meeting recruitment goals. Many trained assessors had previously served as assessors for the U.S. decennial census. English and Spanish language proficiency (i.e., spoken and written

fluency) was evaluated before an employment offer was made for each potential assessor. There was a 61% attrition rate for trained assessors. Assessors were trained through several training sessions and were certified before they were allowed to collect data. In cases where sensitive clinical situations arose, trained assessors were instructed to contact NLAAS clinical support persons (i.e., social workers who had previous experience working with survey interviewers).

Participant Recruitment

Recruitment for the NLAAS was carried out in various locations through the U.S., which resulted in a nationally representative household sample of Latinos residing in the U.S. (Alegría et al., 2004). Trained assessors conducted home visits in order to recruit participants. Additionally, recruitment ads in newspapers (in English and Spanish) and flyers in strategic locations (e.g., community centers, libraries, college campuses, employment offices) were also utilized (Penell et al., 2004). Once a participant was selected, appointments were scheduled with them. On average, 9.2 contact attempts were made to complete the assessment for the first (and in many cases the only) session. In circumstances where more than one session was needed to complete the assessment, on average 11.6 contact attempts were made. Contact attempts included telephone calls, home visits, and personalized letters. The NLAAS research team screened 27,026 addresses. One respondent was randomly selected from each home based on a sequential listing of eligible respondents. This resulted in 4,345 primary eligible respondents (i.e., they were randomly selected and agreed to participate) and 1,029 second adult respondents (i.e., the primary eligible respondent declined to be in the study and thus a second respondent was selected). From the subset of eligible respondents, 3,620 interviews were completed with main eligible respondents, and 1,029 with second adult respondents. Thus, a total of 4,649

respondents completed interviews (comprised of Asians and Latinos). This resulted in a weighted response rate of 77.6% among Latinos.

Study Incentives

Participants were paid $50 for the completion of the interview (Pennell et al., 2004). In order to reach recruitment goals, the NLAAS team increased incentives for study participants towards the end of the data collection phase. In order to boost recruitment numbers, trained assessors received monetary bonuses towards the end of data collection as well.

Study Sample

In the present study, we retained a sample of 2,554, out of a total of 4,649 total respondents (54.94%). The retained sample comprised respondents identified as Cuban, Puerto Rican, Mexican, Mexican-American, and "other Latino". We operationalized "Latinos" to be comprised of these participants for the purposes of the present study.

Approval for the Study

The Institutional Review Board (IRB) Committees of Cambridge Health Alliance, the University of Washington, and the University of Michigan approved all recruitment, consent, and interviewing procedures included in the NLAAS. Study protocol for the present study (i.e., secondary analyses on NLAAS) was approved by the University of Wisconsin-Milwaukee's (UWM) IRB following proposal to the primary author's dissertation committee.

Measures

The following section outlines each of the measures included in the present study. The individual items comprising these subscales can be found in Appendices B through I. A complete table of internal consistency (i.e., Cronbach's alpha [α]) for the scales outlined below can be found in Table 1.

Demographic Characteristics. With regards to demographic characteristics, we evaluated: gender, age, race/ancestry (i.e., Mexican, Mexican-American, Chicano, Puerto Rico, Cuban, other, not Spanish/Hispanic), birth country (i.e., US or other), US citizenship, citizenship in another country, number of parents born in the US (i.e., generational status), number of years living in the US, age at migration, marital status (i.e., married, separated, divorced, widowed, never married), number of years of formal education completed, employment status (i.e., employed, self-employed, retired, homemaker, student, other), household income, and region of US in which respondent resides (i.e., northeast, Midwest, south, west).

Acculturative Stress. See Appendix B for a list of items on the acculturative stress subscale. The acculturative stress scale represents nine items taken from the Mexican American Prevalence and Services Survey (MAPSS; Vega et al. 1998) and additional items developed by NLAAS researchers (to extend content beyond Mexican-Americans). The scale measures acculturative stress, or stress of cultural change that results from immigrating to the U.S. (e.g., language barriers, loss of family ties, perceived prejudice related to ethnicity and legal status, occupational stress). We recoded responses so that they would be consistent with other dichotomous variables and assist with the interpretability of the output (i.e., high responses indicate more acculturative stress). Responses to individual items were no (=0) or yes (=1), and reverse coded for one item (i.e., AS2). Before computing this sum score, we calculated Cronbach's alpha (α) for these items, which was 0.688, indicating borderline questionable internal consistency. The total score was the sum of these nine items, ranging between 0 (low acculturative stress) and 9 (high acculturative stress). We did not conduct a principal components analysis as our internal consistency was close to the acceptable range.

Discrimination. See Appendix C for a list of items on the discrimination subscale. The Everyday Discrimination is a nine-item instrument that measures the frequency of routine occurrence of perceived unfair treatment (e.g., being treated with less respect than other people, having people act as if they were afraid of them, being called names or insulted; Alegría et al., 2004). Items were taken from the Detroit Area Study (DAS; Jackson & Williams 1995, Williams et al. 1997). Individual items were rated as never (=1), less than once a year (=2), a few times a year (=3), a few times a month (=4), at least once a week (=5), and almost every day (=6). Higher scores on this subscale indicate more discriminative experiences. The minimum and maximum scores for the scale are 9 (low discrimination) and 54 (high discrimination), respectively. Cronbach's α for discrimination was equal to 0.905, which corresponds to excellent internal consistency. Total discrimination was computed as the sum of items on discrimination subscale outlined in Appendix B, as utilized in other analyses on the NLAAS (e.g., Alegría et al., 2004; Lorenzo-Blanco & Cortina, 2013).

Circumstances of Exit. As previously mentioned, there may be numerous factors that impact one's ability to migrate to another country. In the present study, we sought to focus on the effect of migration-decision making and reasons for migrating. These are detailed below.

Migration Decision-Making. See Appendix D for a complete list of migration decision-making items. For the purposes of the present study, we were interested in capturing migration decision-making, as per recommendations of Torres and Wallace (2013), which comprised the sum of two items. The first item dealt with degree to which the respondent wanted to immigrate, with recoded responses being either wanted to (=0) or had to (=1), which were recoded to be consistent with other dichotomous variables in the study. The second item dealt with degree to which respondents planned their migration, with responses being either carefully planned (=1),

somewhat planned (=2), poorly planned (=3), or not planned at all (=4). Lower scores indicate more control over migration (i.e., more desire to move, and more careful planning). We calculated Cronbach's α for these two items, which was -0.032. Because we did not achieve adequate internal consistency between these items, we chose to incorporate these variables separately in our model, capturing different facets of the construct of migration decision-making.

Reasons for Migration. Refer to Appendix E for a complete list of items comprising the reasons for migration subscale. The NLAAS inquired reasons for migration to provide information related to context of exit from a respondent's home country. We were interested in capturing the cumulative effect of reasons for migrating, as a proxy for pressure to immigrate. To that end, we created a total score that comprised the sum of nine items related to: employment, rejoining family, improving future for children, better opportunities, fleeing political instability, fleeing political persecution, medical attention, better education, and marital or family problems. Respondents rated level of importance for each of these items. Responses were reverse scored as follows: not at all important (=1), somewhat important (=2), and very important (=3), Higher scores indicated more pressure to immigrate. We calculated Cronbach's α for these nine items, which was 0.570, which corresponds to poor to questionable internal consistency. We then conducted principal components analysis with varimax rotation. Results indicated three factors accounting for 57.9% of the variance, which were: search for a better future (i.e., to find a job, to join other family members, to improve the future of children, better opportunities, seek better education), political reasons (i.e., political situation in country of origin, persecuted for political reasons), and personal problems (i.e., seeking medical attention, marital or family problems). Cronbach's α for the first two factors were 0.642 (search for a better future) and 0.676 (political reasons), indicating questionable to acceptable internal consistency. The last factor (personal

problems) resulted in Cronbach's α of 0.406, corresponding to unacceptable internal consistency. Thus, we then created sum scores for the first two factors (i.e., search for a better future, political reasons), and incorporated the two variables comprising the last factor (i.e., personal problems) separately in our model, which are seeking medical attention and marital or family problems. The expected ranges of scores were five to 15 for search for a better future, two to six for political reasons, one to three for seeking medical attention, and one to three for family or marital problems.

Social Support. See Appendix F for a list of items on the social support scale. With regards to social support, we utilized the recommendation by Canino, Vega, Sribney, Warner & Alegría (2008) to create the following subscales: family support, family harmony, friend support, and friend harmony. We measured family support via a three-item scale assessing how often respondents seek family support (e.g., "How often do you talk on the phone or get together with family or relatives who do not live with you?"). We used a similar 3-item scale to assess friend support. Family harmony was measured using a two-item scale asking respondents how often relatives (not including spouse or partner) or children make too many demands on you or how often respondents argue with family or relatives. Higher scores indicate higher levels of harmony. Friend harmony was similarly based on frequency of demands and frequency of arguments with friends. Cronbach's α for these four social network scales are 0.693 (family support), 0.609 (family harmony), 0.761 (friend support), and 0.610 (friend harmony). As only one of these subscales evidenced acceptable internal consistency (i.e., friend support), we conducted a principal components analysis with varimax rotation. Results indicated three factors accounting for 60.8% of the variance. The factors were family support (i.e., frequency of talking on the phone with relatives, frequency of relying on relatives for serious problems, frequency of

relying on relatives to discuss worries), friend support (i.e., frequency of talking on the phone with friends, frequency of relying on friends for serious problems, frequency of relying on friends to discuss worries), and family and friend demands (i.e., how often relatives make demands, how often relatives argue, how often friends make demands, how often friends argue). Cronbach's α for the three factors were 0.692 (family support) and 0.760 (friend support), and 0.673 (family and friend demands), indicating questionable to acceptable internal consistency. We computed sum total scores for these three factors. The family support subscale was composed of three questions utilizing scales, one of which was on a a 5-point Likert type scale with scores ranging from "less than one time a month" (=1) to "almost every day" (=5), and the other two from "not at all" (=1) to "a lot" (=4). Thus, this scale had an expected range of three to 13. The three items of the friend support scale were similarly scored (i.e., total scores ranged from three to 13). The family and friend demands scale comprised four frequency questions, wherein responses could range between "never" (=1) to "often" (=4). The expected range for this subscale was four to 16. Responses for the aforementioned variables were on scales with a 1-point scale (i.e., respondents could select among 1, 2, 3, and 4).

Exposure to Trauma. The NLAAS battery utilized the World Health Organization-Composite International Diagnostic Interview (WHO-CIDI). During the first part of the PTSD module, respondents were asked to report if they had experienced any of a list of events in order to determine exposure to potentially traumatic events. See Appendix G for the complete list of potentially traumatic events used. For the purposes of the present study, we were interested in capturing the cumulative effect of traumatic events on development of PTSD symptoms. Thus, we created the "trauma exposure" variable, which comprised the sum of 29 trauma types reported. Specifically, the first part of the module comprised a screener that inquired about types

of trauma experienced (e.g., combat, sexual, exposure to toxic chemicals). However, some follow-up questions varied with regards to content such that for some trauma types the follow-up question centered on duration of event and for others it inquired about number of times the trauma type had been experienced. Thus, it was difficult to arrive at a definite number of total lifetime traumatic events. Thus, the present study used the number of trauma types each person experienced as a proxy for the number of traumas experienced. To this end, we recoded responses for each trauma type (i.e., no = 0, yes = 1), and created a sum score. Scores ranged from 0 (no lifetime trauma exposure) to 29 (high trauma exposure). Cronbach's α for trauma exposure was equal to 0.726, corresponding to acceptable internal consistency. We included in our model a sum score of trauma types (i.e., trauma exposure) as we were interested in capturing the cumulative effect of trauma exposure rather than distinguishing between various categories of traumatic events.

PTSD. Refer to Appendix H for a complete list of items comprising the PTSD subscale. In this study, we prioritized capturing PTSD severity over categorizing respondents as meeting criteria for a (DSM-IV-TR) PTSD diagnosis or not. Thus, we utilized the sum of 21[3] PTSD symptoms (based on the symptom clusters) reported for worst trauma type, which was a proxy for PTSD severity. A benefit of this approach is that it may increase generalizability of findings as often clients experience sub-threshold PTSD symptoms. Additionally, operationalizing this variable in this way allows for a larger range, thus decreasing the likelihood of having a truncated range (as would be the case if were used a dichotomous variable indicating meeting

[3] In the present study, we including data from criterion A2 (i.e., subjective reaction to the trauma at the time it happened or in the very immediate aftermath of the trauma). These were coded as four separate questions in the present study, thus bringing our severity index from 17 to 21. It is debatable whether these should be included as they represent the qualification of an event satisfying the definition of trauma. We nonetheless included it to capture a comprehensive set of responses to trauma.

diagnostic criteria or not). The downside of this approach is that we are limited in our ability to determine how cultural variables and exposure to trauma included in our model relate to diagnosable PTSD. Our PTSD severity variable did not take into the following DSM-IV-TR diagnostic criteria: duration and chronicity of symptoms (criterion E) and level of distress and level of functional impairment (i.e., criterion F). We did not include criteria E or F as these items were not coded to be dichotomous as the other PTSD symptoms, and we thus did not want to inflate scores by giving these items more weight (i.e., criteria E and F were rated on 5-point Likert-type scales). Additionally, criteria E and F are utilized to be able to warrant a diagnosis of PTSD. In this study, we were merely interested in the presence of PTSD-specific symptoms present versus whether the individual met diagnostic criteria. Responses (i.e., 21 PTSD symptoms; A2 through D5) were coded as no (=0) or yes (=1), with a range of zero (low PTSD severity) to 21 (high PTSD severity). The range of scores, therefore, is zero through 21. Cronbach's α for trauma exposure was equal to 0.119, corresponding to very poor internal consistency. Despite poor internal consistency, we did not conduct a primary components analysis, as we wanted to take into account the cumulative effect of these symptoms rather than distinguishing between symptom clusters (e.g., re-experiencing, avoidance, hyperarousal).

Data Analysis

Structural Equation Modeling

According to Kline (2011), structural equation modeling (SEM) is a set of techniques based on the principles of regression. These set of techniques can also be referred to as covariance structure analysis, covariance structure modeling, analysis of covariance structures, and causal modeling. SEM techniques put the emphasis on covariance (i.e., relative strength of association between variables and their variabilities) as it is the unit of analysis. Stated another

way, SEM techniques aim to: "(1) understand patterns of covariances among a set of observed variables, and (2) explain as much of their variance as possible with the [proposed] model" (p. 10). Additionally, SEM techniques differ from other statistical analyses in that they have the capability of evaluating relationships between observed and latent variables, in comparison to other techniques that only analyze observed variables (e.g., multiple regression, analyses of variance). Descriptions of observed and latent variables will be explained further later in this manuscript.

The present study will utilize SEM to evaluate a model based on a careful literature review of possible cultural correlates of trauma exposure and PTSD in Latinos residing in the U.S. The original dataset was provided to our research team in the form of a dataset file in Statistical Package for the Social Sciences (SPSS). Relevant variables were transferred to Mplus software Version 7 (Muthén & Muthén, 2010) to perform structural equation modeling in order to carry out SEM techniques.

Operationalization of Terms in SEM

Observed Variables (Manifest Variables). Observed variables are those that correspond to individual variables (i.e., single item, or total sum score for a subscale) in the dataset. In SEM techniques, observed variables can be categorical, ordinal, or continuous. See Figure 1 for our conceptual model, which depicts observed variables as rectangles. For our model, observed variables include: acculturative stress, discrimination, choice to migrate, migration planning, search for a better future, political reasons, seeking medical attention, marital or family problems, family support, friend support, family and friend demands, exposure to trauma, and PTSD severity.

Latent Variables (Hypothetical Constructs; Factors). Latent variables in SEM techniques are thought of as hypothetical constructs as they cannot be directly observed. Moreover, latent variables are thought to exist when there are multiple measures or items, rather than a single measure. Latent variables can be first-order or second-order, meaning that they could be comprised of observed variables (i.e., first-order), or latent variables (i.e., second-order). See Figure 1 for our conceptual model, which depicts latent variables as ovals. Latent variables in the proposed model include: migration decision-making, reasons for migration, and social support.

Relationships among Variables. By convention, visual depictions of the models tested through SEM are represented using square or rectangular boxes to denote observed variables and ovals to denote latent variables. Direct unidirectional causal relationships are depicted by straight arrows with the direction of the arrow leading from the hypothesized cause to the hypothesized effect. Double-headed curved arrows depict covariance between two variables. Variables that make up a construct (i.e., latent variable) are depicted by straight arrows going from the construct (oval-shaped observed variable) to the observed variables (i.e., items within that measure) used to measure the construct.

Specification. Specification is the process of formally stating a model. Herein, we outlined our theory for the parameters included in the proposed model. This process entailed determining our fixed parameters (i.e., not estimated in the model, and thus are fixed to a value), and free parameters (i.e., are freely estimated in the model). The pattern of fixed and free parameters result in the measurement model and the structural model

Measurement Model. The measurement model demonstrates where the indicators are mapped onto the theoretical model constructs. In other words, at this stage we attempt to find

which items (i.e., observed variables) were related to each factor (i.e., latent variables). In our model, we conducted principal component analyses with varimax rotation when internal consistency was low on our subscale scores in order to elucidate factors making up our constructs.

Structural Model. The structural model contains the causal links (paths) between the theoretical constructs. Thus, herein we hypothesize about the relationships between latent and observed variables. Even though the present study has a cross-sectional design, we can begin to gather evidence for which variables cause other variables.

Estimation. Estimation attempts to obtain estimates of the free parameters in the model. During each iteration, estimates are obtained for the free parameters and the parameters from the model are substituted into the structural equations to produce a covariance matrix (i.e., implied covariance matrix). This iterative process attempts to minimize the difference between the implied covariance matrix and observed matrix (i.e., residual matrix). This iterative process ends when the difference is minimized.

Evaluation. Evaluation refers to assessing the fit of the proposed model. There are two categories of indices we examined – overall test for fit, and goodness of fit indices. Overall test for fit comprised a chi-square test (χ^2) to test perfect fit. A model is deemed to have a poor fit if the χ^2 value is large relative to degrees of freedom (df). Alternatively, models with good fit have χ^2 values smaller than df's. We utilized the following goodness of fit indices: Non-Normed Fit Index (NNFI)/Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and root mean square error of approximation (RMSEA). The CFI and NNFI/TLI compare the fit of the estimated model to a null model. The CFI compares the fitted model χ^2 with the null model χ^2. CFI is penalized for each parameter estimated. The NNFI/TLI is similar to CFI, but results in greater

penalty for complexity of the model (i.e., each df gives a penalization). CFI and NNFI/TLI values ≥ 0.95 correspond to good fit, and ≥ 0.90 correspond to fair fit. Lastly, RMSEA indicates model fit based on df's. RMSEA is a measure of the discrepancy per df in the model. Thus, if each parameter is explaining a large amount of variance, this will result in lower RMSEA, and thus better fit. RMSEA values ≤ 0.05 indicate very good fit, and values between 0.05 to 0.08 indicate reasonably good fit.

Model Modification. We modify a model when the fit indices indicate poor fit. In essence, we attempt to find alternative models to test. In order to do this, we free previously fixed parameters or fix previously freed parameters, and re-examine model fit. Per the secondary aim of the present study, should our *a priori* model evidence poor fit, we will systematically adjust our parameter specifications with the goal of increasing model fit.

Equivalent Models. The *a priori* model tested herein is derived from theory. However, statistically, there may be alternative models that produce the same covariance matrix and fit. In this process, we provide rationales for why the theorized model is either equal or superior to alternative models. Per the tertiary aim of the study, should our model evidence good model fit, we will propose equivalent models that also evidence good model fit.

Treating Missing Data

The data set contained missing values. Twelve of our 13 variables resulted in some degree of missing data, ranging from 0.2% (i.e., discrimination, family and friend demands) to 89.5% (i.e., PTSD severity). We did not remove observations with missing variables so as to avoid biased estimation, that is if the missing values are not missing completely at random (MCAR). While the data in this study are comprised of a random and representative sample of the population of Latinos residing in the U.S., we did not assume that missing data were MCAR

as there were many factors that could influence a participant not answering a question (e.g., language proficiency, income level, or other characteristics; Lueck & Wilson, 2010). Mplus defaults to estimating models in which some of the variables have missing values using full information maximum likelihood (FIML; Enders, 2001a; Kline, 2012). FIML estimates implied values for missing data based on observed data patterns. Compared to deletion methods (e.g., listwise, pairwise) and single imputation, FIML produces less biased parameter estimates and allows for the retention of the full sample size (Enders, 2001b).

Managing Outliers

Many of the factors included in the study herein utilized measured constructs (i.e., summed total scores) versus individual items regressed onto latent variables, where appropriate. This was done to decrease the number of parameters, and thus increase model fit. In the process of creating sum scores, the research team identified outliers (i.e., total scores which fell outside the expected range) for one variable – discrimination. The range of scores on this scale is nine to 54, however, 12 (0.5%) respondents completed less than 9 items and thus evidenced sum scores outside of the expected range. We opted to include these respondents in the analysis as we deemed this percentage of the total sample to be negligible.

Assumptions of SEM

Skew and Kurtosis. See Table 2 for a descriptive statistics for variables comprising in the model, including skewness and kurtosis. According to Kline (2015), values of three standard errors of skewness or more (regardless of sign) are skewed to a significant degree and values of ten standard errors of kurtosis or more (regardless of sign) differ from mesokurtic to a significant degree. In our sample, all variables were within limits of skew and kurtosis.

Multicollinearity and Singularity. See Table 3 for a list of correlations between variables proposed in our *a priori* model. Multicollinearity exists when there are high correlations among variables whereas singularity exists when there is perfect correlation between explanatory variables. Correlations of r±0.9 and above indicate multicollinearity. None of our variables appeared to be highly multicollinear, thus we retained all variables in the model.

Results

Demographic Characteristics

Table 4 presents a complete breakdown of demographic information for the study sample. The NLAAS inquired about Spanish and Hispanic descent. Approximately 54.94% of the total sample (*N* = 2,554/4,649) was deemed "Latino" for the purposes of the present study and identified as Cuban (*n* =580, 22.7%); Puerto Rican (*n* = 506, 19.8%); Mexican (*n* = 568, 22.2%); Mexican American (*n* = 312, 12.2%); Chicano (*n* = 27, 1.1%); "other Spanish/Hispanic" (*n* = 546, 21.4 %), or not Spanish/Hispanic[4] (*n* = 15, 0.6%). The mean age (*SD*) was 40.61 (15.64), with a range of 18 to 97. The sample comprised 44.1% men (*n* = 1,427) and 55.9% women (*n* = 1,427).

Approximately a third (*n* = 924, 36.2%) reported they were born in the US, and two-thirds reported being born in another country (*n* = 1,629, 63.8%). Of those born in another country, there was variability with regard to number of years living in the US (i.e., <5 years: *n* = 250, 9.8%; 5-10 years: *n* = 245, 9.6%; 11-20 years: *n* = 411, 16.1%; 20+ years: *n* = 716, 28%). Furthermore, about two-thirds identified as U.S. citizens (*n* = 959, 37.5%) and a third as citizens of country(ies) outside of the U.S. (*n* = 1,586, 62.1%). There was also variability with regards to age at migration (i.e., < 12 years: *n* = 365, 14.3%; 13-17 years: *n* = 216, 8.5%; 18-34 years: *n* =

[4] There were a subset of respondents who were included in the Latino subsample (i.e., versus Asians), but did not identify as having Spanish or Hispanic ancestry. We are unsure of how to interpret this finding.

735, 28.8%; 35+ years: *n* = 306, 12%). Approximately two-thirds of the sample reported no parents were born in the US (*n* = 1,926, 75.4%), 8% of the sample reported one parent born in the U.S. (*n* = 204), and 16.3% of the sample reported two parents born in the US (*n* = 417).

Regarding marital status, approximately half of respondents identified as married (*n* = 1,288; 50.4%), 7% as separated (*n* =178), 11.7% as divorced (*n* = 298), 4.7% as widowed (*n* = 120), and 26.2% as never married (*n* = 669). Respondents reported years of formal education completed was as follows: zero to 11 (*n* = 994, 38.9%); 12 (*n* = 633, 24.8%); 13 to 15 (*n* = 567, 22.2%); and greater than or equal to 16 years (*n* = 360, 14.1%). More than half of the sample identified as employed (*n* = 1399, 54.8%), 5.6% as self-employed (*n* = 142), 1.3% as retired (*n* = 34), 5.4% as homemaker (*n* = 138), 1.8% as student (*n* = 45), and 12.8% other (*n* = 326). Mean (*SD*) household income was $45,366 ($46,207), with a range of $0 to $200,000+.

Descriptive Statistics for Cultural Variables. Refer to Table 2 for descriptive information related to our cultural variables. In summary, our sample reported low levels of acculturative stress (*M* = 2.2, range = 0-9), which may be due primarily to the fact that we grouped all respondents regardless of migratory status (i.e., 63.8% of the sample identified as immigrants). Similarly, our sample reported low levels of discrimination (*M* = 15.57, range = 9-54). Concerning choice of migration, 37.7% reported they "had to" migrate (i.e., forced migration) and 25.6% reported "wanting to" migrate. The most commonly reported reasons for migrating (in order) were: in search of a better future (*M* = 12.43, range = 5-15), due to political reasons (*M* = 3.27, range = 2-6), in search of medical care (*M* = 1.34, range = 1-3), and due to marital or family problems (*M* = 1.17, range = 1-3). Our sample reported moderate to high levels of family support (*M* = 9.79, range = 2-13), friend support (*M* = 8.5, range = 2-13), and family and friend demands (*M* = 6.93, range = 2-16).

Descriptive Statistics for Exposure to Trauma. Figure 3 presents the percentage of individuals as a function of the number of different types of trauma they experienced. Inspection of the figure indicates that only 21.5% of the sample reported no trauma exposure, 17.7% of the sample reported one trauma type, and 60.8% of the sample reported experiencing two or more types of trauma. The mean number of event types reported was 2.85 (out of 20; see Table 2). See Table 5 for a list of trauma types reported, by prevalence. The top three trauma types reported were: witnessing someone close unexpectedly die (35.1%); witnessing someone badly injured or killed or unexpectedly seeing a dead body (26.2%); and being involved in a natural disaster (24.2%). The three least prevalent trauma types were: being a peacekeeper or relief worker in a war (1.3%); purposefully injuring, killing or torturing another person (2%); and doing something that accidentally led to serious injury or death of another person (2.1%).

Descriptive Statistics for PTSD Severity. See Table 6 for descriptive information on PTSD symptoms (by prevalence) reported by respondents for worst trauma type. With regards to the prevalence of criterion A items (i.e., pre-qualifying conditions), they were as follows in order of prevalence: feeling terrified or very frightened at the time (7.8%); feeling helpless at the time (1.5%); feeling shocked or horrified at the time (0.5%); and feeling numb at the time (0.039%). Regarding the criteria B, C, and D symptoms, the most commonly reported PTSD symptoms were: efforts to avoid thoughts, feelings or conversations related to trauma (8%); and intrusive trauma-related thoughts (7%); and difficulty falling or staying asleep (6.9%). The three least commonly reported symptoms were: feeling numb at the time (0.04%); feeling shocked or horrified at the time (0.5%); and feeling helpless at the time (1.5%).

Relationships among Cultural Variables, Exposure to Trauma, and PTSD. See Table 3 for a correlation table for the variables included in our *a priori* model. Results indicated minimal (r = 0.045) to moderate (r = 0.474) significant correlations among our variables, in both directions. For example, acculturative stress was negatively correlated with family support (r = -0.161), as would be expected. The only significant correlations above 0.3 (i.e., weak) were between: PTSD severity and acculturative stress, migrating because of political reasons and "having to migrate", and exposure to trauma and PTSD severity. Correlations in these ranges are a good indicator that the variables included in the present study do not result in multicollinearity.

Model Results

A *Priori* Model Results (Aim 1). The *a priori* model (model 1; represented in Figure 1) resulted in non-convergence. In other words, Mplus was unable to fit the model (i.e., the math we instructed the program to compute was infeasible). Specifically, the program stopped before convergence because the maximum number of iterations had been reached. Moreover, as this was the case the program also did not provide information about model fit indices.

Model Modification (Aim 2). As our *a priori* model did not converge, we engaged in a process to systematically increase the likelihood of convergence and good model fit. These are detailed below.

Model 2 – Dropping Latent Variable of Migration Decision-Making. See Figure 4 for a graphical representation our second model. Given low internal consistency (α = -0.32) of the two observed variables making up the latent variable of migration decision-making (i.e., migration choice, migration planning), we opted to include them in our model as observed variables independently by removing this latent variable. Similarly to our *a priori* model, this model also did not converge and thus did not provide information about model fit indices.

Model 3 – Path Analysis (Measured Model). See Figure 5 for a graphical representation of our third model, wherein we opted to remove all observed variables (i.e., path analysis). This model converged and output included information on model fit indices. However, the model did not fit the data well. Specifically, χ^2 (41, N = 1,592) = 622.648, $p < 0.01$; RMSEA = 0.094, 90% confidence interval (0.088, 0.101); CFI = 0.755; TLI = 0.659. We did not interpret this model as model fit was not acceptable.

Model 4 – Theory Trimming (Removing Non-Contributing Paths from Model 3). See Figure 6 for a graphical representation of our fourth model wherein we dropped non-contributing paths between cultural variables and trauma exposure and PTSD severity. Specifically, we removed direct associations between trauma exposure and discrimination and migration. We also removed covariances between trauma exposure and family support, friend support, and acculturative stress. Additionally, we removed covariances between PTSD severity and family support and friend support. Overall, the model evidenced good fit, χ^2 (17, N = 1,608) = 75.286, $p < 0.01$; RMSEA = 0.046, 90% confidence interval (0.036, 0.057); CFI = 0.969; TLI = 0.953. Even though the χ^2 value is significant, we would expect that this might be the case with a study with such a large sample size such as this one. Nonetheless, the other fit indices indicate good model fit.

Concerning reasons for migrating, the model indicated significant positive associations (i.e., risk factors) between trauma exposure and political reasons (β = 0.090), seeking medical attention (β = 0.778), and marital or family problems (β = 0.140). The model indicated significant negative association (i.e., buffer) between trauma exposure and search for a better future (β = -0.050). Concerning migration choice, results indicate there was a significant positive association between trauma exposure and "having to migrate" (i.e., choice to migrate; β = 0.057),

serving as a risk factor. Moreover, there was a significant association between PTSD severity and trauma exposure (β = 0.340), such that experiencing trauma is a risk factor for development of PTSD symptoms as would be expected. In reference to covariances, there were significant positive covariances between family and friend demands and trauma exposure (β = 0.105) and between family and friend demands and PTSD severity (β = 0.053). There was also a significant positive covariance between acculturative stress PTSD severity (β = 0.071). In total, the model accounted for 62.4% of the variance in trauma exposure (i.e., residual disturbance = 0.376) and 11.6% of the variance in PTSD severity (i.e., residual disturbance = 0.884).

Proposing Equivalent Models (Aim 3). We proposed to produce equivalent models in the case our model evidenced good fit. There is a temporal relationship between trauma exposure and PTSD, such that by definition one cannot have PTSD symptoms if not exposed to trauma. Thus, we cannot alter that association. However, one complicating factor is that the empirical evidence suggests individuals who have been exposed to trauma are more likely to be exposed in the future. Ideally, we would change the direction of the arrow; however, we are limited by the cross-sectional design of our study. Nonetheless, it could be the case that exposure to trauma could precede the following cultural variables: search for a better future, political reasons, seeking medical attention, and choice to migrate. We created an alternative model wherein we switched the direction of arrows in the aforementioned manner (i.e., trauma to cultural variables). We did not adjust the covariances, as these are already bidirectional. See Figure 7 for a graphical representation of this alternative model (model 5).

This model resulted in even better fit than the previous model, χ^2 (12, N = 2,554) = 36.614, $p < 0.01$; RMSEA = 0.028, 90% confidence interval (0.018, 0.039); CFI = 0.991; TLI =

0.973. Similarly to our previous model, the χ^2 value is significant. Again, this is to be expected given our large sample size. Nonetheless, other indicators of model fit are adequate.

The model indicated trauma served as a risk factor for political reasons (β = 0.210), seeking medical attention (β = 0.776), marital or family problems (β = 0.079) and choice to migrate (β = 0.247), as evidenced by positive associations. As expected and similarly to the previous model, the model resulted in a positive association between trauma exposure and PTSD severity (β = 0.369), indicating trauma exposure is a risk factor for development of PTSD symptoms. The model indicated significant negative association between trauma exposure and search for a better future (β = -0.115), indicating trauma exposure decreases the chances someone would migrate in search for a better future. With regards to covariances, there were significant positive covariances between trauma exposure and family and friend demands (β = 0.196) and PTSD severity (β = 0.045). There was also a significant positive covariance between acculturative stress and PTSD severity (β = 0.058). Because trauma exposure is our only exogenous variable, correlations among endogenous variables are automatically estimated. There were significant positive covariances between search for a better future and marital or family problems (β = 0.061); between political reasons and marital or family problems (β = 0.049) and choice to migrate (β = 0.446); seeking medical attention and marital or family problems (β = 0.322) and PTSD severity (β = 0.099); and marital or family problems and choice to migrate (β = 0.081). There was a significant negative association between political reasons and seeking medical attention (β = -0.050). In total, the model accounted for 0.6% of the variance in marital or family problems (i.e., residual disturbance = 0.994), 1.3% of the variance in the search for a better future (i.e., residual disturbance = 0.987), 4.4% of the variance in political reasons for migration (i.e., residual disturbance = 0.956), 60.2% of seeking medical attention (i.e., residual

disturbance = 0.398), 6.1% of the variance in choice to migrate (i.e., residual disturbance = 0.939), and 13.6% of the variance in PTSD severity (i.e., residual disturbance = 0.864).

Discussion

Importance of Study

The present study is important for several reasons. First, in order to understand how to best meet the needs of Latino individuals with PTSD diagnoses, it is crucial to understand sociocultural contexts that place them at risk for exposure to trauma as well as buffers that decrease their chances of coming into contact with traumatic events. Secondly, previous literature has begun to uncover some protective factors as well as risk factors that affect development of PTSD in Latinos residing in the U.S. once exposed to traumatic events. In response to existing PTSD literature (empirical and theoretical), our field has made attempts at developing and disseminating interventions that lessen the impact these traumatic events have on individuals (i.e., psychotherapy for chronic PTSD and acute stress disorder). However, there is room for growth in regard to development of interventions that prevent exposure to potentially traumatic events, especially for particularly vulnerable individuals (e.g., Latino refugees emigrating from violence in their home countries) and re-victiminatization as we know individuals who have experienced a traumatic event are at higher risk for being exposed to subsequent trauma. Specifically, there is an evidence-based treatment (e.g., Prolonged Exposure, Cognitive Processing Therapy) dissemination gap for this population, such that conceivably the conditional probabilities for mental health providers that are trained in empirically-supported interventions and are fluent in Spanish are very low. A third aim of the present study is to identify buffers that decrease the likelihood of PTSD despite exposure to trauma (e.g., social support, breaking down stigma and other barriers to seeking treatment), as we cannot realistically

expect to eliminate trauma from the world. In line with these goals, the present study represents a first step in examining the relationships among various cultural variables, exposure to trauma, and PTSD. We utilized SEM techniques on a sample composed solely of Latinos residing in the U.S. While SEM techniques can evaluate multiple relationships between observed and latent variables concurrently, it is important to note the data used in the present study are derived from a cross-sectional design and thus we are limited in our ability to discuss causal relationships.

Summary of Findings

We tested the direct effect of migration decision-making, reasons for migrating, and discrimination on exposure to trauma, the direct effect of trauma exposure on PTSD severity, and covariances among acculturative stress, social support, and trauma exposure, as well as acculturative stress, social support, and PTSD severity. We hypothesized acculturative stress would positively covary with exposure to trauma and PTSD (hypothesis 1a), as would social support (hypothesis 1d). We also hypothesized discrimination would be directly related to exposure to trauma (hypothesis 1b), as would circumstances of exit (hypothesis 1c). In the current study, path analyses provide preliminary support for causal statements by allowing some cultural variables (i.e., reasons for migration, migration decision-making, and discrimination) to predict changes in trauma exposure (Kline, 2011). However, only experimental design can determine cause and effect. Thus, a positive association between a cultural variable and trauma exposure can be interpreted in the following ways: (1) increases in the cultural variables (e.g., forced migration) are related to increases in the chances of being exposed to trauma either directly or indirectly; (2) decreases in cultural variables are reciprocally related to decreases in exposure to trauma; or (3) a third variable (e.g., gender) cause an increase in cultural variables and an increase in exposure to trauma or in the other direction (i.e., decreases in cultural

variables and also decreases in exposure to trauma). There are also methodological limitations of this study that likely influenced the results and warrant consideration (see Limitations and Future Directions). Moreover, these findings are reported with the hope of generating hypotheses for future directions, more so than confirming hypotheses.

The first aim of the study was to test our *a priori* model (Figure 1), which hypothesized that (1) reasons for migrating (i.e., search for a better future, political reasons, seeking medical attention, family or marital problems) , discrimination, and migration decision-making (i.e., migration planning, choice to migrate) would predict exposure to trauma, (2) trauma exposure would predict PTSD severity, and (3) acculturative stress and social support (i.e., family support, friend support, family and friend demands) would be associated with both trauma exposure and PTSD severity. This model, however, did not converge, indicating a very poor fit with the data.

Consistent with the secondary aim of the study, we tested a series of models until we reached good model fit. In the second model (see Figure 4), we removed the latent variable of migration decision-making as this construct resulted in poor internal consistent. We kept the same hypotheses as those for model 1. This model did not converge either, indicating a very poor fit with the data.

In our third model (see Figure 5), we removed all latent variables and created a path analysis, with the hopes that this would increase model fit. In this model, we also retained the original hypotheses, only removing latent constructs and relying on a measured variable model. This model did converge; however, it also did not result in good model fit.

In the fourth model (Figure 6), we engaged in theory trimming (i.e., removing non-significant contributions from the third model). Specifically, we removed the following paths: (1) discrimination to trauma exposure, (2) migration planning to trauma exposure, (3) acculturative

stress and trauma exposure, (4) family support and trauma exposure, (5) friend support and trauma exposure, and (6) family support and PTSD severity, and (7) friend support and PTSD severity. This model did result in good model fit, and thus we retained it.

The tertiary aim of the present study was to test an equivalent model (Figure 7) to the retained model producing good model fit. We reversed the "causal" relationships between cultural variables (i.e., search for a better future, political reasons, seeking medical attention, marital or family problems, and choice to migrate) and trauma exposure. We did not change the direction of trauma to PTSD, as by definition, PTSD symptoms cannot precede exposure to trauma and also due to the cross-sectional design we could not detect prior exposure to trauma as a predictor or subsequent exposure to trauma. We retained covariances (bidirectional associations) between family and friend demands and exposure to trauma, family and friend demands and PTSD severity, and acculturative stress and PTSD severity.

Overall, the findings in the present study are discussed with caution, as the inherent limitation of a cross-sectional design is that it does not truly allow for temporal relations and therefore we cannot speak to causality. Nonetheless, the findings indicate some significant relationships that provide support for study hypotheses. We will discuss them as significant associations, versus causal relationships. We limit our discussion to models four and five, as both evidenced good model fit.

Non-Significant Contributions Trimmed in Model Four. Contrary to our hypothesis, there were several cultural variables (i.e., migration planning, discrimination, family support, and friend support) that did not result in significant associations (outlined in previous section entitled "Summary of Findings"). These non-significant associations were trimmed from model three to produce model four and produced a substantial increase in the percent of explained variance. We

are unsure of what to make of these findings as they go in the opposite direction of our hypotheses, which were developed through literature review. Specific examples are detailed below. However, we believe they could partly be due to significant study limitations. See Study Limitations section for a more thorough discussion.

Contrary to our hypothesis that proposed family support and friend support would be negatively associated with trauma exposure and PTSD severity (i.e., support would serve as a protective factor); this was not the case. This is also contrary to the scientific literature that indicates social support may serve as a buffer once an individual has been exposed to trauma. It is hard to interpret these findings. It may be possible that consistent with previous literature, Latinos experience very high levels of social support from their family and friends (i.e., are collectivistic). This may have led to non-normal distribution on both the family support and the friend support subscales, such that they were more negatively skewed (i.e., many reported high levels of support). In fact, both of these subscales have an expected range of three to 13. The mean for family support was 9.79, and 8.5 for friend support.

Another surprising finding from this study concerns the non-significant association between discrimination and trauma exposure. We hypothesized that there would be a relationship between discrimination and trauma as we believe people who face discrimination are more likely to be put into hostile and dangerous environments and not have access to normal sources of protection. As a result, they are more likely to find themselves in harm's way (i.e., exposed to trauma). It could also be the case some acts of discrimination might also be acts of violence (i.e., trauma event).

The relatively low level of discrimination reported by most respondents is surprising. The range of the scale was from nine to 54. However, the mean score was 15.57. It is possible

the distribution of scores could have contributed to the non-association between discrimination and trauma exposure. Many of the respondents in this study were recruited from geographic locations with high rates of Latinos. Thus, it could be the case that residing in ethnic enclaves protects against being in contact with individuals from other racial/ethnic groups, and therefore reduces the risk for discrimination.

Our hypothesis that acculturative stress would positively covary with exposure to trauma and PTSD was partially supported. First, there was significant association between acculturative stress and PTSD severity, which is in the expected direction. We describe the possible association between acculturative stress and PTSD severity below (in section entitled "Findings Supporting *A Priori* Hypotheses"). A surprising finding, however, was that there was not a significant association between acculturative stress trauma exposure. We are unsure of what to make of these findings.

Findings from Model Four. In the next section we detail findings from the fourth model we tested, which also resulted in good model fit. Specifically, this model proposed paths (1) from cultural variables (e.g., search for a better future, political reasons, seeking medical attention, marital or family problems, choice to migrate) to trauma exposure, (2) from trauma exposure to PTSD severity, (3) among family and friend demands and trauma exposure and PTSD severity, and (4) between acculturative stress and PTSD severity.

Findings Supporting A Priori Hypotheses. The most unsurprising finding from this model is that trauma exposure and PTSD severity are significantly associated. Again, as previously stated, not every single instance of traumatic exposure results in PTSD. To that end, trauma exposure only accounted for 11.6% of the variance in PTSD severity. Also as previously mentioned, our PTSD severity subscale comprised the sum of PTSD symptoms endorsed from

the worse event. Thus, it is possible the amount of variance accounted for in our model could have been larger had our model reflected all instances of trauma exposure.

Model four indicated migration choice (i.e., forced migration) is a risk factor for exposure to trauma. These findings are consistent with our hypotheses and the literature that indicate individuals who are forced to migrate have a heightened risk for exposure to trauma. It has been well-documented that the process of migration can be a stressful one, wherein individuals may be faced with potentially traumatic situations before migration (e.g., migrating due to being persecuted or assaulted in home country), through their migration journey (e.g., being kidnapped, beaten, or raped by smugglers or others), and/or once arriving in the U.S. (e.g. being assaulted as a result of homeless or living in high-crime areas, being detained by ICE officials).

This model also provided support for the hypothesis that migrating due to political reasons is associated with higher rates of trauma exposure. This finding is not surprising, and is also consistent with our hypothesis and the scientific literature. It may be the case that an individual is forced to flee their home country as a result of traumatic experiences, which may include political violence (e.g., from dictatorships such as in Cuba and Venezuela) and/or exposure to war (e.g., "the Colombian Conflict" from 1960s to the present-day). In fact, a few of the trauma types captured by our trauma exposure variable comprised such experiences (e.g., being a refugee; living as a civilian where there was ongoing terror; and being an unarmed civilian where there was a war, revolution, coup, invasion).

The model provides support for the hypothesis that marital or family problems is associated with trauma exposure. It could be the case that marital or family problems could encompass traumatic situations (included in our trauma exposure inventory), such as: being beaten by parents, a spouse/romantic partner, or anyone else; sexual assault/rape; having a child

with a life-threatening illness; witnessing someone close unexpectedly die; and witnessing a serious physical fight at home as a child. It could also be the case that once exposed to trauma, there may be more marital problems (e.g., increased tension between romantic partners following sexual assault) or family problems (e.g., conflict, misunderstanding, and invalidation from the family environment following a traumatic event.

The model also provided support for the hypothesis that migrating in search of medical attention is associated with trauma exposure. It is difficult to know what to make of this finding. Specifically, we hypothesized endorsing higher numbers of reasons for migration would be a proxy for pressure to migrate. However, we did not hypothesize migrating to seek medical attention in itself could heighten one's risk of being exposed to trauma. Nonetheless, it could be the case that certain traumatic events (e.g., exposure to chemical or toxic substance) might lead an individual to seek medical care that they would not be able to find in their home country. It may also be the case that an individual may have an illness for which they are not able to find treatment for in their home country and thus may have a fear that they are close to dying and thus migrate in search of medical care, and this in itself could be traumatic.

The finding acculturative stress positively covaries with PTSD severity is interesting. It appears that it is the case that merely experiencing high levels of acculturative stress does not in itself increase propensity for being exposed to trauma. However, once exposed to trauma, having high levels of acculturative stress might serve as a risk factor for the development of PTSD symptoms or for the exacerbation of current level of symptoms. This is consistent with the literature that indicates high levels of acculturative stress has adverse effects on mental health wellbeing. It could also be the case that PTSD makes it more challenging to acculturate to a new society (i.e., PTSD increases acculturative stress).

Our hypothesis that social support would also be related to both trauma exposure and PTSD was partially supported. We originally hypothesized social support would be negatively associated with trauma exposure and PTSD severity. However, the result obtained is that a subscale that measured demands by family was positively associated. We did not initially posit a difference in how the various subscales would be associated with trauma and PTSD, but rather opted to include all items of the measure into a single construct. It may be the case there are some family and friend demands that could also be in themselves constitute trauma (e.g., being badly beaten by parents; badly beaten up by spouse or romantic partner, being sexually molested or raped; witnessing serious physical fights at home as a child). Alternatively, it could also be the case once an individual has been exposed to trauma and begins to develop PTSD symptoms they may have a lessened buffer against handling stress, and thus perceive more demands from their family and friends. Seen from this perspective, these results actually make a lot of intuitive sense. If we conceptualize family and friend demands as a source of social stress versus social support, it would make sense that individuals with more stress would report more PTSD symptoms. It could be the case that any source of stress has the potential to exacerbate the PTSD severity.

Findings Not Supporting A Priori Hypotheses. This model also indicated there was a negative association between search for a better future and trauma exposure. We conceptualize migrating in search for a better future as a protective factor against being exposed to trauma, which is contrary to our *a priori* hypothesis. As previously mentioned, we hypothesized endorsing more reasons to migrate would be a risk factor. It is difficult to know what to make of these findings. It may be the case that migrating in search of a better future (e.g., for a job, to rejoin family, to improve the future of children, for better education, and for better opportunities)

could reduce the chances that someone stays in their home country and be exposed to trauma. For instance, it is well-known many parts of Latin America experience high crime rates, poverty, and political instability. These circumstances could give rise to potentially traumatic events. Thus, if an individual migrates, they may reduce the chances of being exposed to these elements. It may also be the case that individuals who have the ability to migrate in search of better opportunities may also have other confounding variables that also serve as protective factors. For instance, if an individual has the ability to migrate to the U.S. in search of better education, they may also belong to a higher socioeconomic status.

A surprising finding from this study is the fact that family support and friend support were not negatively associated with either trauma exposure or PTSD severity. It is possible the distribution of scores on these scales had a truncated range as our sample reported generally high levels of family support and friend support, thus making it difficult to determine associations with other variables. It is also possible the items on these scales did not meaningfully tap into the construct of social support that is important to support individuals with PTSD (e.g., emotional support versus instrumental support). Here, again, we are unsure of what to make of these findings as they appear to contradict existing literature.

Findings from Model Five. As previously mentioned, in the fifth model we reversed the direction of the arrows going from some cultural variables (e.g., search for a better future, political reasons, seeking medical attention, marital or family problems, and choice to migrate) and trauma exposure, and this resulted in increased model fit. Due to the cross-sectional design of the present study, it is unsurprising that we also had good model fit when we reversed the associations between cultural factors and trauma exposure. As previously mentioned, we limit our discussion to significant associations (versus causal ones). Thus, it could be the case trauma

preceded these cultural factors, these cultural factors preceded the trauma, or they co-occur. Nonetheless, these findings suggest that there are significant associations between some cultural factors and trauma exposure.

Also in the fifth model, we made the aforementioned cultural variables shift from exogenous (e.g., independent) to endogenous (dependent on trauma), which cause the statistical software to generate covariances between these variables. There are several noteworthy associations that lend evidence to the hypothesis that these cultural factors are related to one another. The model indicated marital or family problems is associated with political reasons, with seeking medical attention, search for a better future, marital or family problems, and choice to migrate (i.e., forced migration). Additionally, political reasons was associated with seeking medical attention, and choice to migrate. The model also indicated that seeking medical attention is associated with marital with PTSD severity.

Strengths of Study

Concurrent Relationships Among Variables. There are several important strengths to this study. First, this is the first study, to our knowledge, examining the simultaneous relationship among cultural variables, exposure to trauma, and PTSD utilizing a sample of Latinos living in the U.S. Developing a model of these aforementioned variables extends prior knowledge in this area by generating hypotheses proposing ways in which these cultural variables may be interrelated, and how they play a role in increasing the odds and individual may be exposed to trauma, and also to the development of PTSD. Future studies will be able to build upon these findings.

Large, Nationally-Representative Sample. The present study utilizes data comprising a nationally-representative sample of Latinos residing in the U.S. using sound research methods. A

related strength is that the present study utilized a large sample (N = 2,554), thus allowing us to be able to detect statistically significant findings. In fact, SEM techniques are designed for large datasets, given the complexity of computations.

Indications about Possible Cultural Moderators of Treatment. These findings provide indications that there are possible cultural moderators of treatment of traumatic stress. Namely, it may be the case that manualized treatment packages could culturally adapt treatments to acknowledge and/or address important cultural factors (e.g., acculturative stress, demands from family and friends, and circumstances of exit when applicable). However, this is an empirical question that remains to be answered, and to do so would require multiple longitudinal studies with large samples. Nonetheless, at the very least, results from the present study begin to elucidate important relationships to attend to in therapeutic settings.

Limitations of Study

Cross-Sectional Design. There are several noteworthy limitations to the present study. Arguably, the most significant has to do with the fact that data on which these analyses were conducted comprised data derived from a cross-sectional design, rather than a longitudinal design. Thus, we are limited in our ability to claim causal relationships among our variables. At best, we are able to hypothesize about their relationships. Future studies ought to follow a cohort of Latinos living in the U.S. to determine presence of our hypothesized pathways. It is important to note, a longitudinal study would help determine temporal precedence (i.e., change in which variable precedes change in which other variables), which is necessary for a causal relationship. However, strong causal inferences are still limited in a longitudinal study as there may be the presence of an unmeasured third variable explaining the observed relationship.

Limitations of Epidemiological Data. The fact that the data presented herein are derived from an epidemiological study is both a strength and a limitation. It is important to note though epidemiological studies provide very valuable information on prevalence and risk estimates, some noteworthy limitations that should lead us to generalize from these data cautiously. As Kessler, Chiu and colleagues (2005) have noted, there are several factors that may decrease generalizability of findings – (1) individuals dealing with mental disorders (compared to individuals who are not) might be less motivated to complete such surveys; (2) because of the sensitive nature of some survey material, there might be underreporting of embarrassing behaviors; (3) epidemiological surveys operate on the assumption that there is a constant level of risk for development of mental disorder and do not take into account cohort effects; and (4) lifetime prevalence information is often assessed by self-report, which could be sensitive to recall errors. Taken together, it is appropriate for the findings presented herein to be interpreted as conservative estimates. Furthermore, it is an empirical question to what extent undocumented immigrants are represented in research studies, and whether documentation status serves as a barrier to participation out of concern that this could somehow be used to identify them and remove them from the country.

Combining Respondents into One Model. Though the present study comprises data that is nationally-representative of Latinos residing in the U.S., it may not be useful to lump all "Latinos" into one category as we have done here as there may be important sub-group differences for Latinos with origins in different countries. Namely, there may be significant differences in language dialects, norms, traditions, circumstances of exit, sociopolitical context, and SES, to name a few. On practical grounds, we wanted to create a preliminary model of how these cultural factors play out for Latinos residing in the U.S. However, these aforementioned

demographic characteristics could in themselves create changes in our cultural variables, as well as exposure to trauma and PTSD.

Assumptions of Normality. All of our variables appeared to be within the limits of normality. Nonetheless, there are some variables that appeared to have clustering of variables at one end of the spectrum (e.g., many reported low levels of discrimination, low levels of trauma exposure). It is possible our large sample size provided a buffer for violating assumptions nonetheless. For example, our sample reported very low levels of discrimination (positive skew), low levels of trauma exposure (positive skew), and high levels of social support (negative skew). However, skew and kurtosis indices indicated they fell within normal ranges. We are unsure how these variables would perform if normally distributed. Nonetheless, we opted to not transform these variables as they would alter the nature of the research questions we are aiming to answer. For example, the mean number of trauma types reported was 2.84 (out of 20). It would not make sense to have a normal distribution of trauma exposure, as we happen to know that while traumatic events are common, most people tend to report only a few instances.

Missing Data. Another limitation is that we had differential missing data between portions of the NLAAS. Specifically, there were differences in completion rates for specific portions of the questionnaire. There may be multiple factors that led to this phenomenon. First, it could be there were certain topics that were difficult to discuss for respondents. Secondly, it may be the sequencing of modules may have made it such that modules presented later had less numbers if assessors needed to come back multiple times to finish the assessment. In the present study, we treated missing data was through Full Information Maximum Likelihood (FIML) for data imputation.

Self-Report and Recall Bias. Given the self-report nature of our variables, they are subject to recall bias and may be subject to current states of psychological distress. For example, an individual who migrated to the US 25 years ago may not accurately remember all of the factors that played a role in migration decision-making and migration planning. Additionally, as this study strategically captured a wide array of immigrants (e.g., newly arrived versus those arriving in childhood), it is conceivable, cultural factors have shifted across time. Moreover, if a trauma was very far removed (say 25 years ago) and experienced significant PTSD symptoms that have since resolved, it may be difficult for the respondent to remember specific details about that time.

Future Directions

Longitudinal Design. As previously mentioned, one of the major limitations of this study is its cross-sectional design. It would be important to carry out a longitudinal study in order to evaluate causal relationships, which would aid in development of trauma and PTSD prevention efforts. This could be done in several ways. It would perhaps be feasible to collect follow-up data on a subset of the respondents included in the present study. It may also be interesting to develop another longitudinal epidemiological study to replicate findings with another sample.

Improving Clarity about Trauma Exposure. Traumatic experiences can occur at various stages of the immigration process, including before migration, during migration to the U.S., and could include ongoing experiences following migration (Casas, 2014). The data presented herein are limited in that they do not allow us to know when along a participant's immigration journey (if at all) a traumatic event(s) occurred. It is conceivable a large subset of respondents might have been exposed to traumatic experiences (e.g., political violence,

uncontrolled violence such as murder, rape and kidnapping) which may have increased the urgency to immigrate to the US (Casas, 2014). During the immigration process, an individual may have to endure traumatic experiences including, but not limited to, hunger, dehydration, robbery, extortion, sexual abuse, kidnapping, and murder (Villagra, 2014). Alternatively, it may also be the case that once in the US, many immigrants could be exposed to traumatic experiences (e.g., substandard living conditions, lack of adequate living resources, unemployment, racial profiling, ongoing discrimination, exposure to gangs, immigration raids in the community, the arbitrary checking of family members' documentation status, forcible removal or separation from their family for an indeterminate period of time, discovery upon returning home that their family has been taken away, violation of their home by authorities, placement in detention camps or in child welfare, and deportation to their country of origin; Casas, 2014). Thus, future studies ought to examine point at which a traumatic event occurs to further elucidate the relationship between cultural variables and PTSD. This knowledge may have clinical utility, and begin the process of limiting exposure to trauma.

Improving Diagnostic Clarity. The present study utilized DMS-IV-TR criteria, which is outdated as of 2013. Thus, while the present study begins to shed light on the relationship between cultural variables and exposure to trauma and PTSD development, we are limited in that our data may not accurately reflect rates of PTSD approximately 15 years after these data were collected as the criteria have changed. Nonetheless, the core PTSD symptoms with some revisions from DMS-IV-TR to DSM-5 (i.e., trauma definition expanded, shift from three to four symptom clusters). Thus, we have reason to believe these results might be similar if these data were to be collected again in the near future.

Additionally, we prioritized capturing PTSD severity over whether respondents reached the threshold for a PTSD diagnosis. This is both a strength and a limitation. The limitation is that we are limited in our ability to determine either lifetime or past 12-month diagnosis of PTSD, which may arguably limit the clinical utility of these findings as the vast majority (if not all) evidence-based treatments have been developed utilizing samples of individuals meeting the threshold of DSM diagnoses. Moreover, taking this approach combined with our cross-sectional design does not allow us to capture the progression of symptoms across one's lifetime. Also, our measure of severity is limited in that two people could have the same number of symptoms, but nonetheless differ in the severity of those symptoms. Future studies should consider conducting analyses utilizing both severity and diagnostic categories.

Moreover, in the present study, we included lifetime trauma exposure and only PTSD symptoms arising from the worst trauma. Thus, we are limited in our ability to determine the cumulative impact of repeated exposure to trauma as results capture a subset of symptoms. It is possible non-index traumas resulted in some symptoms that were not prompted by the index trauma. In other words, our measure of PTSD severity could be an underestimate of the cumulative effect of trauma. Thus, future studies should include a timeline of trauma events experienced in order to make these evaluations.

Another consideration concerns the fact that the present study did not take into account the effect of a prior diagnosis pre-trauma exposure. Some empirical evidence (e.g., Broment, Sonnega & Kessler, 1998) indicates prior (to index trauma) affective disorders, anxiety disorders, and substance use disorders elevate the chances of being exposed to trauma, as well as subsequent development of PTSD. It will be important for future studies to include other

diagnoses into models such as the one presented herein to better understand the influence of cultural variables on mental health more broadly.

Transdiagnostic Associations. It is well-established that there are many comorbidities between our diagnostic labels. In this study, we examined the role of cultural variables in the development of PTSD symptoms following exposure to trauma. PTSD is one possible response to trauma. However, it is conceivable that individuals exposed to trauma may also have elevated depression and anxiety scores (or other symptoms), not captured in the present study. Future studies ought to expand the score to examine the role of cultural variables in development of other psychiatric disorders, to make public policy recommendations.

Inter-group Comparisons. The present study proposed only one model wherein we lumped all respondents together. However, it may be important to understand group differences for numerous characteristics (e.g., gender, geographic region, income level, education level, number of years residing in the US, age at immigration, age). On practical grounds, we developed the model presented herein as a starting point. It is possible future studies may find nuance with regards findings, utilizing comparisons on demographic variables.

In the present study, we operationalized "Latinos" as respondents that identified as Cuban, Puerto Rican, Mexican, Mexican-American, Chicano, and "other". A great deal of the literature has centered on between-group differences with regards to country of origin or ancestry. Country of origin may play a critical role in determining the circumstances of exit. For example, Puerto Ricans migrating to the U.S. mainland are already U.S. citizens and thus could utilize government programs and not face deportation, which would not be the case for immigrants from other regions such as those who might have migrated by foot (e.g. from Mexico and Central America) or overstayed their Visa.

On a related note, it would be interesting to examine the extent to which our models would also result in good model fit if we were to group respondents based on generational status (e.g., first generation immigrant vs. native-born). Previous literature by Alegría and colleagues (2008) indicates Latinos who are native-born or have lived in the U.S. for longs periods of time report more mental health concerns. Generational status most likely would have an impact on acculturative stress. Thus, it may be the case newer immigrants benefit from cultural buffers (e.g., high levels of social support) that clinicians and researchers may consider strengthening in treatment and determining ways in which other groups could also strengthen these factors. Nonetheless, this remains an empirical question.

It may also be the case that there are important differences by gender. Specifically, it is well-known men and woman are socialized differently. It may be the case that gender may impact the cultural factors included in the present study. For example, men and women may receive different messages about their reactions to trauma (e.g., pressure for men to stay strong, consistent with the masculinity value of *machismo*). The clinical utility of those sorts of explorations is that they could shed light into how to best engage and retain men and women into treatment. For example, it may be helpful to have PTSD group therapy for men, led by men, in order to decrease discomfort of sharing emotions in front of women (which may be a cultural violation).

Adding Different Aspects of our Included Cultural Constructs. The measures included herein begin to shed light into important cultural factors that may be associated with exposure to trauma and development of PTSD. However, they are not comprehensive measures, and thus future studies would benefit from adding more items (examples detailed below).

Discrimination. In the present study, we utilized an inventory of discrimination that tapped into ambiguous mistreatment. While it may be some of those experiences themselves or the accumulation of those experiences could result in trauma, it is possible that this measure did not meaningfully tap into traumatic experiences. Future studies should utilize additional measures that tap into different facets of the construct of discrimination that may better capture discrimination that rises to the level of trauma.

The present study only examines *de facto* (i.e., "by the facts") types of discrimination, which occur through social interaction. In addition to *de facto* discrimination there is *de jure* (i.e., "of the law") discrimination, which is enacted through law by the government. For example, because of our current sociopolitical context, policy has been enacted which has promoted racial profiling and forced deportations disproportionately affecting Latinos residing in the U.S. These types of experiences were not captured by the NLAAS. Thus, it may be reasonable to expect the presented results may be different if data were collected in the current sociopolitical context and captured instances of institutional discrimination.

Additionally, we examined only some aspects of perceived discrimination (i.e., subjective measure). However, future studies could consider including both objective and subjective measures of discrimination to make findings more robust. Additionally, it may be important to disentangle discrimination for different characteristics (e.g., gender, race, ethnicity, ability status, mental health stigma) to provide a more comprehensive look at discrimination's impact on psychological wellbeing.

Acculturative Stress. With regards to acculturative stress, there are several limitations to our study. Specifically, the present study did not examine associations between acculturative stress and other factors that have been found in the literature to impact level of acculturative

stress. Namely, Berry et al. (1987) indicated gender (i.e., men) and level of education (i.e., higher formal education) decreased acculturative stress. Kim (1984) indicated there was higher acculturative stress levels among younger immigrants who could not speak their native language fluently. This may create conflict with the family unit, as it might limit communication, for example, between less-acculturated parents and more acculturated children.

In the present study, we took into account many cultural variables, informed by literature largely focused on Latinos with recent migration in their lineage. That is to say, we discussed many of our cultural factors as they relate to migrating to the U.S. However, a subset of our sample comprised individuals born in the U.S., who may have many generations of U.S.-born ancestors and thus may not identify as immigrants. Thus, it would be important for future studies to better fine-tune how these concepts may apply depending on generational level (e.g., recent Latino immigrant vs. fourth-generation U.S.-born Latino). Moreover, it could also be the case some individuals did not have an immigrant background (even many generations back). For example, there is a subset of individuals who have resided in the American southwest, even before that area became U.S. territory. Thus, technically these individuals would not be considered immigrants.

Additionally, respondents had the ability to select the language of the assessments (e.g., English, Spanish). It is possible language preference may be a factor related to acculturation. It was, however, not included in our model. It may be important for future studies to examine the relationship between language preference, other cultural variables such as those presented herein, and mental health wellbeing.

Additional Sources of Stress. The present study included some sources of stress, namely discrimination, acculturative stress, and traumatic stress. However, there may be other forms of

stress that may be related to or affect the expression of PTSD (e.g., job stress, caregiver burden, financial strain) that will be important to measure in future studies. Additionally, it will also be important to assess the impact of these stressors that may have a unique impact on PTSD based on acute versus life course stress experiences.

Adding More Cultural Constructs. The present study sought to shed light on relevant cultural variables impacting exposure to trauma and development of PTSD. While these factors (e.g., acculturative stress, discrimination, social support, reasons for migrating, decision to migrate) were included in our model following a review of the extant literature, they only capture some cultural variables that may play a role in the development of PTSD. This was done on practical grounds. However, there may be other variables that impact exposure to trauma and subsequent development of trauma, and mental health more broadly. Specifically, socioeconomic status, age at migration, legal documentation status, effects of immigration policy changes (e.g., Deferred Action for Childhood Arrivals [DACA] enacted by President Obama), LGBTQ status, language(s) spoken at home, and urbanicity may also have implications on exposure to trauma and responses to such events.

Additionally, it is possible cultural variables such as those presented herein may be sensitive to "Latino" cultural norms (e.g., respeto [respect], familismo [familism], personalismo [value that places emphasis on personal interactions], dignidad [dignity], and lealtad [loyalty]), and thus impact the results of our model. We thus recommend other studies incorporate other factors that impact migration, such as generational status, rural vs. urban migration, and whether the respondent migrated alone or came to rejoin family. Additionally, it would be important to incorporate social norms and determine how they relate to one another.

Adding Physiological Measures. In the present study is that while we assessed various types of reported stress (e.g., discrimination, acculturative stress, traumatic stress), we did not have data on physiological factors. There is a great deal of evidence to suggest various types of stress can have deleterious effects on an individual physiologically, in addition to psychologically. In fact, the DSM criteria for PTSD incorporates sleep disturbance, exaggerated startle response, and hypervigilance, which may be better captured by psychophysiological instruments. Future studies out to examine these factors to better assess the cumulative impact of stressful experiences on this population. Along these lines, it may be important to incorporate health factors into the model presented herein in future studies, to further elucidate recommendations for policy, research, and clinical practice. For example, future studies could measure skin conductance, heart rate, modulated startle (eye blink) response, and functioning of the H-P-A axis and feedback inhibition a (via a cortisol plus dexamethasone suppression test).

Figures

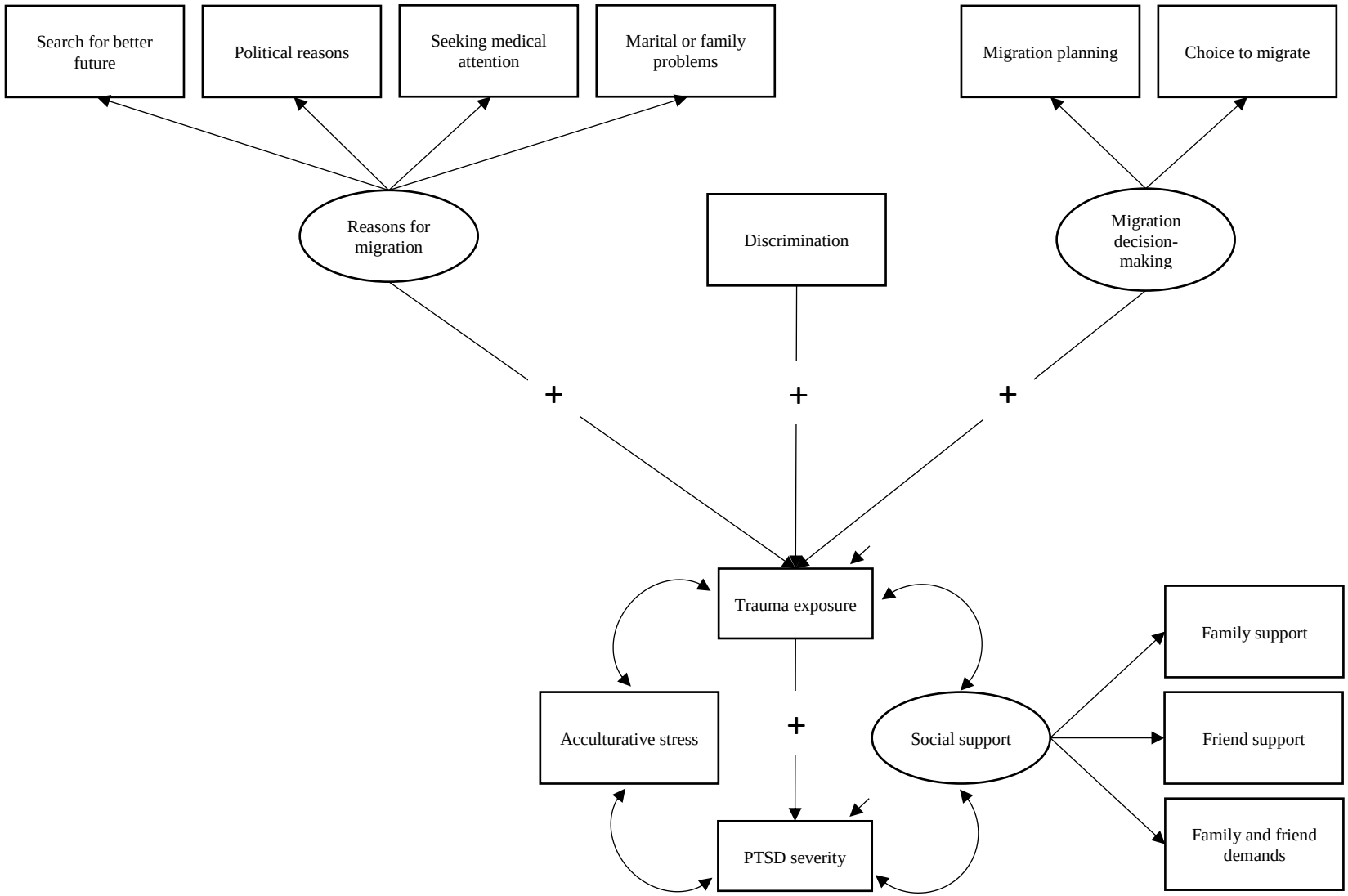

Figure 1. Conceptual model (model 1). This figure illustrates the *a priori* conceptual model, derived from literature review and theory. See section "Operationalization of Terms in SEM" for a complete description symbols and relationships within model.

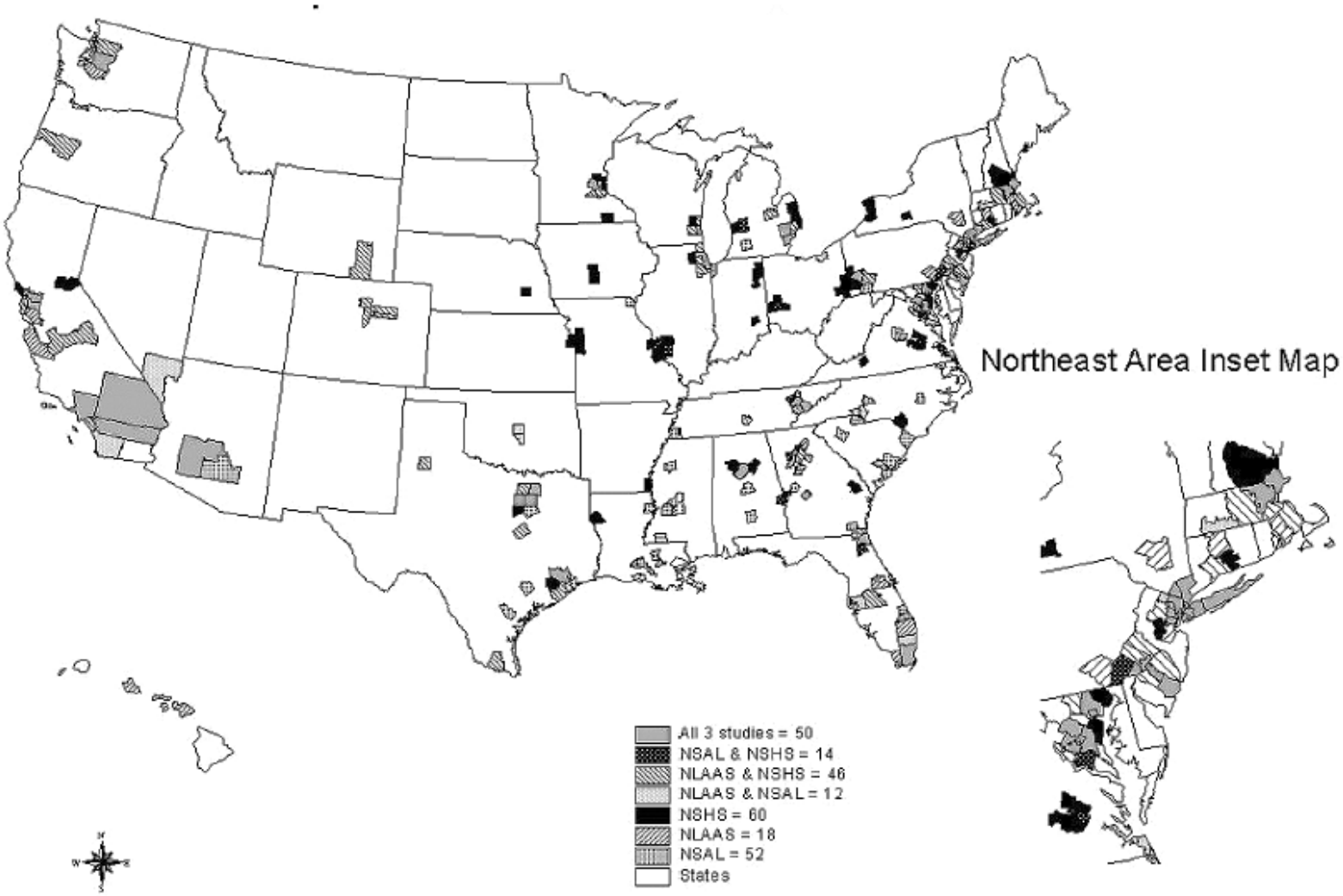

Figure 2. Recruitment areas utilized in NLAAS. This figure represents geographical areas from where NLAAS participants were recruited, compared to other large, national epidemiological studies.

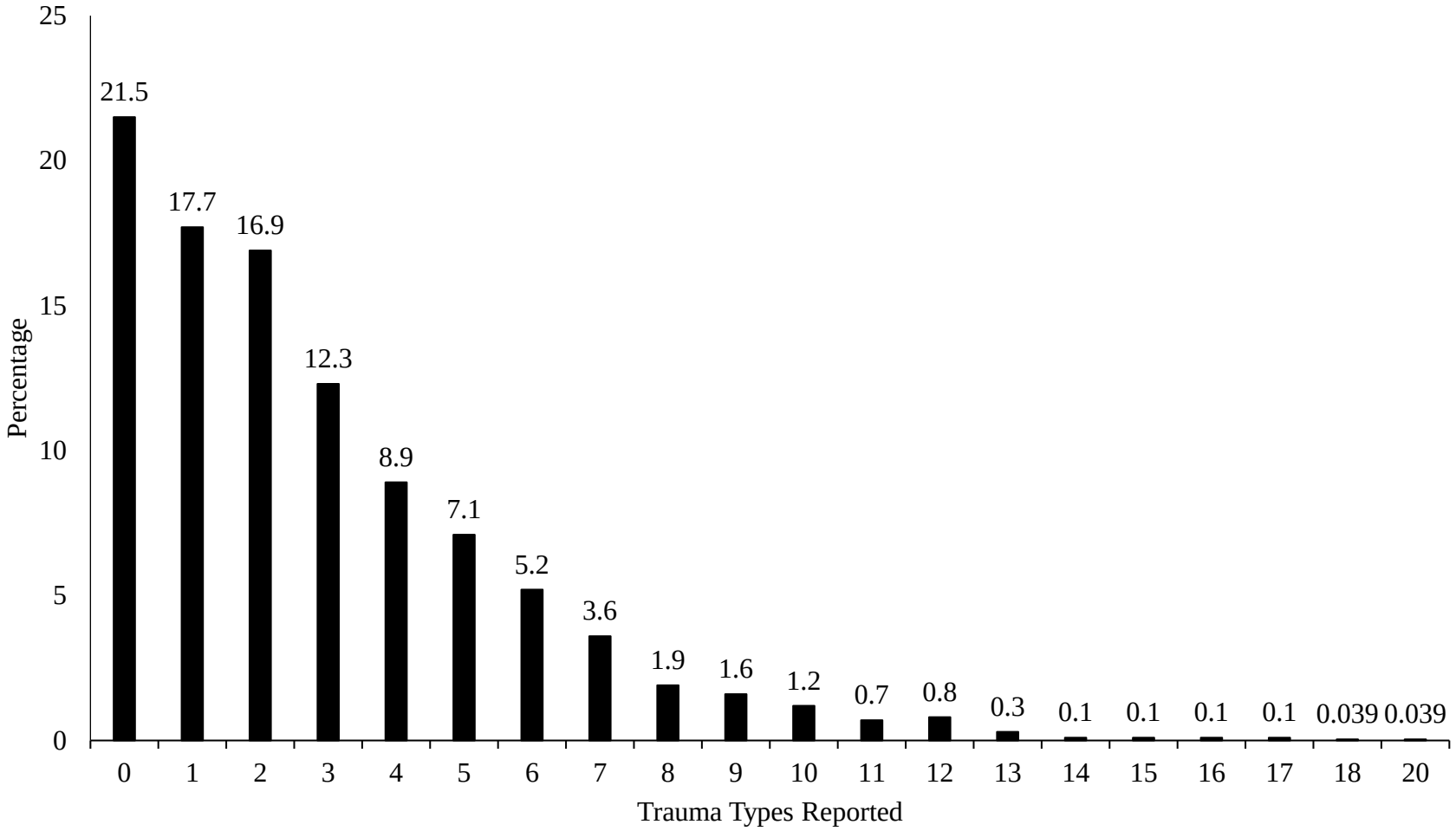

Figure 3. Percentage of trauma types reported. This graph represents number of distinct trauma types reported by respondents, irrespective of total number traumatic events experienced.

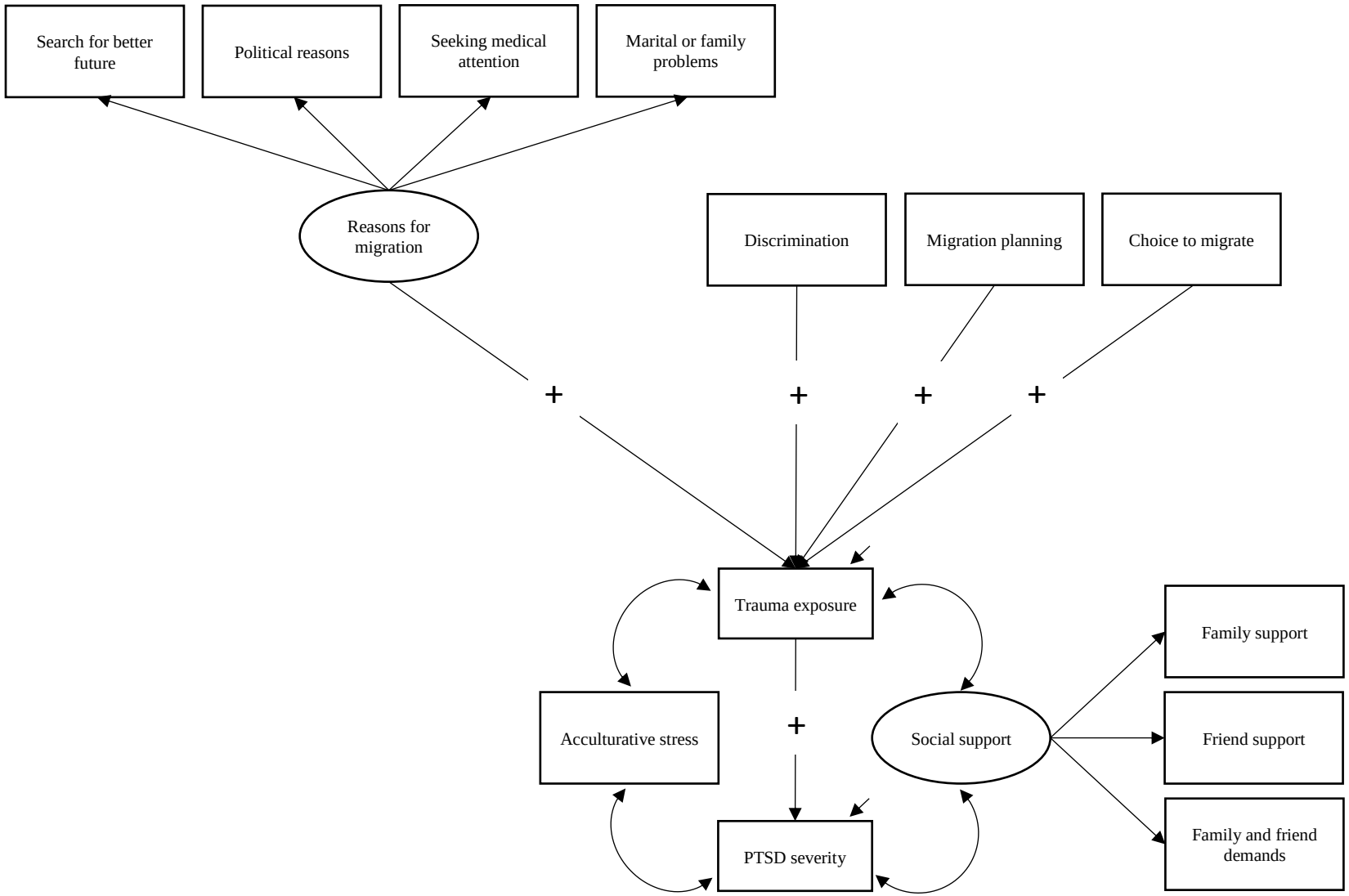

Figure 4. Model 2. This figure represents the conceptual model, removing the latent construct of migration-decision making.

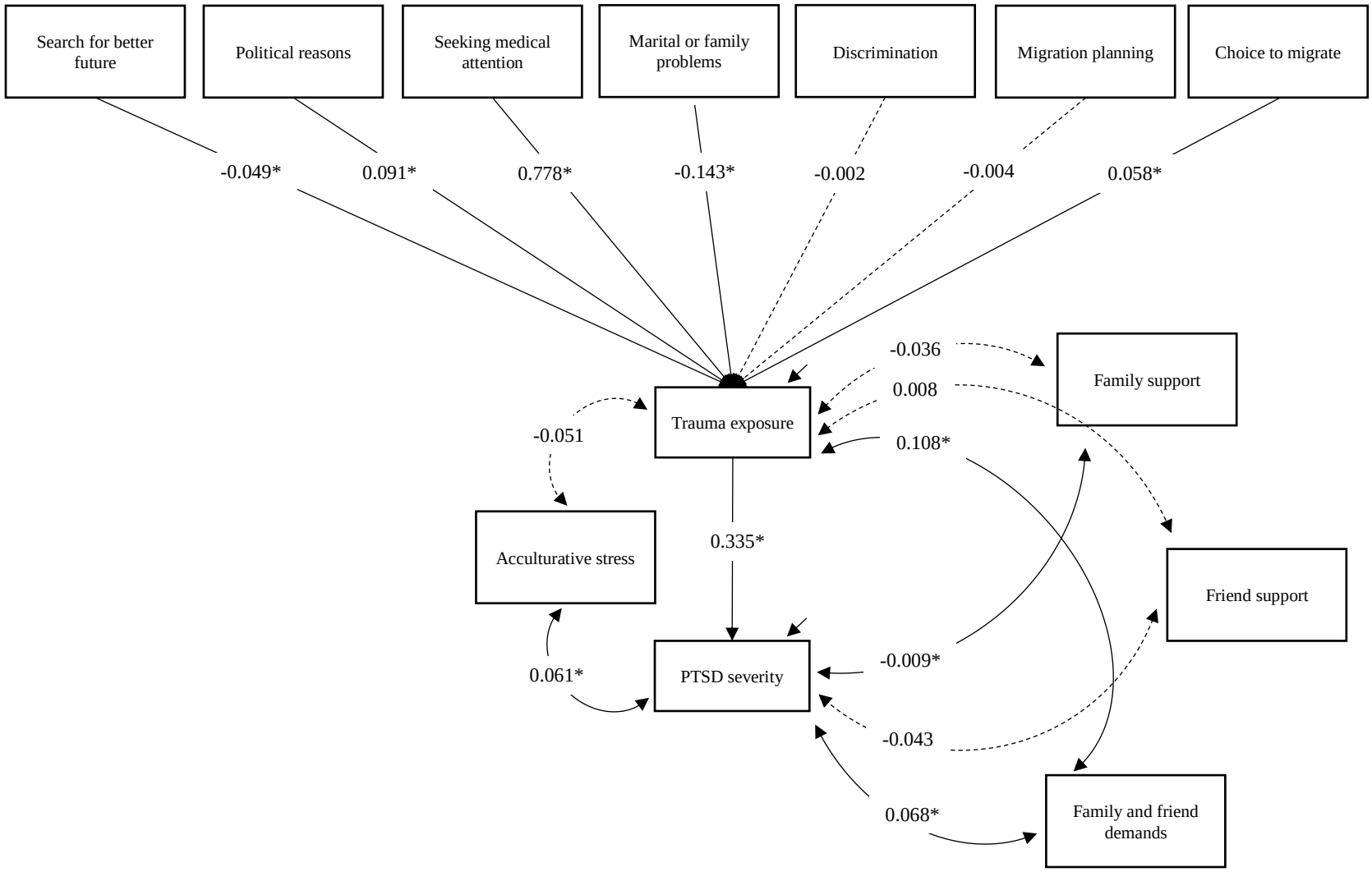

Figure 5. Model 3. This figure represents a path analysis with standardized estimates, after removing latent constructs. Paths represented with solid lines are significant with $p < 0.05$, and dashed lines are non-significant. χ^2 (41, N = 1,592) = 622.648, $p < 0.01$, RMSEA = 0.094, 90% confidence interval (0.088, 0.101). CFI = 0.755. TLI = 0.659.

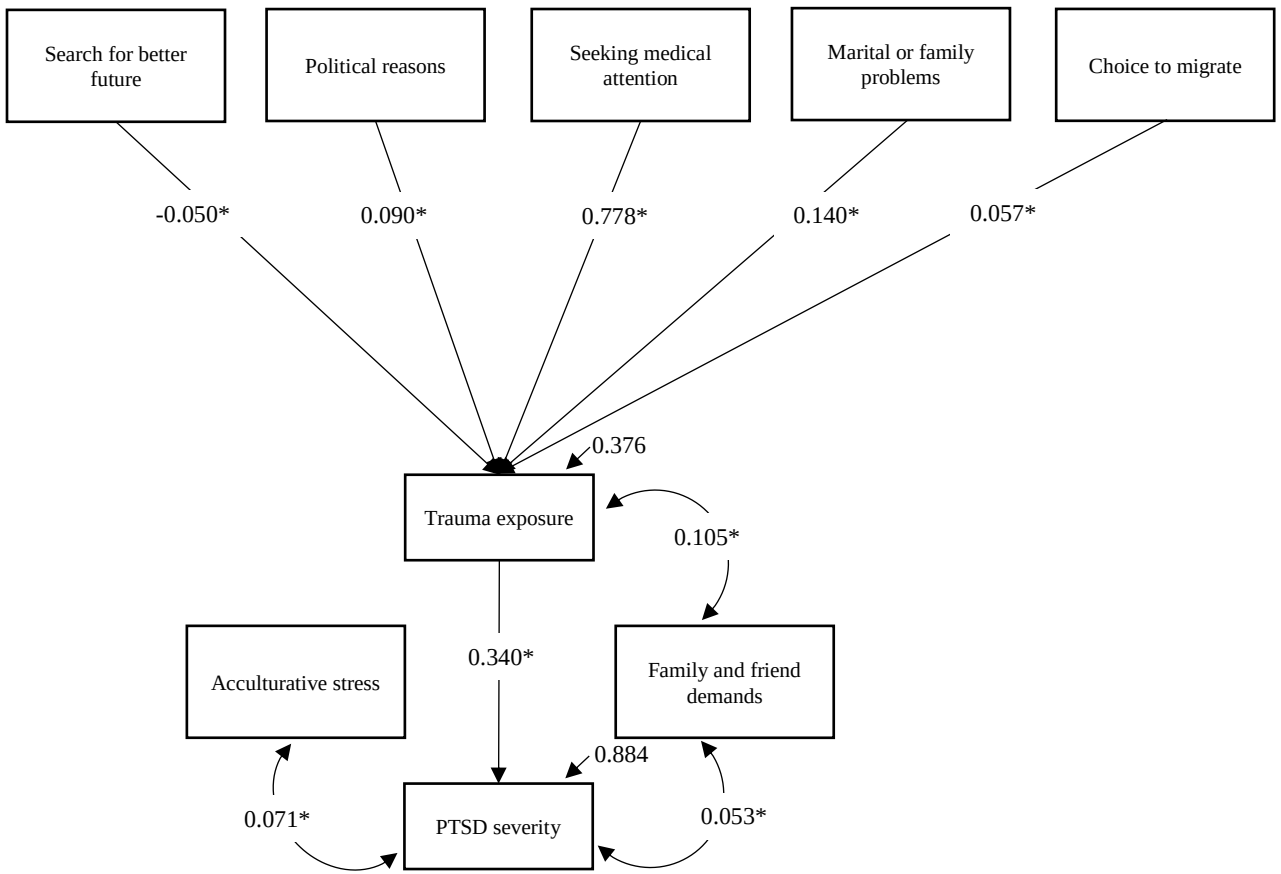

Figure 6. Model 4. This figure represents a path analysis with standardized estimates, removing prior non-significant relationships from previous model (Model 3). Paths represented with solid lines are significant with $p < 0.05$, and dashed lines are non-significant. χ^2 (17, N = 1,608) = 75.286, $p < 0.01$, RMSEA = 0.046, 90% confidence interval (0.036, 0.057). CFI = 0.969. TLI = 0.953.

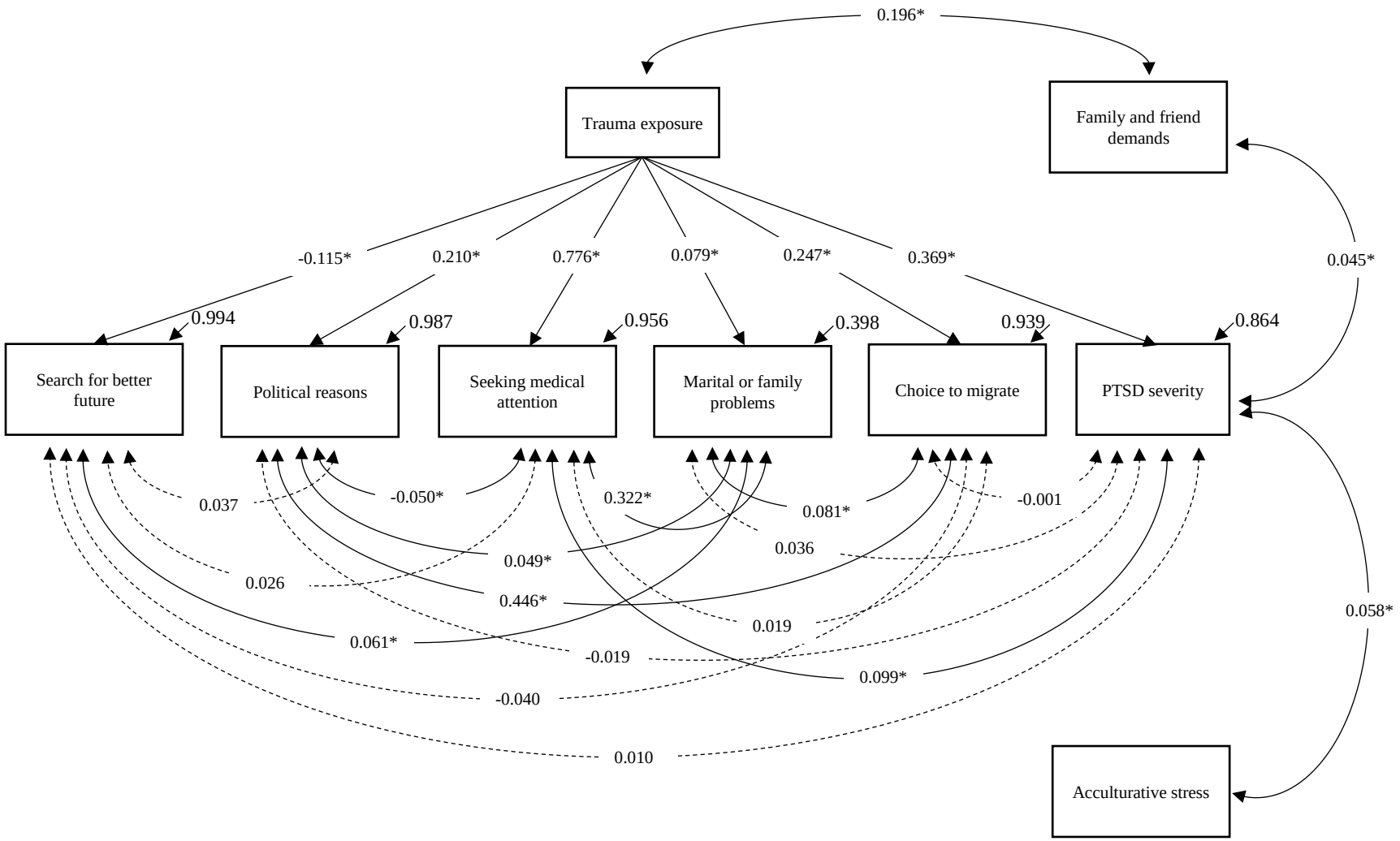

Figure 7. Model 5. This figure represents a path analysis, which is an alternative model to previous (Model 5). Paths represented with solid lines are significant with $p < 0.05$, and dashed lines are non-significant. χ^2 (12, N = 2,554) = 36.614, $p < 0.01$, RMSEA = 0.028, 90% confidence interval (0.018, 0.039). CFI = 0.991. TLI = 0.973.

Tables

Table 1

Internal Consistency for Total Scale Scores for Items Used in Model

Subscale	α
Acculturative stress	0.688
Migration decision-making	-0.032
Choice to migrate	N/A
Migration planning	N/A
Reasons for migration	0.570
Search for better future	0.637
Political reasons	0.677
Seeking medical attention	N/A
Marital or family problems	N/A
Discrimination	0.905
Social support	
Family support	0.692
Friend support	0.760
Family and friend demand	0.673
Exposure to trauma	0.726
PTSD symptoms	0.119

Table 2

Descriptive Statistics for Variables in Model

	M (SD)	Min	Max	Median	Mode	Skew	Kurt	Missing: n (%)
Acculturative stress (n = 1,624)	2.20 (1.97)	0.00	9.00	2.00	1.00	0.95	0.48	930 (36.41%)
Migration decision-making								
Choice (n = 1,616)	0.40 (0.49)	0.00	1.00	0.00	0.00	0.39	-1.85	938 (36.73%)
Had to migrate (n = 963)								
Wanted to migrate (n = 653)								
Migration planning (n = 1,601)	2.31 (1.22)	1.00	4.00	2.00	1.00	0.29	-1.50	
Reasons for migration								
Search for better future (n = 1,620)	12.43 (2.43)	5.00	15.00	13.00	15.00	-1.03	0.60	934 (36.57%)
Political reasons (n = 1,618)	3.27 (1.47)	2.00	6.00	3.00	2.00	0.73	-0.87	936 (36.65%)
Seeking medical attention (n = 1,618)	1.34 (0.69)	1.00	3.00	1.00	1.00	1.77	1.41	936 (36.65%)
Marital or family problems (n = 1,618)	1.17 (0.51)	1.00	3.00	1.00	1.00	2.96	7.33	936 (36.65%)
Discrimination (n = 2,554)	15.57 (7.29)	4.00	54.00	13.00	9.00	1.301	1.994	4 (0.20%)
Social support								
Family support (n = 2,549)	9.79 (2.67)	2.00	13.00	10.00	12.00	-0.78	-0.22	5(19.58%)
Friend support (n = 2,533)	8.50 (2.94)	2.00	13.00	9.00	9.00	-0.30	-0.93	6(23.49%)
Family & friend demands (n = 2,550)	6.93 (2.48)	2.00	16.00	7.00	4.00	0.61	-0.19	4 (0.20%)
Exposure to trauma (n = 2,554)	2.84 (2.82)	0.00	20.00	2.00	0.00	1.46	2.73	0 (0%)
PTSD severity (n = 2,554)	10.05 (5.06)	0.00	18.00	11.00	11.00	-0.376	-0.795	2,286 (89.50%)

Table 3

Full Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1		0.049*	0.039	0.022	-0.032	-0.031	0.044	0.278**	-0.161**	-0.082**	0.021	0.031	0.324**
2			-0.023	-0.066**	0.474**	-0.032	0.097**	0.038	0.027	0.026	0.008	0.243**	-0.063
3				-0.114**	-0.070**	-0.084**	0.093**	0.061*	-0.105**	-0.057*	0.03	0.04	0.128
4					0.012	0.656**	0.052*	0.009	-0.002	-0.049	0.027	-0.114**	0.063
5						0.038	0.064**	-0.059*	0.069**	0.100**	0.03	0.209**	-0.147
6							0.068**	0.047	-0.035	-0.004	0.085**	-0.022	0.128
7								0.094**	-0.069**	-0.013	0.060*	0.077**	0.182*
8									-0.107**	0.025	0.279**	0.214**	0.215**
9										0.29**	0.045*	-0.059**	-0.190**
10											0.223**	0.046*	-0.113
11												0.196**	0.158**
12													0.343**
13													

Note. Categorical variables: Choice to migrate. * = $p < 0.05$; ** = $p < 0.10$. 1=acculturative stress; 2=choice to migrate; 3=migration planning; 4=Search for better future; 5=Political reasons; 6=Seeking medical attention; 7=Marital or family problems; 8=discrimination; 9=family support; 10=friend support; 11=family and friend demands; 12=exposure to trauma; 13=PTSD severity.

Table 4

Demographic Information for Sample (N=2,554)

	n (%)	M (SD)	Range	Missing: n (%)[a]
Gender				0 (0%)
Female	1427 (55.9%)			
Male	1427 (44.1%)			
Age		40.61 (15.64)	18-97	0 (0%)
Race/ancestry				0 (0%)
Mexican	568 (22.2%)			
Mexican-American	312 (12.2%)			
Chicano	27 (1.1%)			
Puerto Rico	506 (19.8%)			
Cuban	580 (22.7%)			
Other	546 (21.4%)			
Not Spanish/Hispanic	15 (0.6%)			
Birth country				1 (0.039%)
U.S.	924 (36.2%)			
Other	1,629 (63.8%)			
U.S. citizenship				7 (0.3%)
Yes	1660 (65%)			
US-born	1117 (43.7%)			
Naturalized citizen	542 (21.2%)			
Refused to answer	1 (0.039%)			
No	887 (34.7%)			
Citizenship in another country				9 (0.4%)
Yes	959 (37.5%)			
No	1,586 (62.1%)			
Number of parents born in the US				7 (0.3%)
None (1st generation immigrant)	1926 (75.4%)			
One	204 (8%)			
Two	417 (16.3%)			

Number of years living in the US				8 (0.3%)
US-born	924 (36.2%)			
< 5 years	250 (9.8%)			
5-10 years	245 (9.6%)			
11-20 years	411 (16.1%)			
20+ years	716 (28%)			
Age at migration				8 (0.3%)
US-born	924 (36.2%)			
< 12 years	365 (14.3%)			
13-17 years	216 (8.5%)			
18-34 years	735 (28.8%)			
35+ years	306 (12%)			
Marital status				1 (0.039%)
Married	1288 (50.4%)			
Separated	178 (7%)			
Divorced	298 (11.7%)			
Widowed	120 (4.7%)			
Never married	669 (26.2%)			
Formal education				0 (0%)
0-11 years	994 (38.9%)			
12 years	633 (24.8%)			
13-15 years	567 (22.2%)			
≥ 16 years	360 (14.1%)			
Employment status				470 (18.4%)
Employed	1399 (54.8%)			
Self-employed	142 (5.6%)			
Retired	34 (1.3%)			
Homemaker	138 (5.4%)			
Student	45 (1.8%)			
Other	326 (12.8%)			
Household income		$45,366 ($46,207)	$0-$200,000+	
Region of country assessment completed				
Northeast	653 (25.6%)			0 (0%)

Midwest	164 (6.4%)
South	1042 (40.8%)
West	695 (27.2%)

Note. [a]Missingness for these variables comprised respondents "refusing to answer", stating "I don't know", or if it was missing for another reason.

Table 5

Trauma by Type by Prevalence

Prevalence (most to least)	PTSD Questionnaire Variable	Trauma Type (Variable Label)	n (%)		
			Yes	No	Missing
1	PT48	Someone very close to respondent ever die unexpectedly	896 (35.1%)	1658 (64.9%)	0 (0%)
2	PT51	Ever see someone badly injured or killed / unexpectedly see dead body	670 (26.2%)	1883 (73.7%)	1 (0.04%)
3	PT38	Ever involved in a major natural disaster	617 (24.2%)	1936 (75.8%)	1 (0.04%)
4	PT44	Ever mugged, held up, or threatened with a weapon	548 (21.5%)	2005 (78.5%)	1 (0.04%)
5	PT36	Ever involved in a life-threatening automobile accident	470 (18.4%)	2084 (81.6%)	0 (0%)
6	PT50_1	Ever witness serious physical fights at home as a child	396 (15.5%)	2152 (84.3%)	1 (0.04%)
7	PT33	Ever a refugee	307 (12.00%)	2247 (88.0%)	0 (0%)
8	PT41	Ever badly beaten by parents	281 (11%)	2271 (88.9%)	2 (0.1%)
9	PT40	Ever have a life-threatening illness	254 (9.9%)	2299 (90%)	1 (0.04%)
10	PT47	Ever been stalked	243 (9.5%)	2309 (90.4%)	2 (0.1%)
11	PT46	Ever sexually assaulted other than rape	229 (9%)	2318 (90.8%)	7 (0.3%)
12	PT32	Ever live as a civilian where there was ongoing terror	216 (8.5%)	2337 (91.5%)	1 (0.04%)
13	PT49	Ever have child with life-threatening illness or injury	202 (7.9%)	2352 (92.1%)	0 (0%)
14	PT57	Ever have traumatic event that don’t want to talk about	202(7.9%)	2350 (92%)	2 (0.1%)
15	PT43	Ever badly beaten up by anyone else	191 (7.5%)	2362 (92.5%)	1 (0.04%)
16	PT50	Anyone very close ever have extremely traumatic experience	186 (7.3%)	2367 (92.7%)	1 (0.04%)
17	PT45	Ever raped	178 (7%)	2368 (92.7%)	8 (0.3%)
18	PT37	Ever have any other life-threatening accident, including on your job	177 (6.9%)	2377 (93.1%)	0 (0%)
19	PT42	Ever badly beaten up by spouse or romantic partner	169 (6.6%)	2382 (93.3%)	3 (0.1%)
20	PT31	Ever unarmed civilian where there was a war, revolution, coup, invasion	135 (5.3%)	2418 (94.7%)	1 (0.04%)
21	PT39	Ever in a man-made disaster	115 (4.5%)	2439 (95.5%)	0 (0%)

22	PT55	Ever experience any other extremely traumatic or life-threatening event	109 (4.3%)	2444 (95.7%)	1 (0.04%)
23	PT35	Ever exposed to a toxic chem/substance that could cause you serious harm	98 (3.8%)	2452 (96%)	4 (0.2%)
24	PT1	Ever participate in combat	80 (3.1%)	2474 (96.9%)	0 (0%)
25	PT54	Ever see atrocities or carnage	72 (2.8%)	2486 (97.2%)	0 (0%)
26	PT34	Ever kidnapped or held captive	68 (2.7%)	2486 (97.3%)	0 (0%)
27	PT52	Ever do something that accidentally led to serious injury/death of another	53 (2.1%)	2496 (97.7%)	5 (0.2%)
28	PT53	Ever purposefully seriously injure, torture, or kill another	51 (2%)	2497 (97.8%)	6 (0.2%)
29	PT30	Ever serve as peacekeeper or relief worker in war	32 (1.3%)	2522 (98.7%)	0 (0%)

Table 6

PTSD Symptoms by Prevalence (for Worst Trauma Type)

Prevalence (most to least)	PTSD Criterion	PTSD Symptom (Variable Label)	n (%)		
			Yes	No	Missing
Prequalification for definition of trauma					
1	A2	Feel terrified or very frightened at the time	200 (7.8%)	614 (24%)	1740 (68.1%)
2	A2a	Feel helpless at the time	39 (1.5%)	577 (22.6%)	1938 (75.9%)
3	A2b	Feel shocked or horrified at the time	12 (0.5%)	565 (22.1%)	1977 (77.4%)
4	A2c	Feel numb at the time	1 (0.039%)	564 (22.1%)	1989 (77.9%)
PTSD symptoms					
1	C1	Efforts to avoid thoughts, feelings or conversations related to trauma	205 (8%)	611 (23.9%)	1738 (68.1%)
3	B1	Intrusive thoughts	178 (7%)	617 (24.2%)	1759 (68.9%)
4	D1	Difficulty falling or staying asleep	177 (6.9%)	593 (23.2%)	1784 (69.9%)
5	B4	Intense psychological distress	164 (6.4%)	631 (24.7%)	1759 (68.9%)
6	D4	Hypervigilance	160 (6.3%)	608 (23.8%)	1786 (69.9%)
7	C2	Efforts to avoid activities, places or people related to trauma	153 (6%)	662 (25.9%)	1739 (68.1%)
8	B2	Nightmares	149 (5.8%)	646 (25.3%)	1759 (68.9%)
9	C5	Detachment or estrangement from others	149 (5.8%)	666 (26.1%)	1739 (68.1%)
10	D5	Exaggerated startle response	146 (5.7%)	623 (24.4%)	1785 (69.9%)
11	D3	Difficulty concentrating	138 (5.4%)	630 (24.7%)	1786 (69.9%)
12	C4	Anhedonia	137 (5.4%)	677 (26.5%)	1740 (68.1%)
13	B3	Flashbacks	132 (5.2%)	663 (26%)	1759 (68.9%)
14	C6	Restricted range of affect	126 (4.9%)	689 (27%)	1739 (68.1%)
15	B5	Physiologic reactivity	122 (4.8%)	673 (26.4%)	1759 (68.9%)
16	D2	Irritability or outburst of anger	119 (4.7%)	649 (25.4%)	1786 (69.9%)
17	C3	Trauma-related amnesia	100 (3.9%)	713 (27.9%)	1741 (68.2%)
18	C7	Sense of foreshortened future	87 (3.4%)	728 (28.5%)	1739 (68.1%)

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Appendix A

DSM-IV-TR (2000) Posttraumatic Stress Disorder Criteria

A. The person has been exposed to a traumatic event in which both of the following were present:
    1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others
    2. the person's response involved intense fear, helplessness, or horror. *Note*: In children, this may be expressed instead by disorganized or agitated behavior

B. The traumatic event is persistently reexperienced in one (or more) of the following ways:
    1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions. *Note*: In young children, repetitive play may occur in which themes or aspects of the trauma are expressed.
    2. recurrent distressing dreams of the event. Note: In children, there may be frightening dreams without recognizable content.
    3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated). *Note*: In young children, trauma-specific reenactment may occur.
    4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
    5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:
    1. efforts to avoid thoughts, fee lings, or conversations associated with the trauma
    2. efforts to avoid activities, places, or people that a rouse recollections of the trauma
    3. inability to recall an important aspect of the trauma
    4. markedly diminished interest or participation in significant activities
    5. fee ling of detachment or estrangement from others
    6. restricted range of affect (e.g., unable to have loving feelings)
    7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:
    1. difficulty falling or staying asleep
    2. irritability or outbursts of anger
    3. difficulty concentrating
    4. hypervigilance
    5. exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and 0) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:
Acute: if duration of symptoms is less than 3 months
Chronic: if duration of symptoms is 3 months or more

Specify if:
With Delayed Onset: if onset of symptoms is at least 6 months after the stressor

Appendix B

Acculturative Stress

Variable	Label	Ratings
AS1	Felt guilty about leaving family/friends in country of origin	0 = no 1 = yes
AS2	Do you feel that in the United States you have the respect you had in your country of origin?	0 = yes 1 = no
AS3	Do you feel that living out of your country of origin has limited your contact with family or friends?	0 = no 1 = yes
AS4	Do you find it hard interacting with others because of difficulties you have with the English language?	
AS5	Do people treat you badly because they think you do not speak English well or speak with an accent?	
AS7	Do you find it difficult to find the work you want because you are of Latino descent?	
AS8	Have you been questioned about your legal status?	
AS9	Do you think you will be deported if you go to a social or government agency?	
AS10	Do you avoid seeking health services due to fear of immigration officials?	
AS Total	Sum of AS1- AS5, AS7- AS10	

Appendix C

Discrimination

Variable	Label	Ratings
DS1A	You are treated with less courtesy than other people	1 = never 2 = less than once a year 3 = a few times a year 4 = a few times a month 5 = at least once a week 6 = almost everyday
DS1B	You are treated with less respect than other people	
DS1C	You receive poorer service than other people at restaurants or stores	
DS1D	People act as if they think you are not smart	
DS1E	People act as if they are afraid of you	
DS1F	People act as if they think you are dishonest	
DS1G	People act as if you are not as good as they are	
DS1H	You are called names or insulted	
DS1I	You are threatened or harassed	
Discrimination Total	Sum of DS1A through DS1I	

Appendix D

Migration Decision-Making

Variable	Label	Ratings
CE2	Choice to migration (i.e., left country of origin because want/had to)	0 = wanted to 1 = had to
CE3	Move carefully/somewhat/poorly planned	1 = carefully planned 2 = somewhat planned 3 = poorly planned 4 = not planned at all

Appendix E

Reasons for Migrating

Construct	Variable	Label	Ratings
Search for a better future (i.e., sum of CE4A- CE4D, CE4H)	CE4A	To find a job	1 = not at all important 2 = somewhat important 3 = very important
	CE4B	Join other family members	
	CE4C	Improve future of children	
	CE4D	Better opportunities	
	CE4H	Seek better education	
Political reasons (i.e., sum of SNE & SNF)	CE4E	Political situation in country of origin	
	CE4F	Persecuted for political reasons	
Seek medical attention	CE4G	Seek medical attention	
Marital or family problems	CE4I	Marital or family problems	

Appendix F

Social Support

Construct	Variable	Label	Ratings
Family support (i.e., sum of SN1-SN3)	SN1	How often talk on phone/get w/ relatives who don't live w/ you	1 = less than once a month 2 = once a month 3 = a few times a month 4 = a few times a week 5 = most every day
	SN2	How often rely on relatives who don't live w/ you for serious problems	1 = not at all 2 = a little 3 = some 4 = a lot
	SN3	How often can rely on relatives who don't live w/ you to disc worries	
Friend support (i.e., sum of SN6-SN8)	SN6	How often talk on phone or get together with friends	1 = less than once a month 2 = once a month 3 = a few times a month 4 = a few times a week 5 = most every day
	SN7	How much can rely on friends when have serious problems	1 = not at all 2 = a little 3 = some 4 = a lot
	SN8	How much can you open up to friends and talk about worries	
Family and friend demands (i.e., sum of SN4, SN5, SN9, SN10)	SN4	How often relatives make too many demands on you	1 = never 2 = rarely 3 = some 4 = often
	SN5	How often your relatives argue with you	
	SN9	How often friends make too many demands on you	
	SN10	How often your friends argue with you	

Appendix G

Trauma Types

Variable on PTSD screen	Variable in PTSD questionnaire	Label	Ratings
PT1	PT1	Ever participate in combat	0 = no
PT2	PT30	Ever serve as peacekeeper or relief worker in war	1 = yes
PT3	PT31	Ever unarmed civilian where there was a war, revolution, coup, invasion	
PT4	PT32	Ever live as a civilian where there was ongoing terror	
PT5	PT33	Ever a refugee	
PT6	PT34	Ever kidnapped or held captive	
PT7	PT35	Ever exposed to a toxic chem/substance that could cause you serious harm	
PT8	PT36	Ever involved in a life-threatening automobile accident	
PT9	PT37	Ever have any other life-threatening accident, including on your job	
PT10	PT38	Ever involved in a major natural disaster	
PT11	PT39	Ever in a man-made disaster	
PT12	PT40	Ever have a life-threatening illness	
PT13	PT41	Ever badly beaten by parents	
PT14	PT42	Ever badly beaten up by spouse or romantic partner	
PT15	PT43	Ever badly beaten up by anyone else	
PT16	PT44	Ever mugged, held up, or threatened with a weapon	
PT17	PT45	Ever raped	
PT18	PT46	Ever sexually assaulted other than rape	
PT19	PT47	Ever been stalked	
PT20	PT48	Someone very close to respondent ever die unexpectedly	
PT21	PT49	Ever have child with life-threatening illness or injury	
PT22	PT50	Anyone very close ever have extremely traumatic experience	
PT22_1	PT50_1	Ever witness serious physical fights at home as a child	
PT23	PT51	Ever see someone badly injured or killed / unexpectedly see dead body	
PT24	PT52	Ever do something that accidentally led to serious injury/death of another	
PT25	PT53	Ever purposefully seriously injure, torture, or kill another	
PT26	PT54	Ever see atrocities or carnage	
PT27	PT55	Ever experience any other extremely traumatic or life-threatening event	
PT28	PT57	Ever have traumatic event that don’t want to talk about	

Appendix H

PTSD Severity for Worst Trauma

DSM-IV-TR Criteria	Variable	Label	Ratings
Prequalification for trauma			
A2	PT67	Feel terrified or very frightened at the time	0 = no 1 = yes
A2a	PT67a	Feel helpless at the time	
A2b	PT67b	Feel shocked or horrified at the time	
A2c	PT67c	Feel numb at the time	
PTSD symptoms			
B1	PT86	Intrusive thoughts	
B2	PT87	Nightmares	
B3	PT88	Flashbacks	
B4	PT89	Intense psychological distress	
B5	PT90	Physiologic reactivity	
C1	PT68	Efforts to avoid thoughts, feelings or conversations related to trauma	
C2	PT69	Efforts to avoid activities, places or people related to trauma	
C3	PT70	Trauma-related amnesia	
C4	PT71	Anhedonia	
C5	PT72	Detachment or estrangement from others	
C6	PT73	Restricted range of affect	
C7	PT74	Sense of foreshortened future	
D1	PT102	Difficulty falling or staying asleep	
D2	PT103	Irritability or outburst of anger	
D3	PT104	Difficulty concentrating	
D4	PT105	Hypervigilance	
D5	PT106	Exaggerated startle response	
PTSD Symptom Severity	Sum of PT67, PT67a, PT67b, PT67c, PT86, PT87, PT88, PT89, PT90, PT68, PT69, PT70, PT71, PT72, PT73, PT74, PT102, PT103, PT104, PT105, & PT106		

Appendix I

Names of variables in SEM

Name in conceptual model	SPSS Variable Name	MPlus name
Acculturative stress	ASTotal	AS
Migration planning	---	PLAN
Had vs. wanted to migrate	CE2	CHOICE
Migration decision-making	CE3	DECISION
Reasons for migration	---	REASONS
Search for a better future	SearchBetterFuture	FUTURE
Political reasons	PoliticalReasons	POLITIC
Seeking medical attention	CE4H	MEDICAL
Marital or family problems	CE4I	PROBLEMS
Discrimination	DiscriminationTotal	DS
Social support	---	SUPPORT
Family support	FamilySupport	FAMILY
Friend support	FriendSupport	FRIEND
Family and friend demands	FamilyFriendDemands	DEMANDS
Trauma exposure	TraumaTypeTotal	TRAUMA
PTSD	PTSD_Severity	PTSD

Curriculum Vitae

Gabriela A. Nagy

EDUCATION

Anticipated 2017	Ph.D.	Clinical Psychology, University of Wisconsin – Milwaukee, WI. (APA-accredited)
2016-2017	Internship	Clinical Psychology, Adult CBT Concentration, Duke University Medical Center, Durham, NC. (APA-accredited)
2011-2013	M.S.	Clinical Psychology, University of Wisconsin – Milwaukee, WI. (APA-accredited)
2007-2011	B.A.	Psychology, *Magna Cum Laude*, University of Colorado – Boulder, CO.

RELEVANT RESEARCH POSITIONS HELD

7/17-present	Post-Doctoral Fellow (Study Coordinator; Study Assessor; Study Therapist). Cognitive-Behavioral Research and Treatment Program. Duke University Medical Center.
11/13-7/17	Co-Principal Investigator. Fear, Exposure and Anxiety Research Lab. University of Wisconsin-Milwaukee.
5/15-9/15	Research Collaborator. Universidad Nacional Autónoma de México (UNAM) & Instituto Nacional de Psiquiatría (INP).
6/14-8/14	Program Evaluation Intern. Clinical and Translational Science Institute (CTSI) of Southeastern Wisconsin. Medical College of Wisconsin.
8/11-5/14	Co-Principal Investigator, Project Coordinator & Study Assessor. Depression Treatment Specialty Clinic. University of Wisconsin-Milwaukee.
7/10-8/11	Undergraduate Research Assistant. Clinical Research, Education, Services and Treatment Laboratory. University of Colorado-Boulder.
8/08-8/09	Undergraduate Research Assistant. Tashiro Laboratory. University of Colorado-Boulder.

GRANTS FUNDED

2014-2016	UWM Senate Appropriations Committee Event Grant ($3,106 in 2014; $2,284 in 2015, $1,837 in 2016). University of Wisconsin-Milwaukee. *Annual Forum for Latino/a Affairs.* Principal Investigator: Nagy, G.

2012-2013 UWM John and Lynn Schiek Research Award in Behavior Analysis ($1,000). University of Wisconsin-Milwaukee. *Development of a Cultural Competence Training in a Behavioral Framework.* Principal Investigator: Nagy, G.

GRANT INVOLVEMENT

7/17-present Study Assessor & Study Coordinator. Duke Biomedical Graduate Program Mental and Emotional Health Initiative (Duke University Medical Center). Direct Costs: $100,000. Duke University Medical Center. PI: M. Zachary Rosenthal, PhD.

7/17-present Study Therapist & Study Assessor. Development of A Novel Transdiagnostic Intervention for Anhedonia (1R61 MH11002701A1). Direct Costs: $751,002. National Institutes of Mental Health (NIMH). Duke University Medical Center. PIs: Gabriel Dichter, PhD; Moria Smoski, PhD.

8/13-5/15 Peer Coordinator. Center for Mental Health Services, Substance Abuse and Mental Health Services Administration. "UWM Suicide Prevention Project." (1U79SM60465-01). Direct Costs: $298,750. Substance Abuse and Mental Health Services Administration (SAMHSA). University of Wisconsin-Milwaukee. PI: Barbara Moser, M.D.

5/13-8/14 Assessor. Imaging Data in Emerging Adults with Addiction (IDEAA): UWM Site (3R01DA030354-03S1). Direct costs $240,000. National Institute of Health (NIH)/National Institute on Drug Abuse (NIDA). University of Wisconsin-Milwaukee. PI: Krista Lisdahl, Ph.D.

12/11-11/13 Study Assessor. A Community-Based Behavioral Activation Treatment for Depression in Latino Adults. ([R34] MH085109-01A1). Direct costs: $450,000. National Institute of Mental Health (NIMH). University of Wisconsin-Milwaukee.PIs: Jonathan Kanter, Ph.D.; Azara Santiago-Rivera, Ph.D.

6/12-8/12 Translation Consultant. Effects of Physical Activity & Marijuana Use on Frontolimbic Functioning During Adolescence: An fMRI Study (1 R01 DA030354-01). Direct costs $375,000. National Institute of Health (NIH)/National Institute on Drug Abuse (NIDA). University of Wisconsin-Milwaukee. PI: Krista Lisdahl, Ph.D.

ORIGINAL PUBLICATIONS IN PEER REVIEWED JOURNALS

1.Santos, M. M., **Nagy, G. A.,** Diéguez Hurtado, G., West, P., Santiago-Rivera, A. L., Lee, H. J., & Kanter, J. W. (In Press). Acculturative stress as a moderator of treatment engagement and retention in behavioral activation and treatment as usual for Latinos with depression. *Journal of Latina/o Psychology*.

2.Benson Flores, G., Santiago-Rivera, A., & **Nagy, G. A.** (2016). Culturally adapted behavioral activation: A treatment approach for a Latino family. *Clinical Case Studies*. 1-16. DOI: 10.1177/1534650116668630

3.Santos, M. M., Rae, J. R., **Nagy, G. A.,** Manbeck, K. E., Hurtado, G. D., West, P., ... & Kanter,

J. W. (2016). A client-level session-by-session evaluation of behavioral activation's mechanism of action. *Journal of Behavior Therapy and Experimental Psychiatry*, 54, 93-100. DOI: 10.1016/j.btep.2016.07.003

4.Kanter, J., W., Santiago-Rivera, A., Santos, M. M., **Nagy, G.,** Lopez, M., Dieguez-Hurtado, G., & West, P. A. (2014). Randomized hybrid efficacy and effectiveness trial of behavioral activation for Latinos with depression. *Behavior Therapy*, 46(2), 177-192.

5.Kanter, J. W., Puspitasari, A. J., Santos, M. M., & **Nagy, G. A.** (2012). Behavioural activation: History, evidence, and promise. *British Journal of Psychiatry*, 200, 361-363. Translated into Portuguese and published as: Kanter, J. W., Puspitasari, A. J., Santos, M. M., & **Nagy, G. A.** (2012). Ativação Comportamental: história, evidência e promessa, *Boletim Contexto*, 36, 131- 141.

BOOK CHAPTERS

1.Santos, M. M., Puspitasari, A. J., **Nagy, G. A.**, & Kanter, J. (In press). Behavioral activation techniques: pragmatic, flexible, and effective strategies for reducing the global burden of depression. In Amy Wenzel (Ed.), *Handbook of Cognitive Behavioral Therapy*. New York, NY: The Guilford Press.

2.Kanter, J., Puspitasari, A. J., Santos, M. M., & **Nagy, G. A.** (2014). Social work and behavioral activation. In Matt Boone (Ed.), *Mindfulness and acceptance in social work* (pp. 101-122). Oakland, CA: New Harbinger Publications, Inc.

TREATMENT MANUALS

1.Kanter, J., W., Santiago-Rivera, A., L., Santos, M. M., Dieguez-Hurtado, G., West, P., **Nagy, G.,** & Lopez, M. (2014). Behavioral Activation for Latinos Treatment Manual. American Psychological Association: Society of Clinical Psychology. Found at: https://www.div12.org/wp-content/uploads/2014/11/Behavioral_Activation_for_Latinos_Manual.pdf

OTHER NON-PEER-REVIEWED PUBLICATIONS

1.Clinical and Translational Science Institute of Southeastern Wisconsin. (2014). *Mentored Career Development Award Program (KL2)*. Milwaukee, WI: Emily Connors & **Gabriela Nagy**.

2.Clinical and Translational Science Institute of Southeastern Wisconsin. (2014). *PhD Program in Basic and Translational Science: 2014 Graduate Tracking Survey System Results*. Milwaukee, WI: Emily Connors & **Gabriela Nagy**.

3.**Nagy, G. A.**, "Development of an Online Training Module for the Shifting Cultural Lenses Model" (2014). Theses and Dissertations. Paper 415.

4.**Nagy, G.** & Dimidjian, S. (2011). The effects of loving-kindness meditation on emotional sensitivity. *The Colorado Undergraduate Journal for Psychological Research*. 1, 73-78.

SUBMITTED FOR REVIEW

1.Tiburcio Sainz, M., **Nagy, G. A.,** Mohedano, G. R., Martínez Vélez, N., Carreño García, S., Pérez Cisneros, D., & Natera Rey, G. (Submitted for review). The Association between Substance Use and Depressive Symptomatology in University Students in Mexico. Submitted February 2017.

MANUSCRIPTS IN PREPARATION

1.**Nagy, G. A.,** Santos, M. M., Dieguez-Hurtado, G., Puspitasari, A. J., Kanter, J. W., & Santiago-Rivera, A. (In Progress). Preliminary results of a bilingual, modular, active learning training of Behavioral Activation for Spanish-speaking community therapists.
2.**Nagy, G. A.,** Wandrey, R., Sylvanna Vargas, & Cahill, S. (In Progress). Multiculturalism in clinical psychology: A content and trend analysis.
3.**Nagy, G. A.,** LeMaire, K., Miller, M., Howard, M., Wyatt, K., & Zerubavel, N. (In Progress). Development of a multicultural consultation team in a large medical center.
4.**Nagy, G.A.**, & Miller, M. (In Progress). Stop us if you've heard this one before – A Canadian and a Venezuelan walk into a supervision session: Reflections on our year of effective multicultural supervision.
5.Santos, M. M., **Nagy, G. A.,** & Kanter, J. W., Lopez, S. R. (In Progress). Applying a process-based model of cultural competence to cognitive-behavior therapy.
6.Santos, M. M., **Nagy, G. A.,** Romero, L., Santiago-Rivera, A., Kanter, J., Dieguez, G., & West, P. (In Progress). RCT of Behavioral Activation for Latinos with depression: A model for community-based participatory research.
7.Santos, M. M., **Nagy, G. A.,** Romero, L., Santiago-Rivera, A., Kanter, J., Dieguez, G., & West, P. (In Progress). Feasibility of delivering Behavioral Activation to Latinos in a community clinic setting.

WORKSHOPS AND INVITED TALKS

1. **Nagy, G. A.** (June 2017). *CBT for Anxiety Practices with Chronic Pain Patients*. Duke Medical Center Pain and Biofeedback Clinic Didactic Series, Durham, NC.
2. **Nagy, G. A.** (May 2017). *Incorporating Behavioral Activation with Chronic Pain Patients*. Duke Medical Center Pain and Biofeedback Clinic Didactic Series, Durham, NC.
3. **Nagy, G. A.** (March 2017). *Cultural Adaptations to DBT*. Duke Medical Center Multicultural Consultation Team, Durham, NC.
4. **Nagy, G. A.** (March 2017). *Multicultural Approaches to Clinical Care*. Duke Medical Center Clinical Psychology Post-Doctoral Fellowship Clinic Didactic Series, Durham, NC.
5.**Nagy, G. A.** (February 2017). *Behavioral Activation in Inpatient Psychiatric Settings*. Duke Medical Center Inpatient Psychiatry Rounds, Durham, NC.
6.**Nagy, G. A.** (January 2017). *Conducting Chain and Solutions Analyses*. Duke Medical Center Inpatient Psychiatry Rounds, Durham, NC.
7.**Nagy, G. A.** (December 2016). *Strengthening Cultural Competence Skills in Clinical Practice.* Duke Medical Center Multicultural Consultation Team, Durham, NC.
8.**Nagy, G. A.** (November 2016). *Infusing Cultural Competence in DBT.* Duke Medical Center DBT Consultation Team, Durham, NC.
9.Dieguez Hurtado, G., Santos, M. M., & **Nagy, G. A.** (October 2016). *Implementing Behavioral Activation for Latinos with Depression (BAL) in a Social Work Context.* NASW WI's 42nd Annual State Conference, Milwaukee, WI.
10. **Nagy, G. A.** (September 2016). *Increasing Cultural Responsiveness in Inpatient Psychiatric Settings*. Duke Medical Center Inpatient Psychiatry Rounds, Durham, NC.
11. Dieguez Hurtado, G., Santos, M. M., & **Nagy, G. A.** (April 2016). *Implementing Behavioral Activation for Latinos with Depression (BAL) in a Social Work Context*. Latino Social Workers Conference, New York, NY.

12. **Nagy, G. A.,** Carr, D., Robinson, N. (May 2015). *Advanced Opportunity Fellowship Panel*. Panel discussion at the UWM Ronald E. McNair Orientation, Milwaukee, WI.
13. **Nagy, G. A.,** LeMaire, K. L., & Skerven, K. (April 2015). *Adapting Dialectical Behavior Therapy to treat primary OCPD with co-occurring disorders.* Workshop presented at the annual Wisconsin Psychological Association Meeting, Middleton, WI.
14. Santos, M. M., **Nagy, G**. **A.**, & Dieguez-Hurtado, G. (April 2015). *Implementing community-based Behavioral Activation for Latinos with depression.* Workshop presented at the annual Wisconsin Psychological Association Meeting, Middleton, WI.
15. **Nagy, G.,** Wandrey, R., Reyes, N., Burdick, B., Muro, N., Navarro, A., Matos, M., Navarro, D. (April 2015). *Reflecting on 20 Years of Multicultural Research in Five Hallmark Clinical Psychology Journals*. Invited oral presentation at the annual Midwestern Psychological Association Meeting, Chicago, IL.
16. **Nagy, G. A.,** Joseph, T., & Munoz, S. (March, 2015). *Scholarly Activism*. Panel discussion at the 2nd annual Forum on Latino/a Affairs, Milwaukee, WI.
17. Skerven, K., **Nagy, G. A.** & Nimphius, M-C. (February 2015). *Managing Stress*. Presented at St. A Day of Discover, Brookfield, WI.
18. **Nagy, G.,** Carr, D., & Coleman, A. L. (November 2014). *McNair Graduate Student Panel.* Panel discussion at the 23rd Annual Ronald E. McNair Research Conference and Graduate Fair, Delevan, WI.
19. **Nagy, G.** (October 2014). *Awareness, Knowledge & Skills: A Cultural Competence Workshop for CBT Therapists*. Invited workshop for Professional Development Program at UWM, Milwaukee, WI.
20. **Nagy, G.** (September 2014). *Training Mental Health Professionals to Deliver Culturally Competent Assessment and Therapy: Results from a Pilot Randomized Controlled Trial.* Invited talk for the UWM Graduate Student Fellowship Celebration, Milwaukee, WI.
21. Lopez, S., **Nagy, G.,** Santos, M., & Kanter, J. (November 2013). *Cultural Competence in Cognitive-Behavioral Therapy: A Process, Skills-Based Model*. Mini-workshop presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Nashville, TN.
22. **Nagy, G.,** Anderson, R., Hernandez, J., Mueller, L., Thomas, C & Voith, L. (July 2013). *Alumni Panel Discussion*. Presented at the 5th Annual Wisconsin McNair Research Symposium Graduate School Visit, Milwaukee, WI.
23. Kanter, J., Dieguez, G., Santos, M. M., Puspitasari, A. J., & **Nagy, G. A.** (October 2012). *Maximizing Your Effectiveness in Behavioral Activation for Latinos with Depression*. Invited workshop at the annual conference of the National Association of Social Workers, Brookfield, WI.
24. **Nagy, G. A.,** Zamarripa, J., Lopez Rios, M., & Hernandez, A. (October 2012). *Panel Discussion.* Presented at the annual UWM Latina Student Reception, Milwaukee, WI.
25. **Nagy, G.** (other presenters unknown) (May 2012). *Panel Discussion*. Presented at the UWM McNair Orientation, Milwaukee, WI.
26. **Nagy, G.** *Grad School 101: An Introduction to Applying to Graduate School.* (February 2012). Oral presentation for undergraduates in conjunction with the Roberto Hernandez Center at UWM, Milwaukee, Wisconsin.

PROFESSIONAL ORAL PRESENTATIONS (*Denotes supervised student status)

1. **Nagy, G. A.** (May 2017). Cultural correlates of trauma exposure and PTSD. Duke Medical

Center Pain and Biofeedback Clinic Didactic Series, Durham, NC.

2. **Nagy, G. A.** (August 2015). *La asociación entre el consumo de sustancias y depresión en estudiantes universitarios en México: Resultados finales*. Oral presentation for Minority Health and Health Disparities International Research Training (MHIRT) Latino Mental Health Research Training Program. Puebla, Mexico.
3. **Nagy, G. A.** (June 2015). *La asociación entre el consumo de sustancias y depresión en estudiantes universitarios en México: Propuesta de investigación.* Oral presentation for Minority Health and Health Disparities International Research Training (MHIRT) Latino Mental Health Research Training Program. Puebla, Mexico.
4. Santos, M. M., **Nagy, G. A.,** Romero, L., Santiago-Rivera, Kanter, J., Dieguez, G., & West, P. (October 2014). *RCT of Behavioral Activation for Latinos with depression: A model for community-based participatory research*. Oral presentation to be presented at the 2014 Biennial National Latina/o Psychological Association Conferencia, Albuquerque, NM.
5. Kanter, J. W., Santiago-Rivera, A., Santos, M. M., Lopez, M., **Nagy, G.,** Dieguez, G., & West, P. (November 2012). *Outcomes and mechanisms of action of a randomized controlled trial of Behavioral Activation for Latinos with depression in a community clinic*. In C. Hunnicutt-Ferguson (Chair), Mechanisms and explanatory processes for major depressive disorder: A research update. Symposium conducted at the Forty-sixth Annual Conference of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.
6. **Nagy, G.**, Santos, M. & *Sotelo, V. (April 2012). *Identifying factors for the empirical modification of Behavioral Activation: Acculturative stress as a potential treatment moderator*. Oral presentation presented at the Annual AGSIP 2012 Symposium, Milwaukee, WI.
7. **Nagy, G.** *Emotion regulation in postpartum women following mindfulness meditation training* (August 2011). Oral presentation at the 2011 McNair Symposium, Boulder, CO.
8. **Nagy, G.** *The effects of loving-kindness meditation training on early parenting behaviors*. (July 2011). Oral presentation at the 2011 University at Buffalo McNair Research Conference, Niagara Falls, NY.
9. **Nagy, G.** *The effects of loving-kindness meditation training on early parenting behaviors*. (April 2011). Poster presentation at the 2011 Undergraduate Research Day, Boulder, CO.
10. **Nagy, G.** *The effects of loving-kindness meditation training on early parenting behaviors*. (April 2011). Oral presentation at the 2011 CU-LEAD Inaugural Student Symposium, Boulder, CO.

PROFESSIONAL POSTER PRESENTATIONS (*Denotes supervised student status)

1. **Nagy, G.,** Wandrey, R., *Matos, M., *Navarro, A., *Reyes, N., & Cahill, S. (October 2016). *Multiculturalism in clinical psychology: Are we doing enough?* Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, New York, NY.
2. **Nagy, G.,** Tiburcio Sainz, M., Rosete Mohedano, G., Martínez, N., Carreño García, S., & Natera Rey, G. (September 2016). *The association between substance use and depressive symptomatology in nursing university students in Mexico*. Poster presentation to be presented at the 2016 Biennial National Latina/o Psychological Association Conferencia, Orlando, FL.
3. *Matos, M., *Navarro, A., **Nagy, G.,** & Cahill, S. (April 2016). *Examining the relationship between social support, exposure to trauma, and PTSD in college students.* Poster presented at the annual meeting of the Midwestern Psychological Association Meeting, Chicago, IL.
4. *Matos, M., *Navarro, A., **Nagy, G.,** & Cahill, S. (April 2016). *The association between*

socioeconomic status, trauma exposure and PTSD. Poster presented at the annual UW System Symposium, Milwaukee, WI.

5. *Navarro, A., *Reyes, N., *Matos, M., **Nagy, G.,** & Cahill, S. (April 2016). *Does gender moderate the relationship between coping styles and PTSD severity?* Poster presented at the annual meeting of the Wisconsin Psychological Association, Middleton, WI.
6. *Reyes, N., **Nagy, G.,** & Cahill, S. (May 2015). *Mental health help-seeking attitudes in college students*. Poster presented at the annual UW System Symposium, Milwaukee, WI.
7. Santos, M. M., Rae, J., **Nagy, G**. **A.**, Dieguez-Hurtado, G., West, P., Santiago-Rivera, & Kanter, J. W. (April 2015). *Single-subject session-by-session evaluation of Behavioral Activation (BA) for depression's mechanism of action.* Poster presented at the annual Midwestern Psychological Association Meeting, Chicago, IL.
8. *Reyes, N., *Burdick, B., *Navarro, A., *Matos, M., *Muro, N., *Navarro, D., **Nagy, G.,** Wandrey, R., & Cahill, S. (April 2015). *Ethical considerations of multicultural issues in clinical psychology: A thematic analysis.* Poster presented at the annual Midwestern Psychological Association Meeting, Chicago, IL.
9. *Burdick, B., *Reyes, N., *Matos, M., *Muro, N., *Navarro, A., *Navarro, D., **Nagy, G.,** Wandrey, R., Cahill, S. (April 2015). *Methodological considerations when working with diverse samples: A thematic analysis*. Poster to be presented at the annual Midwestern Psychological Association Meeting, Chicago, IL.
10. Nimphius, M.-C., Whicker, D., LeMaire, K. L., Rosenberg, L., **Nagy, G.,** Najar, N., & Skerven, K. (November 2014). *Length of counselor experience does not predict treatment outcomes in a comprehensive Dialectical Behavioral Therapy program.* Poster presented at the annual Wisconsin Counseling Association meeting, Madison, WI.
11. LeMaire, K. L., Nimphius, M-C., Whicker, D., Rosenberg, L. M., **Nagy, G. A.,** Najar, N., & Skerven, K. (November 2014). *Emotion regulation skills: A mediator between impulse control and self-harm*. Poster presented at the annual meeting of the International Society for the Improvement and Teaching of Dialectical Behavior Therapy, Philadelphia, PA.
12. **Nagy, G.,** Wandrey, R., *Burdick, B., *Velazquez, A., *Canido, K., *Reyes, N., & Cahill, S. (November 2014). *Multiculturalism in clinical psychology: A content and trend analysis.* Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.
13. **Nagy, G**. A., Santos, M. M., Romero, L., Santiago-Rivera, Kanter, J., Dieguez, G., & West, P. (October 2014). *Examining the feasibility of delivering Behavioral Activation in a community setting for low-income, Spanish-speaking Latinos*. Poster presentation to be presented at the 2014 Biennial National Latina/o Psychological Association Conferencia, Albuquerque, NM.
14. *Canido, K., *Morales, C., *Valadez, F., **Nagy, G.,** Santos, M., Kanter, J. (April 2014). *Retention and attrition of low-income, Spanish-speaking Latinos in Behavioral Activation treatment.* Poster presented at the UW System Symposium, Milwaukee, WI.
15. *Reyes, N., *Canido, K., *Burdick, B., *Velazquez, A., **Nagy, G.,** Wandrey, R. (April 2014*). Impact of stigma on wellbeing: A narrative review.* Poster presented at the UW System Symposium, Milwaukee, WI.
16. *Velazquez, A., *Reyes, N., *Canido, K., *Burdick, B., Wandrey, R., **Nagy, G**., Cahill, S. (April 2014). *Stigma surrounding mental health diagnoses and psychological care: A narrative review.* Poster presented at the UW System Symposium, Milwaukee, WI.
17. Wandrey, R., **Nagy, G.,** *Canido, K., *Reyes, N., *Velazquez, A., *Burdick, B., Cahill, S.,

Chavez-Korell. (April 2014). *20 years of multicultural research in psychology: Preliminary findings from a content analysis of top journals in clinical psychology*. Poster presented at the annual Wisconsin Psychological Association Convention, Middleton, WI.

18. **Nagy, G.,** Santos, M., Lopez, S., Kanter, J. (April 2014). *Efficacy of a cultural competence training module infused in online, modular training of Behavioral Activation in increasing multicultural awareness, knowledge and skills*. Poster presented at the annual Wisconsin Psychological Association Convention, Middleton, WI.
19. Santos, M., **Nagy, G.**, Kanter, J.W., Santiago-Rivera, A. (April 2014). *Predictive validity of the Spanish version of the Behavioral Activation for depression scale – short form (BADS-SF)*. Poster presented at the Latina Researchers Conference, New York, NY.
20. **Nagy, G.,** Santos, M., Lopez, S., Kanter, J., Morales, C., Trejo, V., Walsh, A., Drame, N., Harper, A., Fero, L., Verzal, M., & Koerner, K. (November 2013). *Preliminary primary outcomes of an online, modular training of Behavioral Activation plus a cultural competence training.* Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Nashville, TN.
21. Santos, M., **Nagy, G.,** Lopez, S., Kanter, J., *Morales, C., *Trejo, V., *Walsh, A., & *Drame, N. (November 2013). *Exploring the relationship between therapist's knowledge, awareness and skill in multicultural issues in therapy and a subjective assessment of cultural competence via a role play assessment.* Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Nashville, TN.
22. **Nagy, G.**, *Morales, C., *Trejo, V., *Harper, S., *Fero, L., *Verzal, M., Puspitasari, A., Santos, M. M., & Kanter, J. W. (April 2013). *The effectiveness of a modular, face-to-face training in Behavioral Activation for community therapists who serve depressed Latinos.* Poster presented at the annual Wisconsin Psychological Association Convention, Middleton, WI.
23. Santos, M. M., **Nagy, G.**, A., Lopez, M., Kanter, J. W., & Santiago-Rivera, A. (April 2013). *Examining the moderating effect of immigration-related stress on outcome of Behavioral Activation for Latinos with depression*. Poster presented at the annual Wisconsin Psychological Association Convention, Middleton, WI.
24. *Morales, C., *Trejo, V., *Harper, S., *Verzal, M., *Drame, N. D., *Fero, L., **Nagy, G.,** & Kanter, J. W. (April 2013). *Behavioral Activation skills acquisition, implementation and confidence after a face-to-face modular training.* Poster presented at the Annual AGSIP 2013 Symposium, Milwaukee, WI.
25. **Nagy, G.**, & Puspitasari, A. (April 2013). *Is online training of psychotherapy better than face-to-face?* Oral presentation presented at the Annual AGSIP 2013 Symposium, Milwaukee, WI.
26. *Trejo, V., *Morales, C., *Walsh, A., **Nagy, G.,** & Kanter, J. W. (April 2013). *Mental health professional's acceptability of a modular face-to-face Behavioral Activation training*. Poster presented at the annual UWM Undergraduate Research Symposium, Milwaukee, WI.
27. Santos, M. M., **Nagy, G. A**., *Sotelo, V. I., *Czajkowska, K. K., *Velazquez, A., Lopez, M., Santiago-Rivera, A., & Kanter, J. W. (November 2012). *Treatment outcome and retention in a randomized controlled trial of Behavioral Activation for Latinos with depression in a community clinic*. Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, National Harbor, MD.
28. Santos, M. M., Lopez, M., **Nagy, G. A.,** Kanter, J. K., Santiago-Rivera, A., Dieguez, G., & West, P. (November 2012). *Does activation mediate change in an RCT of Behavioral*

Activation for Latinos with depression? Evaluation of a treatment's mechanism of action in a community setting. Poster presented at the Forty-sixth Annual Conference of Association for Behavioral and Cognitive Therapies, National Harbor, MD.

29. **Nagy, G.A.,** Santos, M. M., Lopez, M., *Czajkowska, K. K., *Sotelo, V., *Velazquez, A., Kanter, J.W., & Santiago-Rivera, A. (November 2012). *Do cultural variables moderate the effectiveness of a Behavioral Activation intervention for depressed Latinos?* Poster presented at the Forty-sixth Annual Conference of Association for Behavioral and Cognitive Therapies, National Harbor, MD.
30. Puspitasari, A. J., *Crowe, A. S., **Nagy, G.**, *Murphy, J. D., & Kanter, J. W. (April 2012). *The development and outcomes of an online Behavioral Activation training: Disseminating an evidence-based treatment for depression.* Poster presented at the WPA 2012 Annual Convention, Madison, WI.
31. Puspitasari, A. J., *Crowe, A. S., **Nagy, G.**, Kanter, J. W., & Koerner, K. (March 2012). *Development of a role-play competency measure to evaluate outcomes of a Behavioral Activation online training*. Poster presented at the 5th Annual NIH Conference on the Science of Dissemination and Implementation: Research at the Crossroads, Bethesda, MD.
32. Puspitasari, A. J., Dillon, S. E., *Crowe, A. S., **Nagy, G.** (November 2011). *Developing a role-play competency assessment for the training of Behavioral Activation therapists*. Poster presented at the annual meeting of the Association of Behavioral and Cognitive Therapies, Toronto, Canada.
33. **Nagy, G.** *The effectiveness of a Dialectical Behavior Therapy skills group in reducing perceived stress in adolescent mothers*. (August 2010). Poster presentation at 15th Annual Summer Research Symposium, Boulder, CO.

TEACHING EXPERIENCE

11/16	Guest Lecturer. Department of Psychology and Neuroscience, Duke University. Durham, NC. Course Taught: *PSY 205: Abnormal Psychology (1 lecture on Sleep-Wake Disorders).* Enrollment: 100.
1/15-12/15	Adjunct Instructor. Department of Psychology, Alverno College. Milwaukee, WI. Course Taught: *PSY-110: Lifespan Development* (2 semesters). Enrollment: Up to 30.
8/11-5/12	Teaching Assistant. Department of Psychology, University of Wisconsin-Milwaukee. Milwaukee, WI. Course Taught: *PSY-101: Introduction to Psychology* (Online; 2 semesters). Enrollment: Up to 55.
8/10-12-10	Teaching Assistant. Department of Psychology and Neuroscience, University of Colorado–Boulder. Boulder, CO. Course Taught: *PSYC-1001: General Psychology* (2 semesters). Enrollment: Up to 30.

CO-MENTORING EXPERIENCE (Undergraduate Research Assistants)

2015	Alma Navarro (Ronald E. McNair summer project)
2014-2015	Norma Reyes (Support for Undergraduate Research Fellows, Honors Thesis)

FELLOWSHIPS

2015	2015 Hispanic Professionals of Greater Milwaukee (HPGM) Advanced Degree Program Fellowship.
2015	NIH/NIMHD-funded Minority Health and Health Disparities International Research Training Latino Mental Health Research Training Program Fellowship.
2013	Dr. Tomas Garrett-Rosas AOP Fellowship Award recipient. UWM Advancement Opportunity Program.
2012-2015	UWM Advancement Opportunity Program Fellowship *(Awarded 3 years)*.

HONORS & AWARDS

2014	National Latina/o Psychological Association Travel Grant.
2014	Puente Award recipient. UWM Roberto Hernandez Center.
2014	Latina Researchers Conference Travel Grant.
2013-2014	UWM Graduate Student Travel Support Program *(Awarded 2 times)*.
2012-2014	UWM Senate Appropriations Committee Travel Grant *(Awarded 3 times).*
2008-2011	CU-Boulder Undergraduate Research Opportunity Fund Grant *(Awarded 4 semesters)*.
2010	Arts and Sciences Dean's List. CU-Boulder School of Arts and Sciences.
2008-2010	Alvin G. Flanagan & Walker Family Scholarship recipient. CU-Boulder President's Leadership Class.
2010	McNair Program Scholarship recipient. CU-Boulder Ronald E. McNair Program.
2007-2010	Presidents Leadership Class Scholarship recipient. CU-Boulder President's Leadership Class.
2009	Residence Life Diamond Awards All-Star recipient. CU-Boulder Department of Housing and Dining.
2007	William Douglas Scholarship. CU-Boulder President's Leadership Class.
2007	Winograd Family Fund Scholarship. The Community Foundation.

CLINICAL EXPERIENCE

7/16-6/17	Pre-Doctoral Clinical Intern (Adult Cognitive Behavioral Therapy [CBT] Concentration). Duke University Medical Center. Primary Supervisors: Zachary Rosenthal, Ph.D.; Moria Smoski, Ph.D.; Melissa Miller, Ph.D.; Miriam Feliu, Ph.D. Rotations: Outpatient CBT/DBT; Inpatient CBT/DBT Consultation Liaison Service; & Consultation Service at Chronic Pain Management and Biofeedback Clinic.
8/15-5/16	Assistant to the Clinic Director. UWM Psychology Clinic. Primary Supervisor: Christopher Martell, Ph.D.
8/15-5/16	Practicum Student. Sixteenth Street Community Health Centers. Primary Supervisor: Paul West, Ph.D.
1/15-4/15	DBT Training and Consultation Team Member. United Community Center. Primary Supervisor: Neal Moglowsky, L.P.C.
9/14-5/15	Depression and Suicide Risk Assessor. UWM Norris Health Center. Primary Supervisors: Barbara Moser, M.D.; Paul DuPont, Ph.D.
5/14-5/15	Practicum Student. Center for Behavioral Medicine. Primary Supervisors: Kim Skerven, Ph.D.; Neal Moglowsky, L.P.C.
7/13-6/14	Student Therapist (General Psychopathology Practicum). UWM Psychology Clinic. Primary Supervisor: Robyn Ridley, Ph.D.
7/12-6/14	Student Therapist (Depression Treatment Practicum). UWM Psychology Clinic. Primary Supervisors: Jonathan Kanter, Ph.D.; Christopher Martell, Ph.D.
6/13-8/13	Support Staff. Maplegrove Treatment Center: Asperger's Syndrome and Related Disorders. Primary Supervisor: Timothy Kabara, M.S.E., Ed.S.
7/12-8/13	Line Therapist. Milwaukee County Disability Services.
1/13-5/13	Practicum Student (Practicum in Empirically Supported Interventions). UWM Psychology Clinic. Primary Supervisors: Shawn Cahill, Ph.D.; Jonathan Kanter, Ph.D.
8/11-5/13	Practicum Student (Practicum in Psychodiagnostic Assessment). UWM Psychology Clinic. Primary Supervisors: Bonita Klein-Tasman, Ph.D.; Hanjoo Lee, Ph.D.
1/12-5/12	Practicum Student (Behavior Therapy Practicum). UWM Psychology Clinic. Primary Supervisor: Douglas Woods, Ph.D.

8/11-12/11	Practicum Student (Prolonged Exposure Therapy Practicum). UWM Psychology Clinic. Primary Supervisor: Shawn Cahill, Ph.D.
1/09-4/09	Undergraduate Intern. Medical Day Treatment Program. Colorado Children's Hospital. Primary Supervisor: Diane Reichmuth, Psy.D.

PROVISION OF CLINICAL SUPERVISION

10/16-present	Developer (Multicultural Consultation Team). Duke University Medical Center.
7/16-6/17	Peer Clinical Supervisor (DBT Skills Group). Duke University Medical Center. Primary Supervisor: Melissa Miller, Ph.D.
8/15-5/16	Peer Clinical Supervisor (Depression Treatment Practicum). UWM Psychology Clinic. Primary Supervisor: Christopher Martell, Ph.D.

SERVICE

1/13 – 5/16	Planning Committee Chair. Forum on Latino/a Affairs Conference. University of Wisconsin-Milwaukee.
8/14 – 1/15	Planning Committee Member. UWM Bilingual Day ("Casa Abierta"). University of Wisconsin-Milwaukee.
10/13 – 5/14	Member. UWM Chancellor's Advisory Committee on Mental Health. University of Wisconsin-Milwaukee.
10/14 – 11/14	Moderator and Volunteer. 23rd Annual Ronald E. McNair Research Conference and Graduate Fair. Delavan, WI.
1/13 – 2/13	Planning Committee Member. Latino Mental Health Summit Planning Committee. Alverno College.

PROFESSIONAL AFFILIATIONS

2014–present	Student Member. National Latina/o Psychological Association.
2014–present	Student Member. Latina Researchers Network.
2012–present	Student Member. Association for Behavioral and Cognitive Therapies.
2014–2016	Student Member. Milwaukee Evaluation.
2013–2016	Student Member. Wisconsin Psychological Association.
2013–2016	Student Member. Midwestern Psychological Association.