A STRESS PROCESS MODEL FOR ANXIETY SYMPTOM SEVERITY:

COMPARING RACIAL AND ETHNIC MINORITY ADULTS

by

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ABSTRACT

Introduction Individuals from diverse backgrounds are at risk for anxiety at levels equal to or greater than their Caucasian peers. However, our knowledge about contributors to anxiety symptom development and stressors unique to these populations is limited. This dissertation explores predictors of anxiety symptom severity in racial/ethnic minority adults using data from two surveys of the Collaborative Psychiatric Epidemiological Surveys dataset (CPES): the National Survey of American Life and the National Latino and Asian American Survey. The Pearlin Stress Process Model (SPM) provided a theoretical framework for the contributions of stressors and resources to anxiety symptom severity.

Method Pearlin's SPM proposes a latent variable model using Structural Equation Modeling (SEM) to test the relations between context variables and the latent constructs of stressors, intrapsychic strain, and resources predicting anxiety symptom severity. Anxiety symptom severity, a latent construct, was composed of number of symptoms, duration of symptoms, distress, and impairment. The final analyses included 7,959 individuals.

Results Only the results of Aim 1 exploring differences in anxiety symptom severity across individuals of African descent, Asian Americans, and Hispanic and Latino Americans are reported in this abstract. Subgroup differences are reported for Aims 2 through 4 in the body of the document. Aim 1 explored the goodness of fit of the SPM across groups (e.g., main effects of demographic variables, latent constructs of stressors and intrapsychic strain, and interactions with race) relating to anxiety symptom severity. Demographics including race were significant

across all steps of the model. Those with greater stressors had worse self-rated mental health and Asian American's self-rated mental health was more impacted by changes in stressors. Those with worse resources experienced a greater impact on self-rated mental health. Hispanic and Latinos experienced the greatest anxiety symptom severity followed by individuals of African Descent and Asian Americans.

<u>Conclusions</u> The Pearlin SPM was successful in predicting anxiety symptom severity across diverse groups and within subgroups. The models demonstrated differences in the interactions between latent variables that contribute to distress across populations. These models have important implications for researchers, clinicians and policy makers working to reduce anxiety symptoms within these populations.

DEDICATION

This dissertation is dedicated to my parents who told me education was important and never anticipated I would take it this far. Also to the memory of my grandparents who passed on their strength and strong faith that has helped me to sustain this long fight. And finally to my husband who encouraged me to keep my eye on the finish line.

LIST OF ABBREVIATIONS AND SYMBOLS

df Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data

F Fisher's *F* ratio: A ration of two variances

M Mean: the sum of a set of measurements divided by the number of measurements in the set

p Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

r Pearson product-moment correlation

t Computed value of *t* test

< Less than

= Equal to

≤ Less than or equal to

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Introduction

As a nation, we are becoming more diverse in race and ethnicity as well as age. Given the changing demographics and the growing number of racial and ethnic minority adults, the mental health community should respond with a growing concern about the paucity of knowledge about anxiety expression and treatment strategies for this culturally diverse population. The current literature suggests that individuals from diverse backgrounds across the lifespan, and specifically those who are recent immigrants, are at risk for anxiety at levels equal to or greater than their Caucasian peers. However, our knowledge about the factors that may contribute to anxiety symptom development and stressors that may be unique to this population is limited. Though previous research has suggested factors such as discrimination, acculturation, and conflicts between family, culture, and the new environment influence the development of anxiety, there is not a comprehensive model that integrates all predictors. The present study reviewed the current understanding of anxiety symptoms in diverse populations and then proposed a model for predictors of anxiety symptom severity using two datasets from the Collaborative Psychiatric Epidemiology Surveys dataset. In this study, the latent construct of anxiety symptom severity was comprised of the number of symptoms, the length of time the symptoms were present, and a rating of the distress and impairment the symptoms caused.

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The current study provides an exploration of a comprehensive model to expand our understanding of the unique and shared experiences of diverse individuals experiencing anxiety symptoms.

1) Aim 1 is to explore the effects of context variables, stressors, self-rated mental health, and resources on anxiety symptom severity comparing individuals of African descent, Asian Americans, and Hispanic/Latino Americans. To address Aim 1, context variables, and self-rated mental health as well as the latent constructs of stressors, and resources were entered into a Structural Equation Model (SEM) to predict anxiety symptom severity. It was necessary to examine both the fit of the SEM and to explore the predictive abilities of the regressions. The main effects and interactions with race were examined comparing individuals of African descent, Asian Americans, and Hispanic/Latino Americans. (See Figure 1 for a visual representation of constructs). Due to limited existing research directly comparing group differences, no *a priori* hypotheses were generated for the direction of these differences. Any differences that emerged were explored using post hoc tests.

Expanding from Aim 1, the predictors of anxiety symptom severity were explored within each ethnic group.

2) Aim 2 is to explore the effects of context variables, stressors, self-rated mental health, and resources on anxiety symptom severity among those of African descent. This was explored by examining if the relations between the latent constructs in the regression models were significantly moderated by ethnicity. The interactions of the latent constructs with ethnicity, specifically African American and Afro-Caribbean groups, were examined. The NSAL dataset, which contributed the African American and Afro-

Caribbean participants in our sample, contained additional variables not available in NLAAS that contributed to the latent constructs of resources: mastery and self-esteem. The construction and analysis of the model for Aim 2 differed from the model for Aim 1 in that the CFA model constructed included mastery and self-esteem as observed variables contributing to the latent variable of resources. Though this changed the relations between variables, all other constructs from Aim 1 were retained (See Figure 1).

3) Aim 3 is to explore the effects of context variables, stressors, intrapsychic strain, and resources on anxiety symptom severity among those of Asian descent. In Aim 3 context variables, stressors, intrapsychic strain, and resources were entered into the model to predict anxiety symptom severity comparing Asian Americans. Then it was necessary to examine if the relations between the latent constructs in the regression models were significantly moderated by ethnicity (as Asian Americans are all of one race). The interactions of the latent constructs with ethnicity, specifically Vietnamese, Filipino, Chinese, and other Asian subgroups, were investigated. The NLAAS dataset, which contributed the Asian American and Hispanic and Latino participants in our sample, contains additional variables not available in NSAL that contribute to the latent construct of resources (e.g. family cohesion, social cohesion, and family cultural conflict). Table 2 (page 48) contains information related to these supplementary variables. It was necessary to examine how the addition of these new observed variables 1) interacted with the existing latent constructs and 2) interacted with ethnicity. With the exception of the changes detailed above, all other variables from Aims 1 and 2 were retained (Figure 1).

4) Aim 4 is to explore the main effects of context variables, stressors, intrapsychic strain, and resources on anxiety symptom severity among those of Hispanic/Latino descent. Aim

4 considered context variables, stressors, intrapsychic strain, and resources entered into the model to predict anxiety symptom severity comparing Hispanic and Latino Americans. This was explored by examining if the relations between the latent constructs in the regression models were significantly moderated by ethnicity. The interactions of the latent constructs with ethnicity, specifically Cuban, Puerto Rican, Mexican and Other Hispanic and Latino subgroups, were examined. The NLAAS dataset, which contributed the Asian American and Hispanic and Latino participants in our sample, contains additional variables not available in NSAL that contributed to the latent constructs of resources and intrapsychic strain. The construction and analysis of the model for Aim 4 was similar to Aim 3 in that the CFA model constructed included additional resource variables (e.g., family cohesion, social cohesion, and family cultural conflict). Again, it was necessary to examine how the addition of these additional observed indicators 1) interacted with the existing latent constructs and 2) interacted with ethnicity.

Background & Significance

Current knowledge about anxiety presentations in diverse populations is limited to conclusions drawn from population-based studies that often undersample racial and ethnic minority adults. The majority of population-based studies focus on prevalence rates of mental illness and use diagnostic criteria generated through research with predominantly young and middle-aged Caucasian samples (Carmin, Wiegartz, & Scher, 2000). However, the prevalence rates of anxiety disorders among racial and ethnic groups imply that a significant number of adults within these groups are impacted. For example, across Latinos in the National Latino and Asian American Study (NLAAS), 15.7% of adults met criteria for a lifetime anxiety disorder; as expected, the rates varied by subgroup with 21.7% of Puerto Ricans, 14.4% of Cubans, 15.5% of

Mexicans, and 14.1% of Other Latinos (Alegria, Canino, Shrout, Woo, Duan, Vila, Torres, Chen & Meng, 2008) diagnosed with any anxiety disorder. Current one-year prevalence rates indicate distinct differences in generalized anxiety disorder across Caucasians (8.6%), African Americans (4.9%), Hispanic Americans (5.8%) and Asian Americans (2.4%) (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010). Though these data suggest that individuals from racial and ethnic minorities are at a lower risk than Whites, they are still negatively impacted by anxiety.

While there are differences when the population is examined as a whole, some studies suggest that elders from these groups may exhibit similar prevalence rates. Jimenez and colleagues (2010) compared the prevalence rates of anxiety disorders in older Non-Latino Whites (13.5%), Latinos (15.3%), Asians (10.9%), African Americans (11.9%), and Afro-Caribbeans (11.2%) and also demonstrated distinctions. Research with older adults' experiences with anxiety suggests that anxiety symptoms at a subsyndromal level are a unique experience from an anxiety disorder. Older individuals who present with subsyndromal anxiety are different from both those who meet criteria for anxiety disorders and non-anxious older adults (Cohen, Magai, Yaffee, & Walcott-Brown, 2006). However, this subsyndromal anxiety leads to impairment in everyday functioning among older adults. The possibility of including the diagnosis of generalized worry disorder among older adults has been proposed, with reduced time and acknowledgement of behavioral as opposed to only psychological criteria for DSM-V (Andrews, 2010), but further exploration between groups across the lifespan is warranted.

Anxiety symptom severity was particularly important for this group because it is an area that clearly causes impairment, but avoids some of the cultural issues that come with DSM-IV-TR diagnoses (Carmin et al., 2000; Lindsey, 2008; Lewis-Fernandez, Hinton, Laria, Patterson, Hofmann, Craske, Stein, Asnaani, Liao, 2009). In diverse groups, the experience of anxiety

symptoms are concerning on a number of levels. First, anxiety symptoms experienced somatically (e.g. racing heart rate, shortness of breath) can be misinterpreted as other medical conditions (Lewis-Fernandez et al., 2009; Zhang & Snowden, 1999). When individuals seek assistance in primary care or emergency rooms, improper diagnosis and treatment of these symptoms place the individual at risk of iatrogenic complications and do not address the anxiety (Alegría, Chatterji, Wells, Cao, Chen, … & Meng, 2008; Borowsky, Rubenstein, Meredith, Camp, Jackson-Triche, & Wells, 2000; Kim, Morales, & Bogner, 2008).   Second, the individual's response to anxiety symptoms can be both distressing and impairing leading to less productivity, impaired relationships, and potentially greater psychopathology due to later diagnosis (Atdjian & Vega, 2005; Elwy, Ranganathan, & Eisen, 2008).   Given the identified impairment that stems from anxiety symptoms and the questionable applicability of diagnostic criteria, the more dimensional construct anxiety symptom severity (composed of the number of symptoms, the length of time the symptoms were present, and a rating of the distress and impairment the symptoms caused) was applied in the current study.

In order to understand the diversity of anxiety expression across racial/ethnic groups, it was necessary to explore theories surrounding the development of anxiety and the experience of anxiety among diverse populations. The exploration of all types of anxiety disorders was beyond the scope of this dissertation; thus, the primary focus was on severity of symptoms associated with generalized anxiety disorder and subsyndromal levels of anxiety. A lack of research about risk factors that contribute to anxiety symptoms within diverse populations, by race, ethnicity, or age, generates concern about misdiagnosis and possible lack of treatment for these groups. The paucity of empirically supported culturally competent treatments also presents unique challenges for clinicians working with these populations. An additional concern when exploring anxiety is

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the possible comorbidity with depression. While this comorbidity was established in young and middle-aged Caucasian adults, the lack of research among diverse populations precludes consensus regarding such comorbidities. Further complicating this process is the lack of consistency in how racial/ethnic groups are defined in the literature. Some studies distinguish groups only at the large group level (e.g. Asian American) without defining the ethnicities (e.g. Korean, Chinese) of the individuals that comprise the samples. Still other articles describe the ethnicity in limited terms denoting Hispanic when they mean both Hispanic (i.e. origins from the Spanish peninsula) and Latino (i.e. Latin America). Throughout the document the most inclusive terms were used to describe groups and less inclusive terms were used only when the smaller subgroups are indicated.

Conceptualizations of Anxiety Symptom Severity

Anxiety occurs when concerns about stressors or threats are not proportionate to the realistic nature of threat. Individuals attempting to avoid the resulting unpleasant feelings engage both psychological and behavioral strategies to relieve the unpleasantness. However, some of these strategies are maladaptive and can result in the maintenance of anxiety symptoms rather that alleviating the distress. Individual characteristics (e.g. genetics, temperament) interact with environmental factors (e.g. perceived income adequacy, experienced discrimination) (Kessler, Mickelson, & Williams, 1999) to contribute to the experience of anxiety. For anxiety disorders, diagnoses are determined by evaluating the presence or absence of physical and psychological symptoms as defined by diagnostic criteria within the Diagnostic and Statistical Manual of Mental Disorders, (4th ed., text rev.; DSM–IV–TR; American Psychiatric Association, 2000) or the International Classification of Disease, 10th edition (World Health Organization; ICD-10). The individual must meet criteria both in the number of symptoms they experience and the impact of these symptoms on functioning in order to be diagnosed with anxiety. However, assessment instruments developed with young and middle aged Caucasian adults may not accurately reflect symptom presentations in more diverse groups (Street, Salman, Garfinkle, Silvestri, Carrasco, Cardenas, … Liebowitz, 1997). Moreover, previous research has identified that current criteria may not match the experience of diverse patients in the number of symptoms or degree of impairment (Lawrence & Brown, 2009; Lewis-Fernandez, Hinton, Laria, Patterson, Hoffman, Craske, …Liao 2009). The expression of anxiety symptoms in individuals from racial

and ethnic minority groups varies from presentations that were used to develop diagnostic criteria (Lindsey, 2008; Lewis-Fernandez, Hinton, Laria, Patterson, Hofmann, Craske, Stein, Asnaani, Liao, 2009).

Individual perception and health care factors also play a role. For example, the presence of anxiety symptoms does not always lead to perception of need for treatment in the community (Garrido, Kane, Kaas, & Kane, 2009; Mackenzie, Paguar, & Sareen, 2010). In addition, some clinicians may not recognize the degree of impairment engendered by acculturative stress or understand the degree of distress experienced by diverse clientele (Lewis-Fernandez et al., 2009). Individuals who do not map onto existing diagnostic criteria may not be recognized as in need of treatment. Subsyndromal anxiety may accurately describe the distress of those who do not meet the criteria for an anxiety disorder diagnosis due to too few symptoms or failure to meet duration or impairment criteria, but still experience distress. Recognizing subsyndromal experiences of anxiety or presentations that fall into categories such as *anxiety not otherwise specified* allow for the diagnosis and treatment of the individual in distress (Lawrence & Brown, 2009).

This conceptualization of subsyndromal anxiety may provide an initial way to conceptualize the experience of racial and ethnic minority populations who do not meet criteria for anxiety disorder. Street and colleagues (1997) followed the experiences of Hispanic/Latino clients presenting to an anxiety disorders specialty clinic, and found the symptoms of 14% of Hispanic and Latino clients assessed were not adequately captured by current diagnostic criteria. The primary difference in presentation for these clients was in the number of excessive worries with those who met criteria for GAD reporting more worry overall about a larger number of topics (Street, Salman, Garfinkle, Silvestri, Carrasco et al., 1997).

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Introduction to Anxiety Theory

There are a number of theories of anxiety that can be used as a framework to explain the development and maintenance of anxiety and anxiety symptoms. A concise overview is provided as well as an exploration of how the theories might be applied in a multicultural context with diverse adults across the lifespan.

Psychodynamic/Psychoanalytic

One of the earliest explanations of anxiety was developed out of Sigmund Freud's theories about the unconscious. He proposed that wishes and fantasies in the unconscious of which the individual is unaware cause distress. This distress can manifest as anxiety in two forms. The first, traumatic anxiety, occurs when the ego or self experiences danger that is too overwhelming to process. The second type is signal anxiety, which is a less severe form of anxiety that serves as a warning to the ego that psychological danger is approaching (Busch, Milrod, & Shear, 2000). Freud's explanation of psychopathology was that it represented a conflict between the individual's unconscious wishes and socially acceptable thoughts and behaviors (Berzoff, 2011). His more specific conceptualization of anxiety was based solely in the individual's unconscious desires and the internalization of experiences of danger.

Jung expanded upon psychoanalytic theory in his exploration of the collective unconscious or the underlying universal concepts present in everyone's unconscious regardless of culture. Jung described anxiety as dependent on archetypes rather than specific problems of the individual. He expanded on Freud's ideas about unconscious motivations, and included

religious and spiritual needs, and was more egalitarian in considerations of gender. However, like Freud, Jung continued to rely on immeasurable constructs such as the unconscious and internal conflict (Crain, 2005, p346).

Synthesis. Psychoanalytic theory provides for the changing stressors or new signals that occur across the lifespan as the individual ages or faces new cultural challenges such as acculturation. However, there are several difficulties with the application of this theory to the current study. This perspective does not readily lend itself to empirical investigation and does not explain cultural differences in anxiety experiences. Psychodynamic conceptualizations are difficult to explore empirically because they conceptualize anxiety as driven by internal states that are often part of the unconscious. This does not allow for systematic objective assessment of anxiety symptoms and there is no provision for why the expression of symptoms would change across the lifespan or differ by culture. In fact, modern psychoanalytic theorists have acknowledged the difficulty of applying psychodynamic theories across race, class, gender and culture (Berzoff, Flanagan, & Hertz, 2011). Freud's ideas have been argued to be culture-bound and culture- and gender-biased, and they lack a universal application (Crain, 2005, p273-274). In the case of Jung's collective unconscious, the potential existence of certain archetypes may even argue against cross-cultural differences. While this theory provides explanations for a variety of factors that influence symptoms, it does not provide the empirical rigor or cultural adaptability that would explain the differences in predictors of anxiety across diverse groups in the U.S.

Evolutionary or Biological Approaches to Anxiety

Biological approaches to anxiety explain the development of the fear response as a maladaptive way of evaluating or responding to stimuli. This maladaptive response develops out of the fear circuit in the brain as first imaged in animal models. More recent research has built

upon these animal models to examine responses in humans with specific disorders using advanced imaging techniques. For Generalized Anxiety Disorder, two structures are implicated: the amygdala and the medial prefrontal cortex. The exaggerated responses to experimental stimuli seen in individuals with GAD in these studies suggest a starting point for the underlying pathophysiology that corresponds to the psychopathology (Shin & Liberzon, 2009). However, there are several limitations to these studies including the difficulty in drawing cause and effect relationships between neuroanatomy and the existence of the disorder. These studies demonstrate biological correlates of anxiety, but do not explain the development or maintenance of symptoms.

Seyle (1951) proposed the General Adaptation Syndrome (GAS), a model of stress-induced responses to threats. In this theory, developed in animal research, the organism first responds to threats with alarm and then enters a recovery phase. If the threats continue to occur, the organism will eventually become exhausted and unable to respond to environmental demands. The hypothalamic-pituitary-adrenal (HPA) axis is the part of the neuroendocrine system that controls the release of hormones and neurochemicals that underlie the organism's response to stressors. The action of the HPA and the organism's response as proposed by Seyle explain the physiological response to stress. This physiological response can be extended to provide a foundation for our understanding of anxiety.

Synthesis. The majority of research that has been conducted using animal models examining the application of these biological theories to people with anxiety has been assessed in experimental design studies with individuals with psychopathology. While these theories are applicable to humans, they fail to take into account cognitive appraisals, and do not account for the diversity of responses and coping styles at the individual's disposal. This model assumes that

the same physiological response occurs in reaction to all stressors, and does not account for individual variations in coping abilities or allow for varying cognitive appraisals of the event.

In exploring cultural difference, there is little evidence to suggest unique racial or ethnic differences in the biology of anxiety disorders. Genetic variations do exist in the physiological response to and metabolism of medications, but even these differences are not able to explain difference in the development of anxiety (Schraufnagel, Wagner, Miranda, & Roy-Byrne, 2008). When considering a model of anxiety expression in diverse populations, both individual psychological factors and environmental influences should be considered.

Behavioral/Learning

Learning theory would suggest there are a number of pathways through which maladaptive responses could develop (e.g. classical conditioning, vicarious learning, social learning, etc). All of these pathways suggest that a response to anxiety is adaptive in the short term for relieving an individual's distress. However, the response provides escape from or avoidance of the anxiety that does not resolve the underlying threat or stressors. Individual differences in associative learning may explain the development of anxiety disorders in some individuals including genetic and temperamental differences and previous environmental exposure to feared stimuli (Mineka & Oehlberg, 2008). In a review of learning theory of anxiety disorders, Mineka and Oehlberg (2008) posit that the suppression of negative emotional and psychological responses by worrying reinforces the worry (and anxiety).

Synthesis. While this model can account for a myriad of factors that lead to the development of anxiety symptoms, it has limitations within the population of interest. The behavioral or learning theories may be able to address a more diverse sample because they account for a wide variety of cultural experiences with stressors in the development of anxiety

symptoms. For immigrant populations, the new experiences with discrimination or clashes between native culture and adoptive country culture could also be explained within a learning context. However, this model does not explain why different groups develop anxiety at different rates or express symptoms differently. Learning theory does not allow for the formulation of a comprehensive model to explain all the possible predictors including the cognitive components of anxiety. The stimulus response basis of learning theory ignores cognitive appraisals and does not explain variations between racial and ethnic groups. In sum, behavioral/learning theory is not sophisticated enough to account for the interaction between predictors in a comprehensive model of anxiety that includes a myriad of factors that impact those from diverse populations (Mineka & Zinbarg, 2006).

Trait and Interactionist

The conceptualization of anxiety as an individual trait has been proposed by a number of theorists including Freud (1924), Allport (1937), Taylor (1953), and Endler (1997). Trait anxiety includes the processing of external stimuli, internal physiological stimuli, behavior, and cognitions (Mogg, McNamera, Powys, Rawlinson, Seiffer, Bradley, 2000). Trait anxiety reflects a cognitive perspective or a way of processing information. This is in contrast to state anxiety which is related to subjective perceptions of threats in the immediate environment. Trait anxiety, alone or in conjunction with state anxiety, is an individual characteristic that could contribute to the development of anxiety disorders. More recently, state and trait anxiety have been proposed as multidimensional constructs on a continuum. The interactionist perspective proposes that individuals experience both trait and state anxiety, but can vary from low to high on each category. This interactionist idea accounts for the interaction between the individual (trait

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anxiety) and the environment (e.g. stressful situations) and cognitive biases that occur in the interpretation of state experiences can lead to psychopathology (Eysenck, 2000).

Synthesis. The state/trait anxiety perspective provides a framework for the experience of anxiety, but does not necessarily explain the development of anxiety. The interactionist perspective allows for a broader interpretation of the state-trait explanation and better describes how psychopathology might develop. It also highlights how cultural idioms of distress such as "nervious" (Hispanic/Latinos) may develop in specific environments. In essence, this theory posits that differences in information processing account for the differences in anxiety across cultural backgrounds (Alcántara, Abelson, & Gone, 2011). However, neither of these theories yields a comprehensive, culturally competent model to explain the development of an anxiety disorder that lends itself to statistical analysis. Most importantly, there are too few details about how trait-environment interactions and cognitive biases in the interpretation of those interactions actually progress to anxiety. In effect, the underlying theory is important for the current study, but the lack of a comprehensive model that can be empirically tested leaves something to be desired. Most importantly, there are too few details about how trait-environment interactions and cognitive biases in the interpretation of those interactions actually progress to anxiety. Essentially the underlying theory is important for the current study, but the lack of a comprehensive model that can be empirically tested reduces the ability to examine this theory statistically.

Cognitive

The cognitive perspective of anxiety posits that the individual has a faulty appraisal system. Threats are interpreted as more severe by the defective appraisal system, and the individual engages in behaviors that prevent the feared stimulus from occurring. In addition,

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cognitive appraisal can generalize across similar threats. The concept of the faulty appraisal system might explain some variations in experience across individuals and may explain some culture or immigration specific experiences. For example, individuals who have experienced discrimination in the past may expect future interactions with people outside their group to involve discrimination. As suggested by the components of negative problem orientation, or a faulty appraisal of a threat, the individual ruminates about the issues and often engages in catastrophic thinking that intensifies the perceived problem.

In sum, this model posits that anxiety develops from the use of worry as a (maladaptive) coping strategy, and anxiety is intensified by negative appraisals of the worry or unsuccessful attempts to control or stop the worry (Wells, 1995). More recent empirical modeling of cognitive explanations of worry has proposed four essential components: 1) intolerance of uncertainty, 2) positive beliefs about worry, 3) negative problem orientation, and 4) cognitive avoidance (Dugas, Savard, Gaudet, Turcotte, Laugesen, Robichaud, … Koerner, 2007). This model demonstrated differences by age and gender, but did not examine the model across diverse populations. Considering factors related to immigration and acculturation, the cognitive theory would suggest that the individual's perception of a threat (e.g. discrimination) would be intensified by the maladaptive coping mechanism of worry and then perpetuated by attempts to control the worry.

Synthesis. While this theory can explain some of the aspects of anxiety in diverse populations, the cognitive perspective fails to account for the variations in anxiety expression and experience across groups. This theory proposes that cognitive distortions of the individual are the key factors in the experience of anxiety symptoms. This would not explain group differences represented in anxiety prevalence rates, but rather would argue for a more cohesive

expression of anxiety across cultures. For example, the expression of more somatic symptoms (Lenze, Karp, Mulsant, Blank, Shear, Houck, Reynolds, 2005) or the lack of endorsement of psychological or emotional symptoms in older adults (Lenze et al., 2005) and some racial or ethnic groups (Lewis-Fernandez et al., 2009; Zhang & Snowden, 1999) is not explained. While the cognitive theory may capture some of the individual's interpretation of discrimination, or acculturative stress, it may not account for other differences in groups of people in anxiety symptom expression and experiences of psychopathology. A model that accounts for both current environmental perspectives and historical context would aid explanations for group differences in anxiety symptom prevalence.

Cognitive Behavioral

The Cognitive Behavioral explanation of anxiety disorders incorporates elements from both cognitive theory and behavior theory. The cognitive theory of anxiety highlights the individual's faulty appraisal system that interprets threats as more severe. Behavioral theory suggests individual's behavioral responses provide escape from the anxiety but does not resolve the underlying threat or stressors. The cognitive behavioral approach suggests that an individual engages in both strategies to deal with their anxiety. Specifically, it posits both cognitions or thoughts and behavior contribute to and perpetuate anxiety. The dual focus on both cognition and behavior makes the theory more successful than many other theories because it takes into account both faulty cognitive appraisals and their interactions with the environment. This theory might explain some variations in experiences across individuals and may explain some culture-or immigration-specific experiences. For example, individuals who have had a difficult time adjusting to their new environment in the past may expect future interactions with people outside their group to involve discrimination.

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Synthesis. While this theory ameliorates some of the weaknesses of cognitive or behavior theories alone, it still fails to capture the etiology; it is more about symptoms and distortions that perpetuate anxiety. However, cognitive behavioral theory does not account for variations by race or culture. The same issues that emerged from the cognitive and behavior/learning theories are still present. While there are individual differences in cognitive appraisal and behavioral responses, the differences between groups are not explained. Additionally, like other theories, the cognitive behavioral approach does not provide a testable model for the predictors that might contribute to anxiety symptom development.

Theories of Anxiety Summary

Overall, these theories provide us with a basic understanding of the contributing factors that influence the development and maintenance of anxiety. The theories provide us with predictors of anxiety at the individual level based on experiences and interpretations of those experiences, but do not easily lend themselves to statistical tests. However, these theories provide the background for constructing a testable model of anxiety development in diverse populations. It will be necessary to account for culture-specific or immigration-related factors that may be influential for our populations of interest. Several models from the health care services and the stress and coping literatures may be applicable to our populations of interest and allow us to quantify the predictors that influence the development of anxiety symptoms. A key qualification necessary in a model to predict Anxiety Symptom Severity is the ability to accommodate a wide range of predictors that account for an ecological approach that is culturally competent.

Models for Consideration

Andersen

The Andersen Behavioral Model of Health Service Use was developed to explore factors that contribute to an individual's health service use (Andersen & Newman, 1973; Andersen, 1995). The Andersen Model proposes that there are three types of factors that influence health service use: predisposing, enabling, and need. Each type of factor can interact with and influence the other factor(s). This model is helpful because it acknowledges that factors, including outcome variables, can influence and be influenced by variables at other levels (Andersen, 1995). This model has been used with diverse populations (Kimerling & Baumrind, 2005; Hines-Martin, Brown-Pipert, Kim & Malone, 2003) including racial and ethnic minority elders (Bradley, McGraw, Curry, Buckser, King, Kasl, & Andersen, 2002) to predict health care access. More recent iterations of the model have added a fourth factor that examines the influence of race or culture on health service use (Kim, Yang, Chiriboga, Ma, & Schonfeld, 2010; Bradley et al., 2002).

Synthesis. The Andersen Behavioral Model of Health Service Use is attractive for the current study because of its use with diverse populations and its inclusion of psychosocial predictors. However, the model is limited in that this model considers race as a separate factor instead of the interaction of race with the other factors. Additionally, the model predicts health service usage rather than mental health symptoms, which is the focus of the current study.

Lazarus & Folkman

In the Lazarus and Folkman (1984) Stress and Coping Model, stress is the result of an imbalance between demands and resources. There is a transaction between the individual and his/her external environment in which the individual appraises the stressful event. After this appraisal the individual compares the threat with the resources s/he possesses to cope with the threat. There are two forms of appraisals, primary and secondary, which aid the individual in assessing first the emotional threats and then what coping mechanisms can be applied. The emotional threats or demands are appraised and coping resources evaluated in light of the current threat. Coping is characterized by both cognitive and behavioral efforts to manage internal and external pressures that may exceed the individual's current resources. If the individual's appraisal concludes that he or she has adequate resources for coping, then the event is judged to not present a stress. However, if the appraisal reveals deficient coping strategies for dealing with the event then stress may follow. Lazarus & Folkman's (1984) model allows for stress reduction by changing the individual's perception or appraisal of the potential threat and emphasizes recognition of the coping strategies they possess that can be augmented to face the threat.

Ethnicity and culture influence the appraisal process and how coping mechanisms are employed (Aranda & Knight, 1997). The model allows for different coping styles and sources to be taken into account. For example, group identification (e.g. ethnic identity) has been found to be important in the coping process. Specifically, awareness of group identity can lead to a positive appraisal of coping resources. Ethnic identity is related to more positive appraisals and consequently better mental health outcomes for some individuals (Mossakowski, 2003; Yip, Gee, & Takeuchi, 2008). However, it is unknown if individuals from minority groups implement these resources based on group identity (Outten, Schmitt, Garcia, & Branscombe, 2009). While the

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mental health applications of the coping model have explored depression in caregivers for both dementia patients (Haley, Levine, Brown, Bartolucci, 1987) and AIDS patients (Folkman, 1997), this model can be adapted to use mental health as an outcome variable (Folkman, Lazarus, Gruen, & DeLongis, 1986). However, these applications have been limited and may not account for all variables that influence the development of anxiety.

Synthesis. While this model has been considered Eurocentric because of its Western emphasis on the individual's experience of stress and the stress process, others have sought to expand this model with the inclusion of culture relevant dimensions that consider the community or social context (Slavin, Rainer, McCreary & Gowda, 1991). However, the model may not be able to account for the large number of factors proposed to account for culturally competent explanations of anxiety and the interactions of these variables with individual and environmental factors. The model primarily examines the individual's appraisals of threats encountered and the coping strategies used to manage threats. Cultural antecedents such as family cultural conflicts and experiences with discrimination do not adapt well into the existing structure of the model. The Stress and Coping Model may be insufficient to account for difference in coping practices and sources of coping across subgroups of Asian Americans (Chang, Tugade, & Asakawa, 2006). To fully explain the experiences of a diverse group of people it will be important to understand more than just appraisals and coping, but how population specific stressors impact symptom severity.

Folkman

Folkman and Moskowitz (2000; Folkman & Moskowitz, 2003) extended the research of Lazarus and Folkman (1984) to include positive psychological states (e.g. positive affect). This model acknowledges that both positive and negative psychological states can be induced by

caregiving and these states in turn influence coping. This inclusion of both positive and negative psychological states provides a more complete model of the individual's experience (Folkman, 2008). However, Folkman's model focuses on primary events and reactions and may not account for long term interactions between person and environment.

An adaptation of the Stress and Coping Model has been proposed to incorporate the influence of race and ethnic differences in caregivers: The Sociocultural Stress and Coping Model (Hunter & Schmidt, 2010; Knight & Sayegh, 2010; Knight et al, 2000). This model was developed to explain anxiety in African American adults, and posits sociocultural beliefs, attitudes, interpretations, and behaviors that contribute to anxiety symptoms and severity (Hunter & Schmidt, 2010; Knight & Sayegh, 2010; Knight et al., 2000; Aranda & Knight, 1997). This model suggests that the effects of ethnicity are mediated through the appraisals of stress and coping styles (Knight et al., 2000).

Synthesis. While these adapted models may allow for a more complete understanding of coping styles, they still fail to account for key factors related to the research questions. Folkman's extension improves previous theoretical models by being more inclusive in its exploration of coping styles, but ignores intrapsychic factors and resources that the individual receives from internal sources, family, and social support. The Sociocultural Stress and Coping Model improves the cultural competency of the model but does not explore environmental factors such as acculturation, discrimination, or family cultural conflict and is not able to account for these factors over the lifetime (Wolitzky-Taylor, Castriotta, Lenze, Stanley, & Craske, 2010). Finally, research with this model has not been extended to predict mental health outcomes.

While a number of these models may approximate psychological distress through examining stress, they do not go far enough in their adaptation to predicting anxiety symptoms.

Stress and Coping models are a more comprehensive framework for examining factors that contribute to stress, but they have not been used extensively. The opportunity to include sociocultural beliefs is an improvement on other models; however, these models do not predict mental illness outcomes. The Pearlin Stress Process Model is unique in its origins in predicting stress within the dementia caregiving context, but has been expanded and adopted in the mental health arena to provide a culturally competent framework to explore predictors of psychological distress. It has been widely used in the literature with diverse populations including racial and ethnic minority adults, elders and adapted to examine mental health outcomes in these populations.

Pearlin Stress Process Model

The Pearlin Stress Process Model (SPM) provides a theoretical model for the contributions of stressors to the development of anxiety symptoms. While originally proposed as a model of dementia caregiver stress (Pearlin, Mullan, Semple, & Skaff, 1990), the application of this model has been expanded to examine mental health outcomes and mental health disparities in diverse populations (Aneshensel, 2009; Cairney & Krause, 2005; Goode, Haley, Roth & Ford, 1998;Govia, 2009; Katerndahl & Parchman, 2002; Milkie, Bierman, & Schieman, 2008; Noh & Avison, 1996; Ranney & Aranda, 2001; Turner, & Lloyd, 1999).

The SPM allows exploration of multiple groups of predictors (i.e. psychosocial factors, environmental stressors), and the interaction between the groups of predictors, or latent constructs (Hilgeman et al., 2009; Noh & Asovin, 1996). Pearlin's (2010) model provides an ecological approach accounting for the impact of social status on the individual, and has been expanded to include the impact of race and cultural factors (Del Santo, Scharlach, Nielsen, & Fox, 2007; Hilgeman et al., 2009), including chronic stressors associated with immigration (Noh

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& Avison, 1996), discrimination, and psychological distress (Ong, Fuller-Rowell, & Burrow, 2009). The SPM is unique and more complete than other stress models in its inclusion of positive resources of the individual (e.g. mastery) and their environment (e.g. social support) (Noh & Avison, 1996). Pearlin's SPM provides theoretical support for a latent variable model using Structural Equation Modeling (SEM) to test the relations between context variables, and the latent constructs of stressors, intrapsychic strain, and resources predicting anxiety symptom severity.

Pearlin and colleagues acknowledge that the stress process model is not without limitations, noting, "the model should be regarded as an heuristic device rather than as a literal reflection of realities . . . the model, consequently, should be regarded as something to be built upon rather than something to be followed or perpetuated" (Pearlin et al., 1990, p. 591). In the current study, Pearlin's SPM provided a framework for the exploration of anxiety symptom severity in that it allowed for modeling of a number of factors. In order to construct the model for the population of interest, it was necessary to explore the current literature on anxiety in racial and ethnic minority populations. While research has begun to document differences in presentation, little is known about the factors that contribute to anxiety symptom severity in diverse populations, both age and race/ethnicity (Shah, Doe, & Deverill, 2008).

Anxiety Symptoms within Diverse Populations

Distinct differences in anxiety disorder prevalence rates exist among the diverse groups that comprise the U.S. population (Asnaani et al., 2010; Alegria et al., 2008). Initial surveys suggest that individuals from racial and ethnic minority groups may not be as greatly impacted by anxiety as Caucasians. Treatment research has demonstrated that individuals from minority populations are significantly less likely to access treatment for mental health, and the quality of care is often unequal (Alegría, Chatterji, Wells, Cao, Chen, … & Meng, 2008). Individuals from racial and ethnic minority groups also often suffer greater morbidity as they often have more severe symptoms when treatment is accessed (Atdjian & Vega, 2005; Elwy, Ranganathan, & Eisen, 2008). Understanding the risk factors as well as the ecological context of minority mental health can aid in the prevention of distress and impairment as well as improve the cultural competence of care providers and policy makers.

Several distinct issues emerge when we consider differences in the development of anxiety disorders in diverse populations. Race and ethnicity play a role in diagnosis due to cultural factors in assessment, expression and experience of the disorder (Asnaani et al., 2010; Lewis-Fernandez et al, 2009; Hunter & Schmidt, 2010). The emphasis on psychological symptoms in diagnostic criteria on most assessment instruments following DSM-IV-TR criteria may lead assessors not to diagnose those who experience and/or express their anxiety more somatically (Lewis-Fernandez et al., 2009; Zhang & Snowden, 1999) or in culturally distinct ways (Lewis-Fernandez et al, 2010; Lewis-Fernandez et al., 2009). In primary care samples,

physicians are less likely to recognize Hispanic/Latinos or African Americans presenting with anxiety (Borowsky, Rubenstein, Meredith, Camp, Jackson-Triche, & Wells, 2000; Kim, Morales, & Bogner, 2008) compared to European American patients across the lifespan (Kim, Morales & Bogner, 2008).

Measures to assess psychopathology in diverse populations face complications in maintaining relevance to the culture while being comparable across groups (Alegria et al., 2004). Recent efforts to apply standardized instruments to assess anxiety such as the Beck Anxiety Inventory (Chapman, Williams, Mast, & Woodruff-Bordern, 2009) and the Penn State Worry Questionnaire (Carter, Sbrocco, Miller, Suchday, Lewis, & Freedman, 2005) to diverse populations have demonstrated that different factor structures emerge for African Americans compared to European American groups (Chapman, Kertz, & Woodruff-Border, 2009). The results of these factor analyses have implications for the way anxiety symptoms are experienced and expressed across race or ethnic groups, and, consequently, how diagnoses are made.

Racial and ethnic population-specific risk factors and cohort effects have been posited for differences by age group and specific ethnic subgroups. However, anxiety symptoms in racial and ethnic minority adults need to be explored to clarify psychosocial risk factors (Stanley & Beck, 2000) and the interaction of risk factors with race/ethnicity. The majority of research on anxiety in racial and ethnic minorities has explored singular predictors rather than constructing models to account for multiple predictors. Reviewing the literature on known individual risk factors provides guidance for construction of a more integrated model. In the discussion that follows, empirically supported risk factors will be examined by group.

African Descent

African Americans and Afro-Caribbeans in the U.S. endorse anxiety at somewhat lower

rates than their Caucasian counterparts (Breslau et al., 1995). However, individuals of African

descent experience more chronic courses of anxiety (Breslau et al., 2005; Breslau et al., 2006)

with greater functional impairment (Himle, Baser, Taylor, Campbell, & Jackson, 2009). It is also

uncertain if the lower prevalence rate reflects the full experience of anxiety in the population.

Several hypotheses have emerged that may explain why a relatively small number of individuals

with severe presentations of anxiety appear in mental illness epidemiology. It is possible that

individuals of African descent experience less anxiety as a group due to strong coping resources

including personal resiliency (Ryff, Keyes, & Hughes, 2003), religiosity (Lesniak, Rudman,

Rector, & Elkin, 2006), and higher levels of positive affect compared to Caucasians (Brenes et

al., 2008; Chapman & Steger, 2008). Alternatively, researchers have suggested that racial

differences in prevalence may also represent a phenomenological difference in the way African

Americans experience and report distress (Neal & Turner, 1991; Hunter & Schmidt, 2010).

African Americans and Afro-Caribbeans may not present their anxiety symptoms to health care

professionals in the same ways as reference groups that were used to generate current diagnostic

criteria. Therefore, a lack of cultural competence in current diagnostic guidelines may complicate

assessment, diagnosis, and intervention. This is reflected in primary care samples, where

physicians are less likely to recognize anxiety in African Americans compared to Caucasians

(Kim et al, 2008). However, Afro-Caribbeans who originate from Spanish-speaking parts of the

Caribbean demonstrate a greater likelihood of using specialty mental health care (Jackson,

Neighbors, Torres, et al., 2007). The documented presentation of more somatic rather than

cognitive symptoms in individuals of African descent may also impact this process. If anxiety is

experienced and/or expressed more somatically, then the individual may present as distressed about somatic complaints rather than appearing psychologically anxious (Heurtin-Roberts et al., 1997).

Complicating the examination of this group is the concept of African Diaspora, which includes numerous heterogeneous peoples and cultures most often displaced from Africa by forced migrations to the Americas. For example, individuals of African descent can be from Spanish speaking countries such as Puerto Rico, Cuba, and Panama, other groups from the Caribbean Islands, Brazil, or other multiracial people descended from European countries or Black American Indians. The diversity of these people in cultural backgrounds as well as their experiences in the Americas with racial oppression may influence their mental health presentations on levels that have not yet been empirically explored. However, it is important to consider how these factors may influence their presentation of psychological distress. For example, the use of cultural or folk idioms to describe symptoms of anxiety may interfere with communication of distress and impairment between patient and provider (Heurtin-Roberts, Snowden, & Miller, 1997). Other factors influencing reporting of African Americans' anxiety symptoms are the sociocultural influences and stigma surrounding possible mental illness (Johnson, Mills, DeLeon, Hartzema, & Haddad, 2009).

A culturally competent model for anxiety symptom expression in African Americans has been proposed by Hunter and Schmidt (2010). The Sociocultural Stress and Coping Model proposed that African Americans' experience of anxiety is influenced by "fears related to minority status and catastrophic interpretations of specific somatic symptoms" (Hunter & Schmidt, 2010, p213). The influence of racism and discrimination is predictive of lifetime Generalized Anxiety Disorder for African Americans (Soto, Dawson-Andoh, & BeLue, 2010).

This is reflected in research with African American women who identify racism in a social context (Ward & Heidrich, 2009) as a perceived risk factor for mental illness. While this model represents a starting point for developing a culturally relevant model of anxiety, it may not include enough factors to explain the variance seen in the prevalence data.

Asian Americans

Asian Americans are proposed to have the lowest rates of anxiety disorders compared to other racial/ethnic groups in the U.S. (Smith, et al., 2006), though there is some disagreement about the accuracy of this statistic (Sue, Sue, Sue & Takeuchi, 1995). Asian Americans as a group reflect a diverse number of subgroups each with unique characteristics (Sue et al., 1995; Kim, Yang, Atkinson, Wolfe, & Hong, 2001), but previous research has largely examined the group as a whole. Within the Asian American community, differences in prevalence rates have emerged which reflect within group differences. For example, Korean Americans report higher rates of anxiety than Japanese, Chinese, and Vietnamese Americans (Akutsu & Chu, 2006). Differences in symptom presentations also appear based on ethnic subgroups within the larger Asian American population. Early studies conducted with college students placed an emphasis on somatic symptoms, and this presentation was originally generalized to the entire community regardless of ethnicity. However, more recent research demonstrates that somatic presentations, while common in some college students, are not reflective of the experience of anxiety across all 25 subgroups that fall under the Asian American umbrella (Iwamasa & Hilliard, 1999). For example, refugees from Southeast Asia express distress in somatic symptoms (Hsu et al., 2004), but research with Korean immigrants in Canada posits psychological resources are integral to the stress process (Noh & Avison, 1996). Filipino and Korean Americans in the California Health Interview Survey were more likely to report psychological distress symptoms than non-Hispanic

whites (Sorkin, Nguyen, & Ngo-Metzger, 2010). Culture-specific anxiety disorders are also common in Asian American groups and may be of particular importance for recent immigrants and older adults. See Hinton, Park, Hsia, Hofmann, and Pollack (2009) for a review of culture-bound anxiety disorders.

In examining the factors that contribute to anxiety symptoms, Asian Americans as a group are poorly understood. The following have been proposed as variables that may predict anxiety at the group level: discrimination (Gee, Spencer, Chen, Yip, & Takeuchi, 2007a), acculturation (Salant, & Lauderdale, 2003), social status (Leu et al., 2008; Jimenez et al., 2010), family cohesion (Gee et al., 2007a), self-rated physical health (Gee et al., 2007a), and family cultural conflict (Lau, Fung, Wang, & Kang, 2009). The influence of marital status appears to work through the larger construct of family composition in that men and U.S. born Asians may benefit from extended family contacts in the U.S. (Walton & Takeuchi, 2010). Discrimination experiences in Asian Americans are related to increased risk for poor mental health, and increased risk for anxiety disorders specifically (Gee et al., 2007a) across ethnicities. Differences in social standing based on income also vary greatly across subgroups, and this social status could impact the individual's experiences with discrimination. Other factors that have been explored in more detail are acculturation and cultural conflict.

Factors related to acculturation are hypothesized to play a role in the development of psychological distress and anxiety. In Asian American college students, acculturative stress demonstrates a strong relation with risk for poor mental health (Hwang & Ting, 2008). Higher rates of social anxiety in Asian Americans are thought to be a product of cultural conflict between collectivist cultural values and the emphasis placed on individual emotional experiences by Western culture (Lau et al., 2009). The relation between acculturation and mental health

outcomes is mediated by a number of variables including factors related to intergenerational status and family conflict (Suinn, 2010). Additional factors related to poor psychological adjustment in Chinese American young adults include conflicts with and feelings of alienation from parents due to pressure to succeed and language barriers (Qin, Way, & Mukherjee, 2008; Suinn, 2010). Limited English proficiency (LEP) has been consistently documented as a risk for poorer mental health in Asian Americans (Sorkin et al., 2010, Kim et al., 2011a, Kim et al., 2011b), and Asian American men may be particularly at risk (Takeuchi, Zane, Hong, Chae, Gong, Gee, Walton, Sue, & Alegría, 2007).

It is imperative that researchers explore comparisons within the unique cultures that compose Asian Americans. In developing a comprehensive framework of predictors of anxiety symptoms in Asian Americans and subgroups that comprise Asian Americans, it will be important to consider the social or environmental influences that have been identified in previous research as well as individual factors (Hinton, Park, Hsai, Hofmann, & Pollack, 2009).

Hispanic Americans

Hispanics and Latinos in the U.S. account for the largest minority population; however, their mental health needs are underserved. National prevalence studies provide conflicting results about the prevalence rates of anxiety disorders in Hispanic and Latino Americans (Breslau et al., 2006; Hernandez, Plant, Sachs-Ericsson, & Joiner, 2005; Lopez & Guarnaccia, 2000). One reason for the discrepant findings is the within-group diversity of this ethnic group, as anxiety prevalence rates differ between the numerous diverse subgroups that compose the Hispanic/Latino population in the U.S. (Alegria et al., 2007). Recent research has also identified differences in the number of individuals with anxiety by immigration status (Alegria et al., 2008; Breslau, Borges, Hagar, Tancredi, & Gilman, 2009). The immigrant paradox, or the idea that

individuals who immigrate to the United States experience lower risks for mental illnesses

(Alegria et al., 2008; Breslau et al., 2009), suggests that environmental factors impact anxiety

experiences (Markides & Eschbach, 2005).

A number of factors have been proposed to explain the increased psychological risk in

Hispanics and Latinos in the U.S., including family factors (e.g., (lack of) family support, family

cultural conflict, marital status; Mulvaney-Day, Alegría, & Sribney, 2007); and social and

environmental factors (e.g. neighborhood factors, perceived discrimination, unemployment,

perceived lower social status; Alegria et al., 2007). Ethnic identity adherence can promote

positive mental health outcomes (Mossakowsi, 2003; Sellers, Caldwell & Schmeelk-Cone, &

Zimmerman, 2003), but can also interact with the environment in negative ways (e.g.,

discrimination; Hwang & Goto, 2008; Operario & Fiske, 2001; Perez, Fortuna, & Alegria, 2008,

minority status, perceived racism; Alamilla et al., 2010). Lower income has been shown to be a

protective factor (Alegria et al., 2007) due to its facilitation of social cohesion.

Acculturation

Acculturation in Asian and Hispanic populations has been explored with regard to a

number of mental health variables with mixed results. However, these studies have been

criticized for significant measurement error (Salant & Lauderdale, 2003), and in some cases

variations in how acculturation is defined (Rudmin, 2009). Acculturation is a multidimensional

construct assessed through a number of measures (Salant & Lauderdale, 2003), and variations in

assessment may explain the differences between studies (Rudmin, 2009; Thomson & Hoffman-

Goetz, 2009). Though controversial in its division, Berry's model of acculturation suggested that

four orientations can emerge from interactions between the individual's traditional culture and

the host or dominant culture (Berry, 1980). Regardless of the methods used, if the individual

experiences distress as a result of the acculturation process or the acquisition of a second culture, this has implications for mental health outcomes (see Koneru, Weisman de Mamani, Flynn & Betancourt, 2007 for a review). Immigrants who internalize acculturative stress interpret this stress as more threatening and are at a greater risk for poor mental health outcomes in general (Hovey, 2000a; Hovey & King, 2000; Hovey 2000b; Alamilla, Kim, & Lam, 2010), and an increased risk for anxiety specifically (Hovey & Magana, 2002). The negative outcomes from acculturative stress are not inevitable as they can be mediated by social support (Hovey & Magana, 2002; Lee, Koeske, & Sales, 2004). Related to the acculturative stress experience, conflicting results about the impact of immigration have been presented. The immigrant paradox, or the idea that individuals who immigrate to the United States experience lower risks for mental illnesses (Alegria et al., 2008; Breslau et al., 2009), suggests that environmental impacts may be key to understanding differences in anxiety experiences. This may be at least partially related to a selection bias in that only the healthiest individuals immigrate (Markides & Eschbach, 2005).

Some individuals also experience distress as a result of the acculturation process or the acquisition of a second culture (Koneru, Weisman de Mamani, Flynn, & Betancourt, 2007). The process of acculturation is stressful, but for some individuals, interactions between the individual's traditional culture and the host or dominant culture (Salant & Lauderdale, 2003;Thomson, & Hoffman-Goetz, 2009) have a negative impact on mental health outcomes (Alamilla, Kim, & Lam, 2010; Hovey, 2000a; Hovey & King, 2000; Hovey 2000b; Koneru et al., 2007), and increase risk for anxiety specifically (Hovey & Magana, 2002). Immigrants who internalize acculturative stress interpret this stress as more threatening and are at a greater risk for poor mental health outcomes (Alamilla et al., 2010; Hovey, 2000a; Hovey & King, 2000; Hovey 2000b; Ortega et al., 2000; Hovey & Magana, 2002).

The conflict between higher rates of acculturative stress in immigrants and the immigrant paradox may be explained by exposure to U.S. culture and years in the U.S (Breslau, Aguilar-Gaxiola, Borges, Kendler, Su, & Kessler, 2007). Comparison studies show U.S. migrant workers have a higher risk of psychiatric issues compared to their family members who remain in Mexico (Breslau et al., 2011). However, there may be a cohort or age effect at work, as Latino elders who immigrated to the U.S. have higher lifetime prevalence rates of anxiety disorders compared to U.S. born Latinos (Jimenez et al., 2010). While risk and protective factors have been established, the cumulative effect of these factors and the way race/ethnicity moderates these relations is poorly understood.

The immigrant paradox does not hold true for all ethnic groups or subgroups (Alegria et al., 2008). For example, U.S. born Mexicans experience greater risk for anxiety disorders than recent immigrants from Mexico, but there is no difference in Puerto Ricans by nativity (Alegria et al., 2008). Differences may also emerge based on cohort effects (Jimenez et al., 2010; Breslau, Borges, Tancredi, Saito, Kravitz, Hinton, et al., 2011), and by reason for migration (e.g. refugee status). The conflict between higher rates of acculturative stress in immigrants and the immigrant paradox may be explained by exposure to U.S. culture and years in the U.S (Frisbie, Cho & Hummer, 2001). For example, research with college students has suggested that acculturative stress and ethnic identity are related to psychological distress (Walker, Wingate, Obasi, & Joiner, 2008), and anxious symptoms specifically (Joiner & Walker, 2002) among African Americans (Anderson, 1991). Research suggests that African Americans experience temporal acculturation indicating that they have lived in the U.S., but in moving from primarily African American communities to more integrated communities, they experience acculturative stress (Koneru, Mamani, Flynn, & Betancourt, 2007). For Afro-Caribbeans living in the United States, the risk

of mental health problems varies by immigration status as well as age and gender. First generation Afro-Caribbeans have lower overall risk, but second and third generation individuals exhibited markedly higher risk of mental health problems (Williams, Haile, González, Neighbors, Baser, & Jackson, 2007). Also of note, U.S. born Afro-Caribbeans are more likely to seek services compared with those who immigrated to the U.S. (Jackson, Neighbors, Torres, Martin, Williams, & Baser, 2007).

There are also differences by gender. U.S. born Asian American women have higher rates of anxiety disorders than female immigrants (Takeuchi et al 2007). For men, English proficiency was more important than immigration status in predicting anxiety disorders, with greater proficiency reducing the rate of anxiety in the sample (Takeuchi, Zane, Hong, Chae, Gong, Gee, Walton, Sue, & Alegría, 2007). Acculturative stress and immigration status, however, cannot explain predictors of anxiety symptom severity across racial and ethnic groups and elders.

Individual, Family, and Ethnic/Cultural Identity Influences

Though the research on factors that contribute to anxiety in ethnic and racial minority populations is limited, individual, family and ethnic/cultural identity factors have been proposed to contribute to psychological distress and may generalize to anxiety symptom severity. Ethnic identity adherence can promote positive mental health outcomes (Mossakowsi, 2003; Sellers, Caldwell & Schmeelk-Cone, & Zimmerman, 2003), but the impact varies with age (Yip, Gee, & Takeuchi, 2008), and the environment (e.g., discrimination, Perez, Fortuna, & Alegria, 2008; Hwang & Goto, 2008; Operario & Fiske, 2001). Social status and social support also influence psychological distress for Asian immigrants and U.S. born Hispanics (Leu et al., 2008; Jimenez et al., 2010; Min, Moon, & Lubben, 2005; Masood, Okazaki, & Takeuchi, 2009). Factors related to the stressors of minority status and

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perceived racism have been shown to correlate with psychological distress, including symptoms of

anxiety (Alamilla et al., 2010). Considering the influence of these cultural and environmental level

factors on the individual's experience of anxiety, it is necessary to explore our aims using a

comprehensive framework.

Proposed Model and Analyses

Pearlin's (2010) SPM provides an ecological approach accounting for the influence of social status on the individual, and has been expanded to include the impact of race and cultural factors (Del Santo, Scharlach, Nielsen, & Fox, 2007; Hilgeman et al., 2009), including chronic stressors associated with immigration (Noh & Avison, 1996), discrimination, and psychological distress (Ong, Fuller-Rowell, & Burrow, 2009). A unique aspect of the Pearlin SPM is the inclusion of factors that have the potential to provide positive supports for the individual. Pearlin's SPM provides theoretical support for a latent variable model using structural equation modeling (SEM) to test the relations between context variables, and the latent constructs of stressors, intrapsychic strain, and resources predicting anxiety symptom severity.

Using the Pearlin Stress Process Model, the current study explored a comprehensive framework to expand our understanding of the unique and shared experiences of diverse individuals experiencing anxiety symptoms. The Pearlin Stress Process Model was assessed for fit using SEM for comparison across racial groups and then within groups. The interaction with race/ethnicity was also explored. Though the sample included Caucasians, they were not included in analyses due to the extensive literature available on their experiences with anxiety. Instead, the current study focused on groups that are underrepresented in the literature, and the study contributes to our understanding of predictors of anxiety symptoms and severity in racial and ethnic minority adults. Documented differences in the cultural expression of anxiety (Alegria et al., 2004; Alegria et al., 2008; Alegria et al., 2007; Alegria, Canino, Shrout, Woo, Duan, Vila,

… Meng, 2008; Asnaani et al., 2010; Heurtin-Roberts et al., 1997; Iwamasa & Hilliard, 1999; Hsu et al., 2004; Noh & Avison, 1996; Sorkin, Nguyen, & Ngo-Metzger, 2010) was the impetus for the current study to examine anxiety symptoms on a severity continuum rather than as a dimensional construct such as a specific diagnostic category. This allowed for an examination of risk in individuals who were experiencing anxious distress rather than limiting analysis only to those individuals meeting criteria for a diagnosis that may not be culturally relevant. To clarify individual and environmental stressors that disproportionately impact racial and ethnic minorities in the U.S, Pearlin's SPM was employed as a framework. This dataset provides a unique opportunity to explore how this model applies to those of African descent, Asian Americans, and Hispanic/Latino Americans and the subgroups that comprise these groups across the lifespan.

Utilizing nationally representative epidemiological data, the variables of interest from The National Survey of American Life (NSAL) (Jackson, et al., 2004), and the National Latino and Asian American Study (NLAAS) (Alegria, Takeuchi et al., 2004) were selected for individuals from the following groups: African American (n=3,570), Afro-Caribbean (n=1,438), Vietnamese (n=520), Filipino (n=508), Chinese (n=600), Other Asian (n=467), Puerto Rican (n=495), Cuban (n=577), Mexican (n=868), and Other Hispanic (n=797). These datasets are uniquely suited to inform the current study because they contain questionnaires that assess Axis I diagnostic criteria, and for this study, anxiety specifically, as well as measures of individual (e.g. self-rated physical health, English Proficiency), social (e.g. family social support, religious attendance), and environmental (e.g. discrimination) risk and protective factors. The Pearlin Stress Process Model provided theoretical support for a latent variable model using SEM to test the relations between context variables, and the latent constructs of stressors, intrapsychic strain, and resources predicting anxiety symptom severity.

Descriptive statistics were calculated to aid our understanding of population characteristics and differences between the racial groups.

Statistical Analyses

In the current study, SEM was used to estimate the predictive ability of the latent variables and context variables across groups with relation to Anxiety Symptom Severity. For each of the four aims the following steps were conducted. The relations between latent variables were first estimated using AMOS version 17 (SPSS, Chicago, IL). The model was then tested using confirmatory factor analysis (CFA) with the latent and observed variables. After assessing the Chi-square values and other model fit statistics (e.g. CFI & RMSEA), the estimates generated from this CFA were saved in SPSS 17.0 (SPSS, Chicago, IL), and centered and standardized following Aiken and West's (1991) recommendations. Then the latent constructs were used to estimate regression models representing the proposed paths in the adapted model. Context variables (e.g. race, age, gender, education) were entered into the model individually because it did not make sense to construct a latent variable from these context variables.

The proposed paths in the adapted model could not be easily explored using SEM, because of the proposed interaction between the latent constructs. Interaction effects are not traditionally calculated in SEM. Exploring these proposed relationships between latent constructs in the model required including interaction effects through the use of a technique called the "latent variable approach" (Joreskog, 2000). Unlike more traditional structural equation modeling techniques (i.e., a multiple regression path model), the current study estimated the values for each latent construct and then examined the potential interactions among these variables (i.e., estimates for the latents) using regression analyses in SPSS. This method is preferred to the traditional way of predicting pathways because it allows for interactions in SEM,

which is not otherwise possible in AMOS. An ANOVA was performed to explore racial and ethnic differences in the estimates of the latent constructs.

To address Aim 1, context variables, self-rated mental health and the latent constructs of stressors, and resources were entered into the model to predict anxiety symptom severity comparing individuals of African descent, Asian Americans, and Hispanic/Latino Americans. It was necessary to examine both the fit of the SEM and to explore the predictive abilities of the regressions. The main effects and interactions with race were examined comparing groups. Individuals with greater stressors, fewer resources, and worse self-rated mental health were hypothesized to have greater anxiety symptom severity (See Figure 1 for a parsimonious visual representation of constructs). Due to limited existing research directly comparing group differences, no *a priori* hypotheses were generated for the direction of these differences. Any differences that emerged were explored using post hoc tests.

Figure 1. Pearlin Stress Process Model

***Context Variables

Gender	Education	Race

Physical Health

Discrimination

Stressors

*** Context influenced Stressors, Mental Health, and Resources

English Proficiency

Time Out of Role

Self-Rated Mental Health

Anxiety Symptom Severity

Number of Symptoms

Duration of Symptoms

Distress & Impairment

Marital Status

Objective Social Status

Resources

Religious Attendance

Ethnic Identity

To test Aim 2, context variables, self-rated mental health and the latent constructs of stressors and resources were entered into the model to predict anxiety symptom severity comparing individuals of African descent. This was explored by examining if the relations

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between the latent constructs in the regression models were significantly moderated by race/ethnicity. The interactions of the latent constructs with ethnicity, specifically African American and Afro-Caribbean groups, were examined. The NSAL dataset, which contributed the African American and Afro-Caribbean participants in our sample, contained additional variables not available in NLAAS that contributed to the latent constructs of resources: mastery and self-esteem. The construction and analysis of the model for Aim 2 differed from the model for Aim 1 in that the CFA model constructed included mastery and self-esteem as observed variables contributing to the latent variable of resources. Though this changed the relations between variables, all other constructs from Aim 1 were retained (See Figure 1).

In Aim 3 context variables, stressors, intrapsychic strain, and resources were entered into the model to predict anxiety symptom severity comparing Asian Americans. Then it was necessary to examine if the relations between the latent constructs in the regression models were significantly moderated by ethnicity. The interactions of the latent constructs with ethnicity, specifically Vietnamese, Filipino, Chinese, and other Asian subgroups, were investigated. The NLAAS dataset, which contributed the Asian American and Hispanic and Latino participants in our sample, contains additional variables not available in NSAL that contribute to the latent construct of resources (e.g. family cohesion, social cohesion, and family cultural conflict). It was necessary to examine how the addition of these new observed variables 1) interacted with the existing latent constructs and 2) interacted with ethnicity within Asian Americans. With the exception of the changes detailed above, all other variables from Aims 1 and 2 were retained (Figure 1).

Aim 4 considered context variables, stressors, intrapsychic strain, and resources entered into the model to predict anxiety symptom severity comparing Hispanic and Latino Americans.

This was explored by examining if the relations between the latent constructs in the regression models were significantly moderated by ethnicity. The interactions of the latent constructs with ethnicity, specifically Cuban, Puerto Rican, Mexican and Other Hispanic and Latino subgroups, were examined. The NLAAS dataset, which contributed the Asian American and Hispanic and Latino participants in our sample, contains additional variables not available in NSAL that contributed to the latent constructs of resources and intrapsychic strain. The construction and analysis of the model for Aim 4 was similar to Aim 3 in that the CFA model constructed included additional resource variables (e.g., family cohesion, social cohesion, and family cultural conflict). Again, it was necessary to examine how the addition of these additional observed indicators 1) interacted with the existing latent constructs and 2) interacted with ethnicity within Hispanic and Latino Americans.

In order to describe the differences between groups as well as within groups, four models were proposed for investigation. Testing each of the four hypotheses allowed for an examination of the unique factors that contribute to anxiety symptom severity as well as the moderating effect of race/ethnicity for those of African descent, Asian Americans, and Hispanic and Latino Americans across the lifespan. There was limited previous research on the factors that contribute to anxiety symptom severity in diverse populations and little to no research on models of the interactions of these factors by race/ethnicity. Using the Pearlin model as a theoretical framework, individual predictors were selected based on their significant contributions in previous research for inclusion in the model. Though the interactions between latent constructs and the moderating factor of race/ethnicity are unknown, it was hypothesized that these models would contribute to the literature by demonstrating potential differences between groups and within subgroups. For example, the results may show that resources may be an important

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predictor for individuals of African descent, but analysis by racial or ethnic subgroup may reveal that it is especially important for African Americans compared with Afro-Caribbean adults. Regardless, analyzing multiple models between and within racial/ethnic groups allowed us to explore the differences between groups as well as within groups.

Methods

Participants

Participants included non institutionalized adults compiled from data from two surveys from the CPES dataset: The National Survey of American Life (NSAL) (Jackson, et al., 2004), and the National Latino and Asian American Study (NLAAS) (Alegria, Takeuchi et al., 2004). The sample contained the following racial and ethnic groups: Vietnamese, Filipino, Chinese, Other Asians, Cuban, Puerto Rican, Mexican, Other Hispanics, Afro-Caribbean, African-American, and Non-Latino Whites (Heeringa, Wagner, Torres, Duan, Adams, & Berglund, 2004). Due to the redundancy of exploring factors that contributed to anxiety disorders in Non-Latino Whites, they were omitted and the focus was on racial and ethnic minority adults. The final analyses included 7,959 individuals based on response rates to the variables of interest and the inclusion criteria of race/ethnicity. Figure 2 displays the percentages of the sample by ethnicity.

Figure 2. Sample by Ethnicity
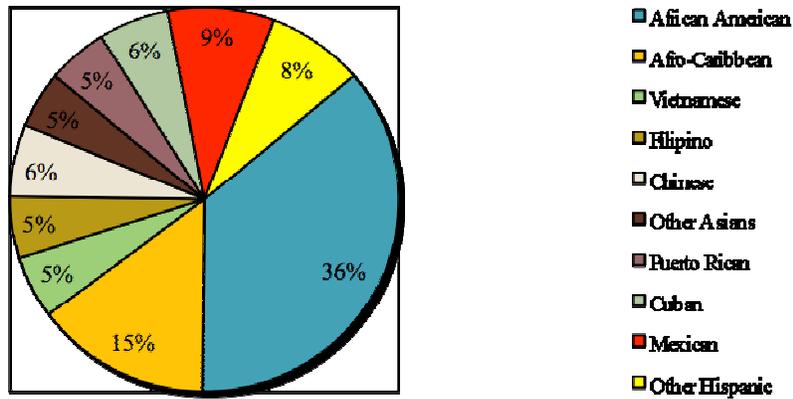
Measures

Each questionnaire included across the two surveys contained a number of instruments related to demographic factors and health status, and a core questionnaire that was derived from the World Health Organization's Composite International Diagnostic Interview (CIDI). Notably, respondents were matched linguistically to interviewers in the study and were provided the opportunity to respond to the questionnaires in their preferred language. Table 1 displays the composition of both the National Survey of American Life and the National Latino and Asian American Survey. For information about the development of the surveys, collection procedures, and questionnaire adaptation for use with racial and ethnic minority populations including translation into languages other than English, please see Pennell, Bowers, Carr, Chardoul, Cheung, Dinkelmann, Gebler, Hansen, Pennell, and Torres (2004).

Table 1. NSAL and NLAAS Study Information

National Survey of American Life (NSAL)	National Latino and Asian-American Study of Mental Health (NLAAS)
African-Americans, and Afro-Caribbean	Latino and Asian Americans
6,199 Total African-Americans (3,570) Afro-Caribbean descent (1,623)	4649 Total Latinos (2,554) Asian Americans (2,095)
• Modified SCID • World Mental Health Composite International Diagnostic Interview (WMH- CIDI) • Psychological distress and mental disorders • Neighborhood characteristics, religion, health, and work.	• Modified WMH-CIDI
English only	English, Spanish, Chinese, Vietnamese, or Tagalog

Following the Pearlin Stress Process Model, the observed variables defined below were included in the model. When appropriate, the observed variables were grouped by the latent constructs that they comprised. Table 2 provides information about measurement of the variables including origins of the scale (when appropriate), scale of measurement, range of possible responses, and potential number of participants. Additionally, some variables are not available in both surveys due to the population surveyed. Specifically, the NLAAS survey contained questions related to acculturation and nativity that were not asked in the NSAL. As indicated in Aim 3 and Aim 4, additional observed variables available to contribute to the latent constructs were included. These variables are identified in Table 2 and in the text that follows.

Table 2. Indicator Variables and Latent Constructs

Variables	Scale (if applicable)	Response options (range)
		Context Variables
Age	Self-Report	Possible range 18-99.
Race/Ethnicity	Self-Report	Response Options for included variables: Cuban, Puerto Rican, Mexican, Other Hispanics
Gender	Self-Report	Response options: male or female
Education	Self-report	Response options on a 4 item Likert-type-type scale: 1= 0-11years, 2=12 years, 3=13-15 years, 4= 16 years or greater
		Stressors (Latent Variable)
Time Out of Role	WHO Disability Assessment Schedule (WHO-DAS)	Calculated score from self-reported that estimated the number days they experienced out of their usual roles. Possible range of 0 to 100.*Higher scores indicate greater impairment
Years in U.S.	Self-report	The number of years in the U.S. variable is categorized into 5 groups: 0= U.S. Born, 1= Less than 5 years, 2=5-10 years, 3=11-20 years, 4=20 or more years.
English Proficiency	Self-report	Individuals rate themselves on a 4 point Likert-type-type scale: 1=Poor, 2=Fair, 3=Good, 4= Excellent.*Lower scores indicate lower levels of proficiency
Experiences with Discrimination (Appendix A)	Everyday Discrimination (ED) : The scale measures frequencies of discrimination experiences.	Respondents rate the frequency of their experiences with a 6 point scale ranging from: 1= Almost every day, 2=At least once a week, 3=A few times a month, 4=A few times a year, 5=Less than once a year, 6=never *Higher scores indicate fewer incidents of discrimination
	Perceived Discrimination(PD) This scale measures perceptions of events as they relate to discrimination experiences	Respondents rate the frequency of experiences with response options ranging from: 1=Often, 2=Sometimes, 3=Rarely, 4=Never. *Higher scores indicate fewer incidences of perceived discrimination.
self-Rated Physical Health	Self-Report	Self-rated physical health on a 5 point Likert-type scale ranging from: 1=Excellent, 2=Very good, 3=Good, 4=Fair, 5=Poor. *Higher scores indicate worse physical health perception

Intrapsychic Strain (Latent Construct)		
Self-Rated Mental Health	Self-Report	One item scale of self-rated mental health on a 5 point Likert-type scale ranging from: 1=Excellent, 2=Very good, 3=Good, 4=Fair, 5=Poor. *Higher scores indicate worse mental health perception
Acculturative Distress	The Acculturative Distress Scale is an 8-item scale assessing the individual's experiences after immigration.	Individuals rate their distress on a dichotomous scale for each question with responses: yes or no. *Higher scores indicate greater distress
Resources (Latent Construct)		
Ethnic Identity	A three-item scale composed of questions asked to determine the extent to which respondents identified and shared time or feeling with members of their ethnic group.	Response options vary by question, but all are on a 4 point Likert Scale. Response options include: 1=Very Close/A Lot, 2=Somewhat Close/Somewhat, 3=Not Very Close/A Little, 4=Not at All Close/None * Lower scores indicate greater identification with one's ethnic group
Marital Status	Self-Report	Collapsed into the following categories: 1=married/cohabitating, 2 =divorced/ separated/widowed, 3=never married
Objective Social Status	Self-Report	Individuals were asked to report income and then a percentage was calculated comparing the total to poverty level in the US *Higher scores indicate higher levels of objective social status.
Religious Attendance	Self-report	Possible response options include frequency of religious service attendance on the following scale: 1=>1x/week, 2=about 1x/week, 3=1-3x/month, 4=<1x/month, 5=never
Family Support	The family support scale is a 3-item scale that assesses how much an individual thinks they can rely on family members.	Responses range from: 1=Most Everyday, 2=A few times a week, 3=A few times a month, 4=1x/ Month, 5=<1x/month *Higher scores indicate less family support
Family Cohesion	This scale contains 3 items from the Family Adaptability and Cohesion Evaluation Scales (Olson, 2004).	Respondents are asked to rate their agreement on a 4 point scale ranging from: 1=Strongly Agree, 2=Somewhat Agree, 3=Somewhat Disagree, 4=Strongly Disagree. *Higher scores indicate less family cohesion

Social Cohesion	Adapted from Sampson, Raudenbush, and Earls' (1997), the UNOCCAP questionnaire (NIMH, 1994), and Bearman, Jones, and Udry, (1997).	This four item scale asks respondents to rate their agreement on a 4 point scale ranging from: 1=Very True, 2=Somewhat True, 3=Not Very True, 4=Not True at All (Possible Range 4-16) *Higher scores indicate less social cohesion
Family Cultural Conflict	This scale measures the frequency of cultural and intergenerational conflict within families.	This 5 item scale asks respondent to indicate frequency. The response options range from: 1 =Hardly Ever or Never, 2=Sometimes, 3 =Often * Higher scores indicate greater conflict.
Outcome Variable: Anxiety Symptom Severity (Latent Construct)		
Number of Symptoms	Self-Report	For each symptom respondents indicated if they had experienced the symptom in their worse month when they felt worried/anxious/ nervous. Responded with yes or no. The symptoms were aggregated into a count variable
Duration of Symptoms	Self-Report	Participants reported how long their symptoms lasted and the variable was recalculated to indicate the number of days symptoms were experienced
Impairment	Self-Report	Participants reported the how much anxiety interfered with their functioning.

Context variables. Context variables as defined by Pearlin are antecedents to the stress process that characterize the influence of individual differences and the outcomes of stress. In the current study, age, race/ethnicity, gender, occupational status, and education were included.

Age. Respondent in the sample reported ages ranging from 18 years to 97 years. This variable was treated as continuous throughout the analyses. The mean age of the sample was 42.36 (SD=15.77). For mean age of each group see Table 3.

Table 3. Descriptive Statistics for the Entire Sample by Race/Ethnicity

	Asian American	Hispanic/Latino American	African Descent
Gender (% Female)	52.6%	57.3%	65.8%
Age M(SD)	41.55(± 15.02)	40.94 (± 15.69)	43.66 (± 16.04)
Education (% H.S. or Less)	32.3%	62.8%	58.1%
Marital Status (% married/cohabitating)	70.6%	62.0%	37.5%
Self-Rated Physical Health M(SD)	2.51(± 1.02)	2.72(± 1.12)	2.76(± .98)
Self-Rated Mental Health M(SD)	2.10(± 1.01)	2.22(± 1.04)	2.29(± .99)
Time out of Role M(SD)	5.90(± 1.87)	1.03(± 2.61)	1.52 (± 3.00)
Everyday Discrimination M(SD) Range 9-54	47.08 (± 6.63)	47.35 (± 7.41)	42.99 (± 7.95)
Ethnic Identity M(SD) Range 3-12	5.1 (±1.81)	5.06(± 1.88)	**
Acculturative Distress M(SD) Range 1-9	2.28 (±1.42)	2.59 (±1.79)	**
Perceived Discrimination M(SD) Range 3-12	9.88(± 2.11)	9.68(± 2.31)	**

Race/Ethnicity. The race/ethnicity variable was collected by self-report and was available for all participants. Respondents were collapsed into 11 racial or ethnic groups

including African American (n=2,733), Afro-Caribbean (n=1,047), Vietnamese (n=460), Filipino (n=475), Chinese (n=343), Other Asian (n=410), Puerto Rican (n=456), Cuban (n=519), Mexican (n=814), and Other Hispanic (n=703). Race/ethnicity was used as a moderator in the analyses in two distinct ways. First, in the analysis for Aim 1 the groups were collapsed into three race categories (e.g. Asian American, Hispanic/Latino, and African Descent). In Aims 2-4, race/ethnicity variables were created that included each of the subgroups (i.e. Asian Ethnicity contains Vietnamese, Filipino, Chinese, and Other Asians).

Gender. This variable was also collected by self-report. For the entire sample, 60.3% (n=4,801) of participants responded as female.

Education. Educational status was assessed using a 4-item Likert scale with the following categories: 1= 0-11years, 2=12 years, 3=13-15 years, and 4= 16 years or greater. Across race and ethnic groups, 54.1 % (n=4,309) of respondents reported high school education or less.

Stressors (Latent Construct). In the current study, the following were included as the observed variables that compose the latent construct of stressors: role impairment, ethnic identity, number of years in the U.S., discrimination and physical health. Ethnic identity is related to psychological functioning with individuals who describe race as part of their central identity having better psychological functioning (Sellers, Caldwell & Schmeelk-Cone, & Zimmerman, 2003; Operario & Fiske, 2001; Utsey, Giesbrecht, Hook, & Stanard, 2008). English proficiency was included in the model analysis. Limited English proficiency (LEP) has been shown to be a barrier to mental health service for racial and ethnic minority adults (Kim, Worley, Allen, Vinson, Crowther, Parmelee, & Chiriboga, 2011; Kang et al., 2010). The impact of perceived discrimination varies by ethnic subgroup and immigration status, and negatively

impacts health (Perez, Fortuna, & Alegria, 2008; Hwang & Goto, 2008; Gee, 2008; Williams, Neighbors, & Jackson, 2008). Everyday discrimination was available for all respondents. Perceived discrimination is available only for the NLAAS dataset and was included in the models for the Asian American and Hispanic and Latino subgroup analysis of Aim 3 and Aim 4. Self-rated physical health was available for all respondents and was included in all models. Physical health status was important because of its link to somatic expressions of anxiety, as well as the link between medical comorbidities and role disability with anxiety disorders in older adults (Flint, 2009). The accumulation of everyday stressors also places an individual at risk for psychological distress (Neighbors, & Jackson, 2008). Ethnic identity was not available for the Afro-Caribbeans and was included only in the analyses for Aims 3 and 4.

Time out of role. The time out of role subscale of the WHO Disability Assessment Schedule (WHO-DAS) was used to assess the impact that the respondent's health problems in aggregate had on their role functioning in the past 30 days. Scores ranged from 0 to 100 with a mean of 12.4 and a standard deviation of 28.41 indicating that individuals experienced a range of disability.

Years in the U.S. The number of years in the U.S. was categorized into 5 groups: 1= Less than 6 years, 2= 6-10 years, 3=11-20 years, 4=20 or more years, and 6= U.S. Born. In the sample, 54.3% reported being U.S. Born, and, of those who reported immigrating to the U.S., 17.8% reported living in the U.S. 20 years or more.

English proficiency. The current study assessed English proficiency with a single question that asked the individual to assess his or her own ability to speak English. The question wording varied slightly between data sets (NSAL, NLAAS). Participants from NLAAS were asked, "How well do you speak English? (Would you say poor (1), fair (2), good (3) or excellent

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(4)?)" In the NSAL, participants were asked, "How well do you feel that you speak English? Would you say not at all (1), a little (2), somewhat (3), well (4), very well (5)?" For consistency, the responses from the NSAL were collapsed to match the NLAAS so that "not at all (1), a little (2)" were collapsed to match the NLAAS as seen in Table 4.

Table 4. English Proficiency Question Equivalence

NLAAS	NSAL	Final
poor (1),	not at all (1), a little (2)	poor (1)
fair (2)	somewhat (3)	fair (2)
good (3)	well (4)	good (3)
excellent (4)	very well (5)	excellent (4)

Final responses were on a 4-point Likert scale with responses ranging from 1 (Poor) to 4 (Excellent). Lower scores indicated lower levels of proficiency and 44.3% of the sample indicated that their English speaking ability was poor or fair.

Self-rated physical health. Self-rated physical health was assessed with a one-item self-report measure using a 5-point Likert-type scale ranging from 1 (Excellent) to 5 (poor). Respondents indicated if they perceived their physical health to be excellent (12.1%), very good (32.0%), good (32.5%), fair (18.1%), or poor (4.4%). The mean for the sample was 2.70 (±1.04).

Experiences with discrimination. The dataset included a number of variables related to experiences with discrimination, with two subscales: everyday discrimination and perceived discrimination. The Everyday Discrimination scale was derived from the Detroit Area Study (DAS), (Jackson, Williams, & Torres, 1995; Williams, Yu, Jackson, & Anderson, 1997) and measures frequencies of discrimination experiences with a 6 point scale ranging from 1= Almost Every day to 6=Never. Higher scores indicate fewer incidents of discrimination. The 9-items

assess how often the respondent or their friends are disliked or treated unfairly because of their race/ethnicity. The Everyday Discrimination scale was available for both the NLAAS dataset and the NSAL dataset. The Perceived Discrimination subscale was adapted from a measure of acculturative strain by Vega and colleagues (1993), and was only available for the NLAAS dataset. This scale also measures frequency of experiences with response options ranging from 1=Often to 4=Never. This 3-item scale measures the frequency of unfair treatment as experienced by the respondent. Higher scores indicated fewer incidences of perceived discrimination. Table 5 provides both scales.

Table 5. Experiences with Discrimination Scales

Perceived Discrimination	**Everyday Discrimination**
Respondents rate the frequency of experiences with response options ranging from: 1=Often, 2=Sometimes, 3=Rarely, 4=Never.	Respondents rate the frequency of their experiences with a 6 point scale ranging from: 1= Almost every day, 2=At least once a week, 3=A few times a month, 4=A few times a year, 5=Less than once a year, 6=never
1. Disliked due to race 2. Treated unfairly due to race 3. Seen friends treated unfairly	1. Frequency treated with less courtesy than others 2. Frequency treated with less respect than others 3. Freq receive poorer restaurant service than other 4. Freq people act like you are not smart 5. Freq people act afraid of you 6. Freq people act like you are dishonest 7. Freq people act better than you 8. Frequency called names/insulted 9. Frequency threatened/harassed

Intrapsychic strain. (Latent construct). Intrapsychic strain describes the internal impact of stressors on how the person perceives the challenges in the environment. For example, immigrants adapting to their new homeland experience stressors related to acculturation that can

impact quality of life and possibly contribute to the development of anxiety. This construct (self-rated mental health and acculturative distress) was calculated for Aims 3 and 4 and not Aims 1 and 2 due to missing data for the acculturative distress variable in the African Descent group. Aims 1 and 2 only used the observed variable of self-rated mental health.

Self-Rated Mental Health. The respondents' perceptions of their current mental health were assessed using a single item in which the individual was asked to rate his/her mental health on a 5-point Likert-type scale ranging from 1 (Excellent) to 5 (Poor). Respondents indicated if they perceived their mental health to be excellent (27.8%), very good (34.7%), good (26.2%), fair (9.5%), or poor (1.7%). The mean of the sample was 2.23 (±1.01), indicating good to fair mental health. This variable was used both as in independent predictor in Aims 1 and 2 and with acculturative distress as part of the intrapsychic strain latent construct in Aims 3 and 4.

Notably, self-rated mental health is a complex phenomenon and the validity of its application in a research context is complicated by several factors. First, because the variable is based on individual perception, the rating is completely reliant on the individual's assessment of his or her own global mental health. Second, the validity of this variable is also complicated by the honesty of the individual who provides the rating in the research context. Numerous studies that have highlighted self-rated mental health as a variable to approximate mental illness identify both strengths and weaknesses of the variable (Zuvekas & Fleishman, 2008) and differences between racial and ethnic groups (Kim et al., 2011c). For the purposes of this study, it is critical to note that self-rated mental health is not *equivalent* to anxiety but indicative of the individual's perception of psychological distress (Fleishman & Zuvekas, 2007). Self-rated mental health alone is not a sufficient tool to screen for mental illness (Fleishman & Zuvekas, 2007); however,

there are strong correlations between poor self-rated mental health and mental illness (Mawani &

Gilmour, 2010).

Acculturative Distress. Distress related to acculturation was measured with a scale

adapted from the Hispanic Stress Inventory and the Mexican American Prevalence and Services

Survey (MAPSS) (Vega et al., 1998). Individuals rated their distress on a dichotomous scale with

responses of yes and no. A summary scale score variable was created and higher scores

indicated greater distress. This variable was only included as part of the Intrapsychic Strain

construct in Aims 3 and 4.

Resources (Latent construct). A unique aspect of the Pearlin Stress Process model was

the inclusion of factors that have the potential to provide positive supports for the individual. In

the current study, resource variables included marital status, perceived social status, and religious

coping. International studies have demonstrated that marital status reduces the risk of mental

disorders in both men and women (Scott, Wells, et al., 2009). For Asian immigrants and U.S.

born Hispanics, perceived social status contributed to the risk of poor mental health (Leu et al.,

2008; Jimenez et al., 2010). Religious coping as a protective factor has been demonstrated with

African Americans (Lesniak, Rudman, Rector, & Elkin, 2006), and Hispanics (Alegria et al.,

2007). For Korean immigrant elders and Southeast Asian adults, social support is related to

psychological distress (Min, Moon, & Lubben, 2005; Masood, Okazaki, & Takeuchi, 2009).

Family conflict and family cohesion can impact the relation between discrimination and anxiety

in Chinese American individuals. Specifically, family conflict inflates the negative effects of

discrimination, and family cohesion can reduce its impact (Juang & Alvarez, 2010). In Aim 2

(NSAL), mastery or control over life domains, and self-esteem were included in the analysis. In

Aims 3 and 4 (NLAAS), family support, family cohesion, family cultural conflict, and social

cohesion were included in the analysis.

   Martial Status. Marital Status was included in the analysis using the following collapsed

categories 1=married or cohabitating (52.2%), 2=divorced/separated/widowed (23.0%), and

3=never married (24.8%).

   Ethnic Identity. A single item was used to measure the degree to which individuals

identified with members of their ethnic group. Lower scores indicated greater identification with

one's ethnic group. There were significant differences by ethnic group (χ^2 (6) =98.43, p<.001),

with Asian Americans indicating less identification than Hispanic/Latinos. This variable was

only available in the NLAAS dataset and only included in Aim 3 an Aim 4.

   Perceived social status. Objective social status was measured by a poverty measure

constructed through an income-to-needs ratio according to the definition provided by the U.S.

Census Bureau (2002). This measure was calculated from the federal poverty threshold and

incorporated family size and household income. Greater values indicate greater financial

resources.

   Religious Attendance. Religious attendance was assessed using self-report questions

related to the frequency of attendance in religious services. In the NSAL, this 7-item measure

assessed church attendance using the following scale: 1 = multiple times per week, 2 = once per

week, 3 = 1-3 times per month, 4= less than once a month, 5 = a few times a year, 6 = less than

once per year 7 = never. In the NLAAS, this was assessed with a 5-item measure using the

following scale: 1= more than once a week, 2 = about once a week, 3 = one to three times a

month, 4 = less than once a month, and 5 = never. The two questions were combined to create

the following scale: 1 = more than once per week, 2 = about once per week, 3 = 1-3 times per

month, 4 = less than once per month, 5 = few times per year, 6 = less than once per year, 7 = never.

Mastery. The Pearlin-Schooler Mastery Scale (1978), a 7-item self-report scale, asked individuals to rate statements indicating the amount of control they felt over life domains. Participants rated items on a scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree) with statements such as "There is really no way I can solve some of the problems I have." Higher scores indicated a greater sense of control. This scale was only available in the NSAL, and was included in Aim 2 examining African American and Afro-Caribbean respondent's experiences of anxiety.

Self-Esteem. The Rosenberg Self-Esteem Scale (1965), a 10-item scale that assesses self-esteem, asked the respondent to indicate agreement with statements such as "I feel that I am a person of worth, at least on an equal plane with others." Response options range from 0 (Strongly Disagree) to 3 (Strongly Agree). Though some of the items are reverse scored, higher scores indicated greater self-esteem. This scale was only available in the NSAL, and was included in Aim 2 examining African American and Afro-Caribbean respondent's experiences of anxiety.

Family Support. The family support scale included 3-items assessing how much an individual thinks he or she can rely on others. For example, "How often do you talk on the phone or get together with family or relatives who do not live with you?" This scale asked about how much individuals think they can rely on family members. Responses range from 1 (Most every day) to 5 (Less than once a month). Higher scores suggest less family support. This scale was only available in the NLAAS, and was included in Aim 3 and Aim 4.

Family Cohesion. This scale contained 3 items from the Family Adaptability and Cohesion Evaluation Scales (Olson, 2004), and included statements such as "Family members like to spend free time with each other." Respondents were asked to rate their agreement on a 4 point scale ranging from 1(Strongly Agree) to 4 (Strongly Disagree). Lower scores indicated more cohesion between family members. This scale was only available in the NLAAS, and was included in Aim 3 and Aim 4.

Family Cultural Conflict. The Family Cultural Conflict Scale, a 5 item-subscale of Hispanic Stress Inventory (Cervantes et al 1990, 1991), measured the frequency of cultural and intergenerational conflict with families. The response options ranged from 1 (Hardly Ever) to 3 (Often) with higher scores indicating greater conflict. This scale was only available in the NLAAS, and was included in Aim 3 and Aim 4.

Social Cohesion. The measure of social cohesion was adopted from Sampson, Raudenbush, and Earls' (1997) survey work, the Mental Health Use, Needs, Outcomes, and Cost in Child and Adolescent Populations (UNOCCAP) questionnaire (NIMH, 1994), and a questionnaire used in the National Longitudinal Study of Adolescent Health, entitled "Add Health " (Bearman, Jones, & Udry, 1997). This 4-item scale asked respondents to rate their agreement on a 4-point scale ranging from 1 (Very True) to 4 (Not at All True) on questions such as "People in this neighborhood generally get along with each other." Higher scores indicated less social cohesion. This scale was only available in the NLAAS, and was included in Aim 3 and Aim 4.

Measure of Anxiety (Latent Construct). The World Health Organization's Composite International Diagnostic Interview (CIDI) was used to assess both DSM-IV and ICD-10 classifications of mental disorders. This assessment is proposed to be culturally competent and

has demonstrated overall good classification accuracy with clinical interviews with Latinos and Asian Americans (Alegria, et al., 2004; 2009). For the current study, the focus was on anxiety symptom severity rather than diagnosis and the number of symptoms variable was combined with duration of symptoms and distress and impairment to create the latent construct anxiety symptom severity.

Number of Symptoms. As part of the CIDI assessment, individuals were asked if they had a month or more in the past 12 months in which they felt worried, tense or anxious. Individuals who responded yes were asked subsequent questions about the symptoms they experienced (Carter et al., 2001; Garrido et al., 2009). For each symptom, respondents indicated if they had experienced the symptom in their worst month when they felt worried/anxious/nervous. The symptoms included difficulty concentrating, irritability, restlessness, sleep problems, feeling tense or experiencing muscle soreness, and feeling tired. In the current study, the endorsement of symptoms in the follow-up questions was used to calculate the number of symptoms endorsed for each respondent. A number of symptoms variable ranging from 0 to 6 was created by counting the symptoms individuals endorsed.

Duration. Previous research exploring subsyndromal levels of anxiety has highlighted the importance of the length of worry in racial and ethnic minority populations and elders. In the CIDI, respondents endorsed the length of their anxiety episodes across four levels of worry: 1 month, 3 months, 6 months, and 1 year (Carter et al., 2001; Garrido et al., 2009). The current study converted all values to days, and the data was not normally distributed. Due to skew, the variable was adjusted using Log base 10 to correct for normality.

Distress and Impairment. The subjective rating asked participants to report how much anxiety interfered with their functioning. Participants responded to "How much emotional

distress did you ever experience because of your [(worry/or/anxiety/or/nervousness)] - no

distress (1), mild distress(2), moderate distress(3), severe distress(4), or very severe distress(5)?"

Data Analyses

Structural equation modeling (SEM) is a way of using different types of statistical models to represent relations among observed variables. It allows us to test theoretical models using quantitative means. First, SEM allows us to hypothesize how sets of observed variables define constructs. Observed variables are directly measured (e.g. rating of family social support, income) and latent constructs are not directly measured but inferred to represent larger ideas (e.g. resources the individual has at his/her disposal). SEM infers latent constructs from the observed variables that comprise them and then performs calculations using matrices that allow us to explore how the constructs are related to each other. When we examine the calculations in aggregate we can make inferences about how well our theoretical model represents or explains what is observed in our population of interest.

To explore how well Pearlin's theoretical stress process model predicts anxiety symptom severity in our population(s) of interest, data analyses were conducted in four phases. First, preliminary analyses were conducted and descriptive statistics were obtained to determine whether the data met the basic assumptions of SEM (e.g. normal distribution). Second, SEM techniques were used to create a confirmatory factor analysis (CFA) on the proposed model. AMOS 17.0 and maximum likelihood estimates were used for CFA models and to calculate goodness-of-fit statistics. In addition, Root Mean Square Error of Approximation (RMSEA; ≤ 0.5), and Comparative Fit Index (CFI; >0.9) were used to assess model fit. The CFA model had the following latent variables: Stressors, Intrapsychic Strain, Resources, and Anxiety

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Symptom Severity (See Figure 1, p 41). If the fit statistics were poor, or other problems arose with the model (e.g. not positive definite models), modification indices were used to adapt the model. A model is not positive definite if there are problems in the covariate matrix used to calculate the results. This can occur if a variable has a linear combination with other variables, collinearity, negative or zero variances, etc.

For all Aims, the "latent variable approach" (Joreskog, 2000) was used to estimate the values for each latent construct. Then, potential interactions were examined among the variables (estimates for the latent constructs) using regression in SPSS. Context variables were not combined into one latent construct, but instead included in each regression equation with interaction terms of the latent constructs and race. Post-hoc tests including simple slopes plots allowed for examination of the significant interactions.

Aims and Hypotheses

The current study provides an exploration of a comprehensive model to expand our understanding of the unique and shared experiences of diverse individuals experiencing anxiety symptoms.

1) Aim 1 is to explore the effects of context variables, stressors, self-rated mental health, and resources on anxiety symptom severity. Both the main effects and interactions with race/ethnicity were examined comparing those of African descent, Asian Americans, and Hispanic/Latino Americans. Figure 1 reflects this proposed model. The main effects and interactions with ethnicity were examined comparing groups. Individuals with greater stressors, fewer resources, and worse self-rated mental health were hypothesized to have greater anxiety symptom severity (See Figure 1 for a visual representation of constructs). Due to limited existing research directly comparing group differences, no *a priori*

hypotheses were generated for the direction of these differences. Any differences that emerged were explored using post hoc tests.

Expanding from Aim 1, the predictors of anxiety symptom severity were explored within each race or ethnic group.

2) Aim 2 is to explore the effects of context variables, stressors, self-rated mental health, and resources on anxiety symptom severity among those of African descent. The main effects and interactions with race (subgroups) were examined comparing African Americans and Afro-Caribbeans. Additional variables of interest were included in the model for Aim 2, including self-esteem (resources) and mastery (resources).

3) Aim 3 is to explore the effects of context variables, stressors, intrapsychic strain, and resources on anxiety symptom severity among those of Asian descent. The main effects and interactions with ethnicity were examined comparing Vietnamese, Filipino, Chinese and Other Asian groups. Additional variables of interest were included in the model for Aim 3, including family cohesion (resources), social cohesion (resources), family cultural conflict (resources), mastery (resources), and self-esteem (resources). Table 2 (page 48) contains information related to these supplementary variables.

4) Aim 4 is to explore the main effects of context variables, stressors, intrapsychic strain, and resources on anxiety symptom severity among those of Latino descent. The main effects and interactions with ethnicity were examined comparing Cuban, Puerto Rican, Mexican and Other Hispanic groups. Additional variables of interest were included in the model for Aim 4: family cohesion (resources), social cohesion (resources), family cultural conflict (resources), mastery (resources), and self-esteem (resources).

In order to describe the differences between groups as well as within groups, four models were proposed for investigation. Testing each of the four hypotheses allowed us to examine the unique factors that contribute to anxiety symptom severity as well as the moderating effect of race/ethnicity for those of African descent, Asian Americans, and Hispanic and Latino Americans across the lifespan. There is limited previous research on the factors that contribute to anxiety symptom severity in diverse populations and little to no research on models of the interactions of these factors by race/ethnicity. Using the Pearlin model as a theoretical framework, individual predictors were selected based on their significant contributions in previous research for inclusion in the model.

Though the interactions between latent constructs and the moderating factor of race/ethnicity are unknown, it was hypothesized that these models will contribute to the literature by demonstrating potential differences between groups and within subgroups. For example, the results may show that resources may be an important predictor for Asian Americans overall and analysis by racial or ethnic subgroup may reveal that it is important for Chinese adults, but not for Vietnamese adults. Alternatively, self-rated mental health may be important for individuals of African descent but may not predict Anxiety Symptom Severity for Hispanic and Latino Americans. Regardless, analyzing multiple models between and within racial/ethnic groups will allow us to explore the differences between groups as well as within groups.

Results

Aim 1 Results Across Broad Racial/Ethnic Groups

Participants. Participants included 7,960 adults, age 18 and older from the following racial groups: individuals of African descent (n=3,780, 47.5%), Asian Americans (n=1,688, 21.2%), and Hispanic/Latino (n=2,492, 31.3%). Table 3 (page 60) displays descriptive statistics for the sample by these three large ethnic group categories. The differences between groups are indicated by the chi-square and significance values included in the text.

Measurement model fitting. The measurement model was tested though a CFA using AMOS 17.0. The proposed CFA for the model had poor fit with a χ^2 (41) =15064.86, p<.001, CFI=.416, and RMSEA =.215. All items were found to be significantly loaded on the corresponding latent constructs, except for religious attendance (p=.237). Using the modification indices, the CFA model was adapted to achieve a better fitting model by allowing error terms to crossload. This adapted model (Figure 3) attained the following fit statistics χ^2 (37) =1360.26, p<.001, CFI= .949, and RMSEA =.067 which suggested that it is an acceptable fit. Table 6 below displays regression weights for the final model.

Figure 3. Aim 1 Adapted CFA
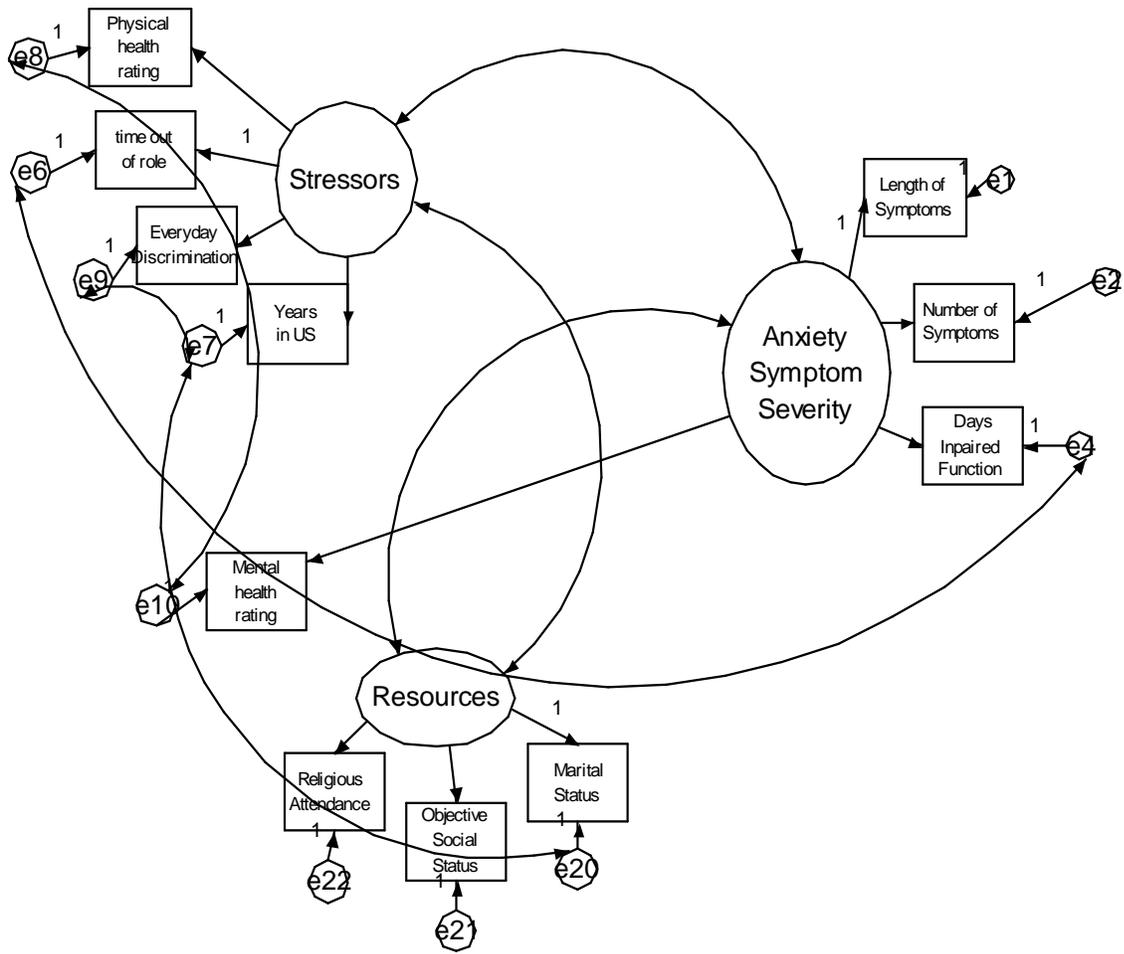
Table 6. Aim 1 CFA Regression Weights Adapted

			Estimate	S.E.	C.R.	P
Length of Symptoms	<---	Anxiety Symptom Severity	1.000			
Number of Symptoms	<---	Anxiety Symptom Severity	2.323	.046	49.983	***
Days of Impaired Functioning	<---	Anxiety Symptom Severity	2.054	.121	16.975	***
Self-Rated Physical Health	<---	Stressors	.028	.001	20.765	***
Role Impairment	<---	Stressors	1.000			
Marital Status	<---	Resources	1.000			
Objective Social Status	<---	Resources	-5.573	.501	-11.121	***
Religious Attendance	<---	Resources	.106	.090	1.184	.237
Everyday Discrimination	<---	Stressors	-.141	.009	-16.201	***
Number of Years in the U.S.	<---	Stressors	.031	.002	16.571	***
Self-Rated Mental Health	<---	Anxiety Symptom Severity	.367	.018	20.112	***

*** indicates significance <.001

Regression analyses examining interactions with race. To address the primary aim, three

regression models were used to test the relations between latent constructs in the modified

Pearlin Model with race as a moderator. In the original Pearlin model, resources are seen to

moderate the relation between self-rated mental health and outcomes. As indicated in Figure 1,

context was entered into each regression model and resources was entered as both a main effect

and a moderator in regressions 1 through 3, such that the first model predicted stressors from

context with race as a moderator. An interaction term representing the main effect of race as well

as the interaction of race with the individual context variables was created.

Results from the first regression predicting stressors from context variables revealed that

the model was significantly able to predict variations in stress (F [5, 7959] =75.42, p<. 001).

Significant main effects for race, age, years of education, and gender predicted variability in

stressors (See Table 7). Younger adults, women, and those with less education experienced

greater stressors. Race was also a significant predictor of stressors. Individuals of African

descent experienced significantly more stressors than Asian Americans or Hispanic/Latinos.

Hispanic/Latinos experienced significantly greater stressors than Asian Americans.

Table 7. Aim 1 First Regression-Stressors

Step 1	B	SE	ß	T	Sig.
Age	-.003	.001	-.046	-4.156	.000
Education	-.067	.011	-.073	-6.399	.000
Gender	.224	.023	.110	9.936	.000
Asian American	-.364	.029	-.149	-12.374	.000
Hispanic/Latino	-.112	.025	-.052	-4.401	.000

Note. R^2=.045   Darkened lines highlight significance

The second regression model predicting self-rated mental health from context variables,

stressors, resources, race X stressors, race X resources and resources X stressors revealed that the

model was significant (F [12, 7959] = 94.909, p<.001 (See Table 8). There were significant main

effects for age, education, gender, race, stressors, and resources. Specifically, older adults,

women, and those with less education experienced poorer self-rated mental health. In exploring

the main effects of race, post hoc analyses revealed that individuals of African Descent

experienced significantly worse self-rated mental health compared to Asian Americans. Asian

Americans experienced significantly better self-rated mental health than Hispanic/Latinos. Those

who endorse greater stressors and more resources experienced worse self-rated mental health

(the variable is coded so that greater values indicate poorer mental health). In addition, race

moderated the relation between stressors and self-rated mental health for Asian Americans. The

level of stressors impacts Asian American self-rated mental health more compared with other

groups as seen in Figure 4. There was not a significant race by resources interaction or stressors

by resources interaction.

Table 8. Aim 1 Second Regression- Self-Rated Mental Health

Step 1	B	SE	ß	T	Sig
Context					
Age	.008	.001	.132	12.066	.000
Education	-.150	.011	-.163	-14.264	.000
Gender	.096	.022	.047	4.405	.000
Asian	.093	.031	.038	3.020	.003
Hispanic/Latino	-.026	.025	-.012	-1.023	.306
Stressors					
Stressors	.197	.020	.197	9.961	.000
Stressors X Asian	.108	.036	.041	2.971	.003
Stressors X Hispanic/Latino	.034	.026	.021	1.330	.183
Resources					
Resources	.058	.021	.058	2.839	.005
Resources X Asian	-.019	.030	-.010	-.629	.529
Resources X Hispanic/Latino	.018	.029	.010	.606	.545
Resources X Stressors	-.002	.011	-.002	-.188	-.851

Note. R^2=.125

Figure 4. Aim 1 Interaction of Stressors and Race on Self-Rated Mental Health
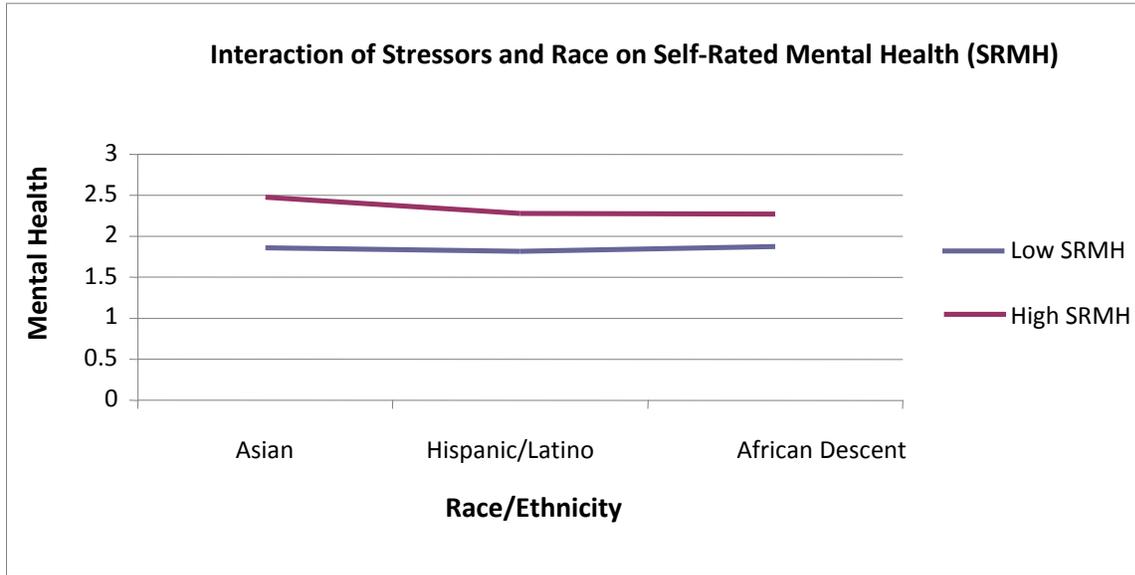
The third regression model predicting anxiety symptom severity from context variables, self-rated mental health, resources, race X self-rated mental health, race X resources, and resources X self-rated mental health revealed that the model was significant ($F[12, 7959]$ =110.681, p<.001). There were significant main effects for race, education, gender, resources, and self-rated mental health. Specifically, those with more education, women, more resources, and worse self-rated mental health reported higher levels of anxiety symptom severity (See Table 8). In examining race, post hoc analyses revealed there were significant differences between groups. The African Descent groups had significantly worse anxiety symptoms compared to Asian Americans. Asian Americans experienced less anxiety symptom severity compared to Hispanic/Latinos. Hispanic/Latinos had significantly greater anxiety symptom severity compared to individuals of African descent. Race moderated the relation between self-rated mental health and anxiety symptom severity (Figure 5) in that self-rated mental health was more

important for Asian Americans and Hispanic/Latinos compared to African descent. Race also

moderated the relation between resources and anxiety symptoms (Figure 6). Resources were

significantly more important for individuals of African Descent's anxiety symptoms compared to

Asians. There was also a significant resources X self-rated mental health interaction.

Table 9. Aim 1 Third Regression-Anxiety Symptom Severity

Step 1	B	SE	ß	T	Sig
Context					
Age	.000	.001	-.011	-1.015	.310
Education	.049	.010	.053	4.674	.000
Gender	.084	.022	.041	3.883	.000
Asian	-.051	.030	-.021	-1.692	.091
Hispanic/Latino	.198	.025	.092	7.920	.000
Self-Rated Mental Health					
Self-Rated Mental Health	.134	.017	.134	8.090	.000
Self-Rated Mental Health X Asian	.072	.029	.033	2.476	.013
Self-Rated Mental Health X Hispanic/Latino	.102	.025	.059	4.178	.000
Resources	.330	.018	.330	17.845	.000
Resources X Asian	-.189	.027	-.104	-6.891	.000
Resources X Hispanic/Latino	-.052	.027	-.028	-1.938	.053
Resources X Self-Rated Mental Health	.114	.011	.114	10.192	.000

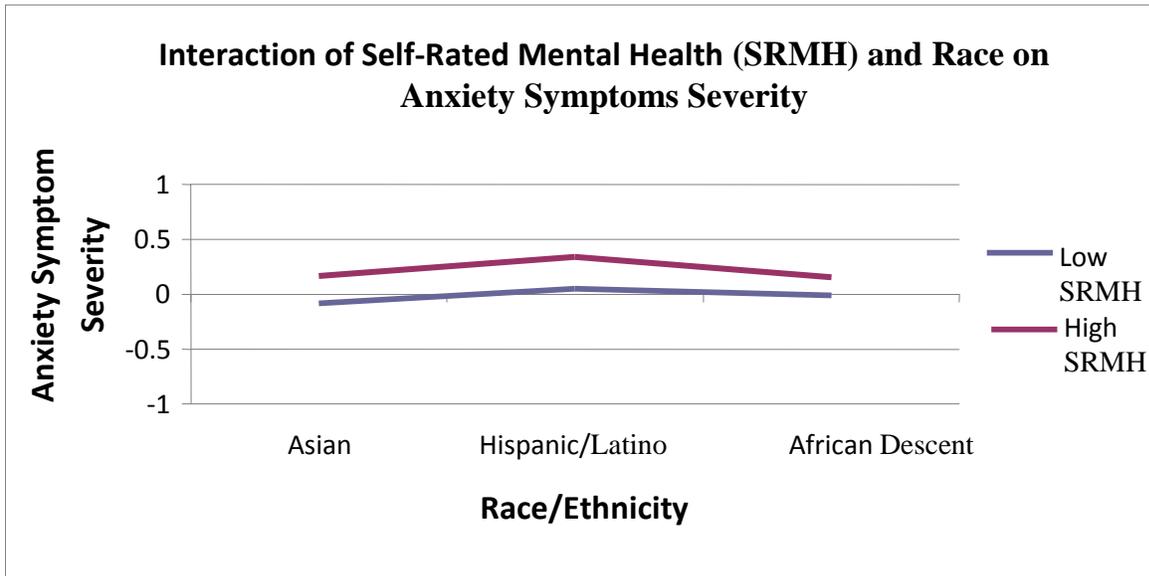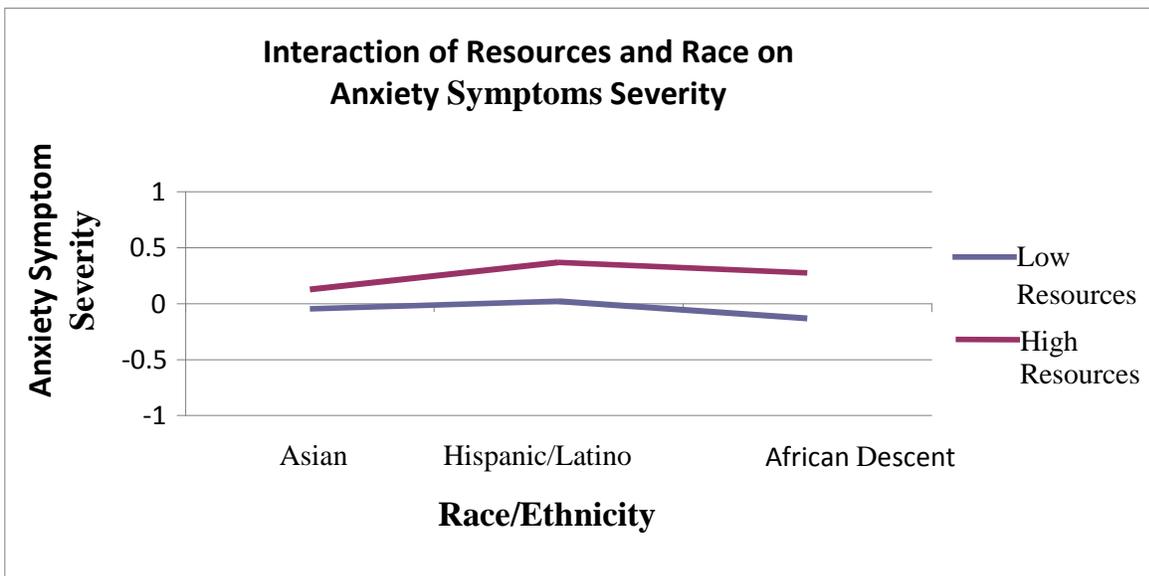Figure 5. Aim 1 Interaction of Self-Rated Mental Health and Race on Anxiety Symptom Severity

Figure 6. Aim 1 Interaction of Resources and Race on Anxiety Symptom Severity

Aim 1 Discussion

Using the Pearlin model as a theoretical framework, individual predictors were selected based on their significant contributions in previous research for inclusion in the model. These observed variables were used to create the latent constructs of stressors, resources and the outcome construct of anxiety symptom severity as provided by the Pearlin model. The primary research question was to examine how racial and ethnic groups vary in the factors that contribute to anxiety symptom severity. To answer this question it was necessary to examine how race moderated the relation between latent constructs to predict anxiety symptom severity. It was hypothesized that these models would contribute to the literature by demonstrating potential differences between groups. The follow-up analyses in Aims 2, 3, and 4 were hypothesized to explore between subgroup difference analyses.

As proposed, the observed variables were combined to create the latent constructs, but the initial model displayed a poor fit. Structural equation modeling allows for the calculation of modification indices, which can inform the addition of pathways between variables in the model to improve model fit. The proposed model was adapted to make a better fitting model. This was largely accomplished by allowing the observed variables to cross-load. For example, self-rated physical health and self-rated mental health showed a strong relation, though they were proposed to contribute to different latent constructs in the model. Allowing these variables to cross-load improved model fit.

After the initial SEM produced an adequate fitting model, the estimates of the latent constructs obtained from the CFA were centered and standardized. This facilitated a series of regression equations that examined the differences in the model across groups. Three regression

equations explored the pathways of the Pearlin Model and indeed demonstrated important differences across the latent variables. Significant main effects of predictor variables in each of the three regression equations contributed information to our understanding of the predictors of anxiety symptom severity.

Notably, demographic factors were consistent predictors across the model. Women disproportionately experienced greater stressors, worse self-rated mental health and more anxiety. This disproportionate negative impact on women across the model is consistent with previous research that has shown greater frequency of anxiety disorders in women (McLean, Asnaani, Litz, & Hofman, 2011). Women from racial and ethnic minority groups may be particularly vulnerable as they report higher symptom burden (McGuire & Miranda, 2008).

Lower education levels predicted greater stressors and poorer self-rated mental health, but greater education levels also predicted worse anxiety symptom severity. This relation between less education and greater stressors and worse self-rated mental health is not unexpected (Matthews & Gallo, 2011). However, the relation between greater anxiety symptom severity and more education reflects a continuing discussion in the literature. Previous studies have suggested that anxiety prevents advanced educational attainment (Kessler, Foster, Saunders, & Stang, 1995), which may offer an explanation for why more individuals with anxiety show up in lower SES strata. However, this research has been challenged with data that contradicted the hypothesis of anxiety's negative impact on educational, and subsequently socioeconomic, status (Miech, Caspi, Moffitt, Wright, Silva, 1999).

There are several hypothesized explanations for the conflicting data. Bjelland and colleagues (2008) produce a cogent argument that lower education is correlated with anxiety, but find that this relation decreases across increasing age. This suggests a cohort effect that would

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argue that the education and anxiety relationship needs to be explored across different age groups perhaps due to cultural factors that occur in specific points in time (e.g., wars, changes in stigma associated with mental health). Some evidence suggests that the relation between higher education and increased anxiety in racial and ethnic minority groups may be explained by interpersonal and social factors associated with advanced education. Though not specifically examining racial differences, social adjustment was found to differ between students of first generation or second generation college student status (Hertel, 2002). That is to say, exposure to majority culture and heterogeneous peer groups in higher education or professional settings may lead to conflicts between the individual and peers (e.g. bullying), and make salient differences in personal and majority culture (Burchinal, Roberts, Zeisel, & Rowley, 2008). In addition, the stressors associated with upward mobility (Hardaway & McLeod, 2009) may be driving the poorer outcomes in those with more education.

Interestingly, younger age predicted greater stressors, but older age predicted worse self-rated mental health. Younger adults may experience greater stressors due to factors related to more exposure to majority culture through education and employment (Burchinal, Roberts, Zeisel, & Rowley, 2008; Hardaway & McLeod, 2009). Young adults in educational settings or the workplace have more exposure to discrimination and stressors related to cultural adaptation (Torres, 2010, Vega & Sribney, 2003). Older adults in the sample experienced worse self-rated mental health, but older age was not a predictor of anxiety symptom severity. This is not surprising given that younger adults from these populations are more likely to have an anxiety disorder, though poorer self-rated mental health increases the likelihood of anxiety even in older adults from diverse groups (Kim, Jang, Chiriboga, Ma, & Schonfeld, 2010). This relation

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between poorer self-rated mental health and anxiety is present in diverse older adults but not as large as this same relation in Non-Hispanic Whites (Kim et al., 2010).

Several factors may be at work to explain why older adults experience more distress, but not necessarily anxiety symptoms. Research on distress and emotion management in older adults suggests while older adults may experience more distress they are also more skilled than younger adults at managing the distress (Carstensen, 1992**;** Carstensen, Isaacowitz, & Charles, 1999). This socioemotional selectivity theory would explain why older adults may experience more distress, but manage it so that fewer older adults are impacted by difficulties in emotion regulation (Carstensen, 1992**;** Carstensen, Isaacowitz, & Charles, 1999). Though self-rated mental health did not lead to anxiety symptom severity in this population, it is important to note that poorer self-rated mental health is associated with greater use of mental health services in elderly immigrants (Kim et al., 2010). Perhaps, the older adults experience distress that does not progress to clinically significant levels of anxiety or other symptoms of mental illness (e.g. depression) instead of anxiety. Second, ties to cultural heritage act as protective factors as older adults are more likely to immigrate with families and live in neighborhoods with culturally similar individuals. Alternatively, older adults may be more likely to experience distress in the form of depression or other somatic illnesses instead of experiencing it as anxiety. Younger adults' progression to psychopathology may be related to their status as second or third generation in the U.S. and rapid cultural adaptations. The stress of acculturation, language acquisition, and more exposure to majority culture may cause young adults to adopt expressions of distress that are more consistent with the current dominant culture. This leads to expressions that are more consistent with diagnostic criteria for anxiety (Andres-Hyman et al., 2006; Hirai et al., 2006; Ortega et al., 2000).

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Within the Pearlin model, stressors are an important first step in the stress process. As previously described, younger adults, women, and those with less education experienced greater stressors. The results of this regression support the hypothesized difference in predictors based on group membership. Specifically, individuals of African descent and Hispanic/Latinos experienced significantly greater stressors than Asian Americans.

In the second regression, there were differences in the way that context variables contributed to self-rated mental health as compared to stressors. Women and those with less education demonstrated poorer self-rated mental health. Additionally, older adults reported poorer self-rated mental health. Individuals of African Descent reported significantly worse self-rated mental health compared to Asian Americans and Hispanic/Latinos. Across groups, individuals with more stressors reported poorer self-rated mental health. Increased stressors negatively impacted Asian American self-rated mental health more than it impacted self-rated mental health for other groups. This race-specific difference is consistent with previous research demonstrating relations between 1) discrimination (Gee, Spencer, Chen, Yip, & Takeuchi, 2007a) and mental health outcomes, and 2) physical health (Gee et al., 2007a) and mental health outcomes (not just self-rated mental health). Across races, individuals with more resources reported poorer self-rated mental health, which makes sense based on the social and emotional support variables that compose the latent construct. The resources (e.g. marital status(r), objective social status, religious attendance(r)) construct was especially important for individuals of African Descent's anxiety symptoms compared to Asians. This may be due to the protective effects of religious coping, which has so often been demonstrated in African Americans (Lesniak, Rudman, Rector, & Elkin, 2006). It appears that Asian American's perceptions of mental health are influenced by internal cues of physical health and negative interactions with

the environment (e.g. discrimination), while the perceived mental health of individuals of African descent are influenced by lack of social support.

In the third regression, individuals with more education, women, those with more resources, and poorer self-rated mental health demonstrated higher levels of anxiety symptom severity. As expected, worse self-rated mental health predicted greater anxiety symptom severity. Self-rated mental health in Asian Americans was more important in the prevalence of anxiety symptoms compared to the other groups. This is especially interesting given the high percentage of Asian Americans with very good or excellent self-rated mental health. It may be that for Asian Americans, if their own perception of mental health is poor, it has a greater influence on the development of anxiety. Considering these factors, Asian Americans may respond to psychological treatments that target these cognitive appraisals such as Cognitive Behavioral Therapies (CBT). Previous research largely supports the efficacy of CBT for Asian Americans if culturally adapted (Hwang, Wood, Lin, & Cheung, 2006; Iwamasa, Hsia, & Hinton, 2006). It is important to note that Asian American elders may be distinctly different in the relation between self-rated mental health and anxiety. Kim and colleagues (2010) demonstrated Asian American elders with worse self-rated mental health had the lowest incidence of mental illness. Additional research is needed to explore the experience of anxiety in Asian American elders.

The absence of social support as represented by fewer resources appears to be important in predicting anxiety symptom severity in African descent individuals compared to Hispanic/Latinos and Asians. Self-rated mental health was less important for the African descent group compared to other groups, but still a significant predictor of anxiety symptom severity.

Overall, the significant relations between the latent constructs and the outcome variable of anxiety symptom severity experienced by African Americans are consistent with previously

developed models such as The Sociocultural Stress and Coping Model. This model suggests that mental health concerns in African Americans are impacted by environment and protective resource variables (Hunter & Schmidt, 2010; Knight & Sayegh, 2010; Knight et al, 2000). Environmental and resource variables should be considered in future research and the impact of these variables in Aim 2 should help to clarify the relations with anxiety symptom severity in individuals of African descent. With regard to intervention, building resources including those related to social support are most important for individuals of African descent.

While the SPM predicted anxiety symptom severity in Hispanic and Latino adults, there were distinct differences across the model for Hispanic and Latinos compared to the other two groups. Interestingly, Hispanic and Latino adults experienced the highest levels of anxiety symptom severity and self-rated mental health was important in the prediction of anxiety symptom severity.

The regressions using the Pearlin Stress Process Model as a framework suggest that the way in which predictor variables contribute to anxiety symptom severity varies by racial/ethnic group. While the adapted model was successful, the more difficult fit of the initial model was consistent with the literature that suggests difference between racial and ethnic groups in anxiety symptom severity. Aims 2-4 are especially important in allowing for greater depth of exploration in the factors that contribute to anxiety symptom severity in the individual subgroup models. Overall, the fit achieved with the adapted model demonstrated that the Pearlin Stress Process model was an effective framework for explaining anxiety symptom severity in a diverse sample. It is possible that this model does not represent Hispanics and Latinos as well as the other groups, a hypothesis that can be further explored in the examination of subgroup differences in Aim 4. Alternatively, the way in which stress process develops into anxiety may be unique for

this group. The underlying stress process impact in each group should crystallize as we examine the groups independently as proposed in Aims 2 through 4.

Aim 2 Results for African Descent Groups

Participants. Participants included 3,732 adults, age 18 and older from the following ethnic groups: African Americans (n=2,700, 72.3%), and Afro-Caribbeans (n=1,032, 27.2%).

Measurement model fitting. The measurement model for African Descent groups was tested though a CFA. The construction of the CFA measurement model for Aim 2 differed from the model for Aim 1 in that the observed variables of mastery and self-esteem from the NLAS dataset were included in the latent variable of resources (Figure 6).

All items were found to be significantly loaded on the corresponding latent constructs. Table 10 presents the goodness of fit values for the model, which suggested that it is poor (χ^2 (62) = 7815.57, p< .001. CFI=. 473, RMSEA= .183). In order to achieve a better fitting SEM model, modification indices were employed. Self-rated mental health was cross-loaded with resources in addition to its contribution to anxiety symptom severity. Consistent with Pearlin's model, the objective variables of mastery and self-esteem contributed strongly to resources for African descent groups. The goodness of fit values suggest the adapted model is a good fitting model (CFI = .951, RMSEA=.058) (Figure 7). The Chi-square was large and significant, but this is likely due to the large sample size (χ^2 (56) = 770.99, p<.001). In the regression models that follow, context variables, self-rated mental health, and the latent constructs of stressors and resources are explored as predictors. In addition, the interactions of the latent constructs with ethnicity, specifically African American and Afro-Caribbean groups, were examined.

Figure 7. Aim 2 Adapted CFA Model
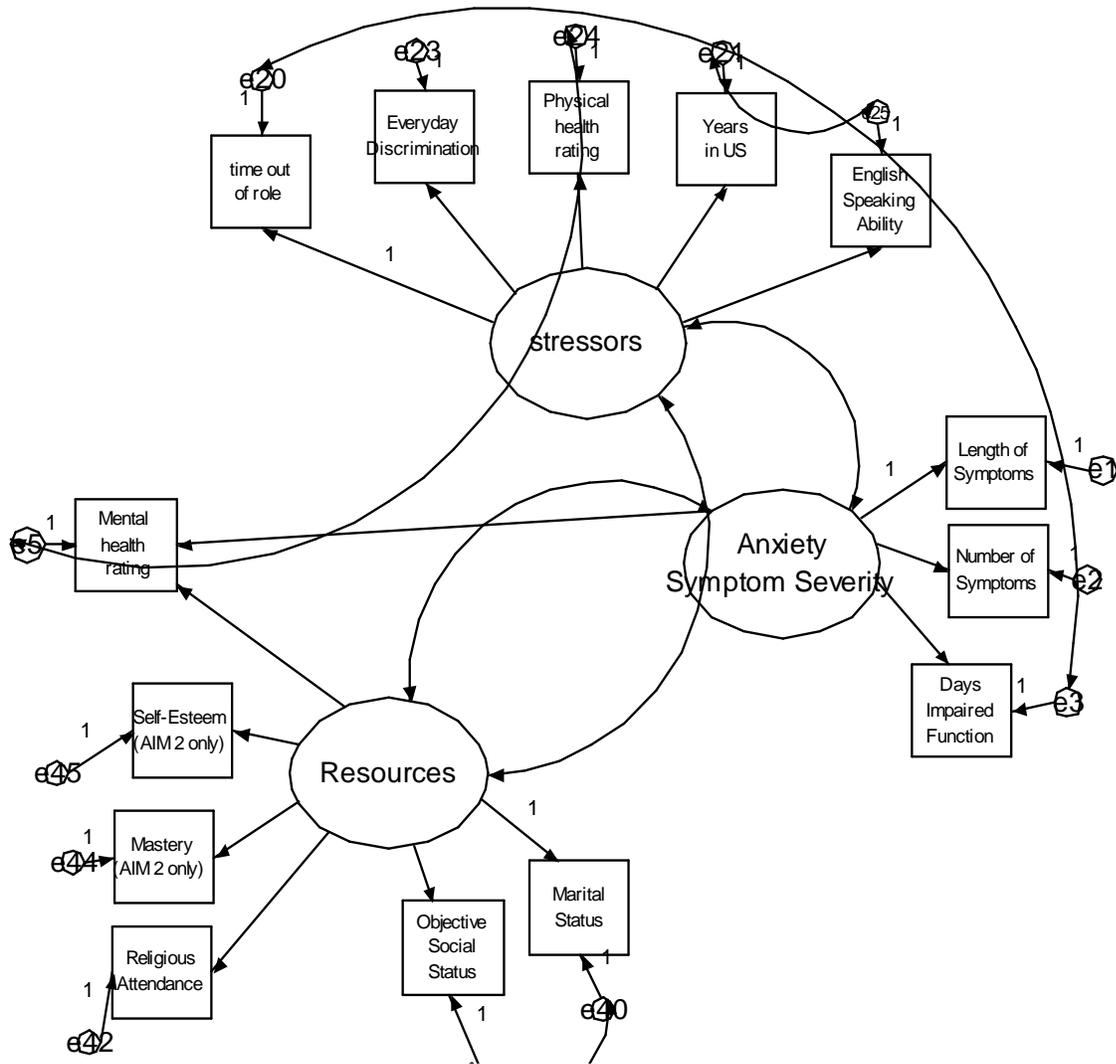
Table 10. Aim 2 CFA Regression Weights Adapted

			Estimate	S.E.	C.R.	P
Length of Symptoms	<---	Anxiety Symptom Severity	1.000			
Number of Symptoms	<---	Anxiety Symptom Severity	2.497	.085	29.329	***
Time out of Role	<---	Stressors	1.000			
Self Esteem	<---	Resources	53.596	12.300	4.357	***
Self-Rated Mental Health	<--	Anxiety Symptom Severity	.124	.026	4.770	***
Marital Status	<---	Resources	1.000			
Religious attendance	<---	Resources	2.208	.657	3.360	***
Number of years in the U.S.	<---	Stressors	.016	.004	3.979	***
Self-Rated Physical Health	<---	Stressors	.049	.004	11.438	***
Number of days functioning was impaired	<--	Anxiety Symptom Severity	1.189	.171	6.971	***
Objective Social Status	<---	Resources	-10.304	2.314	-4.452	***
Mastery	<---	Resources	-45.278	10.388	-4.359	***
Everyday Discrimination	<---	Stressors	-.334	.032	-10.452	***
English Proficiency	<---	Stressors	.004	.002	1.998	.046
Self-Rated Mental Health	<---	Resources	6.935	1.605	4.320	***

Regression analyses examining interactions with ethnic subgroups (African Descent.).
To address the second aim, three regression models using the latent variable approach (Joreskog, 2000) were used to test the relations between latent constructs in the modified Pearlin Model with ethnicity as a moderator. As shown in Figure 6, context was entered into each regression model and resources were entered as both a main effect and a moderator in regressions two and three. The first model predicted stressors from context and included the main effects of ethnicity as a moderator. An interaction term representing the main effect of ethnicity as well as the interaction of race with the individual context variables was created for regressions 2 and 3.

In the first regression, context variables significantly predicted variations in stressors (F [4, 3731] =54.09, p<. 001). Significant main effects for ethnicity, age, and years of education predicted variability in stressors (See Table 11). Younger adults, women and those with less education experienced greater stressors. Ethnicity was also a significant predictor of stressors. Afro-Caribbeans experienced significantly greater stressors than African Americans.

Table 11. Aim 2 First Regression-Stressors

Step 1	B	SE	ß	T	Sig.
Age	-.013	.006	-.037	-2.282	.023
Education	-1.078	.088	-.198	-12.196	.000
Gender	.962	.186	.083	5.179	.000
African Americans	-.883	.200	-.071	-4.422	.000

Note. R^2=.055

The second regression model predicting self-rated mental health from context variables, stressors, resources, ethnicity X stressors, and resources X stressors revealed that the model was significant (F [9, 3731] = 213.25, p<.001 (Table 12). There were significant main effects for age, education, ethnicity, and resources. Specifically, older adults, those with more education and women experienced worse self-rated mental health. Stressors did not significantly predict self-rated mental health, but resources were a significant predictor. Those with fewer resources experienced worse self-rated mental health. Post hoc analyses revealed that African Americans experienced significantly worse self-rated mental health compared to Afro-Caribbeans. Ethnicity did not moderate this relation.

Table 12. Aim 2 Second Regression- Self-Rated Mental Health

Step 1	B	SE	ß	T	Sig
Context					
Age	.006	.001	.091	6.732	.000
Education	.015	.014	.015	1.070	.285
Gender	.114	.028	.055	4.090	.000
African American	-.114	.031	-.052	-3.747	.000
Stressors					
Stressors	-.003	.025	-.003	-.114	.909
Stressors X African American	.057	.049	.027	1.169	.243
Resources					
Resources	-.568	.025	-.574	-22.863	.000
Resources X African American	.036	.046	.018	.792	.428
Resources X Stressors	.009	.011	.014	.8181	.413

Note. R^2=.340

The third regression model predicting anxiety symptom severity from context variables, resources, self-rated mental health, ethnicity X self-rated mental health, ethnicity X resources, resources X self-rated mental health revealed that the model was significant (F[9, 3731] =74.587, p<.001). There were significant main effects for age, education, gender, and resources. Younger adults, those with more education and women experienced more anxiety. In addition, African Americans experienced significantly more anxiety than Afro-Caribbeans. Contrary to the hypothesized relation, self-rated mental health did not predict anxiety. Lower levels of resources

predicted greater anxiety, and ethnicity moderated the relation (Figure 8). African Americans with fewer resources experienced greater anxiety symptoms (See Table 13). There was a significant resource X self-rated mental health interaction, such that low resources made more of a difference if the individual had worse self-rated mental health (Figure 9).

Table 13. Aim 2 Third Regression-Anxiety Symptom Severity

Step 1	B	SE	ß	T	Sig
Context					
Age	-.004	.001	-.099	-6.435	.000
Education	.025	.009	.042	2.614	.009
Gender	.109	.019	.086	5.710	.000
African Americans	-.095	.020	-.071	-4.629	.000
Self-Rated Mental Health					
Self-Rated Mental Health	.002	.013	.003	.148	.882
Self-Rated Mental Health X African American	.026	.025	.022	1.048	.295
Resources					
Resources	-.227	.013	-.381	-16.831	.000
Resources X African American	.079	.025	.067	3.145	.002
Resources X Self-Rated Mental Health	-.016	.008	-.033	-1.967	.049

Note. R^2=.153

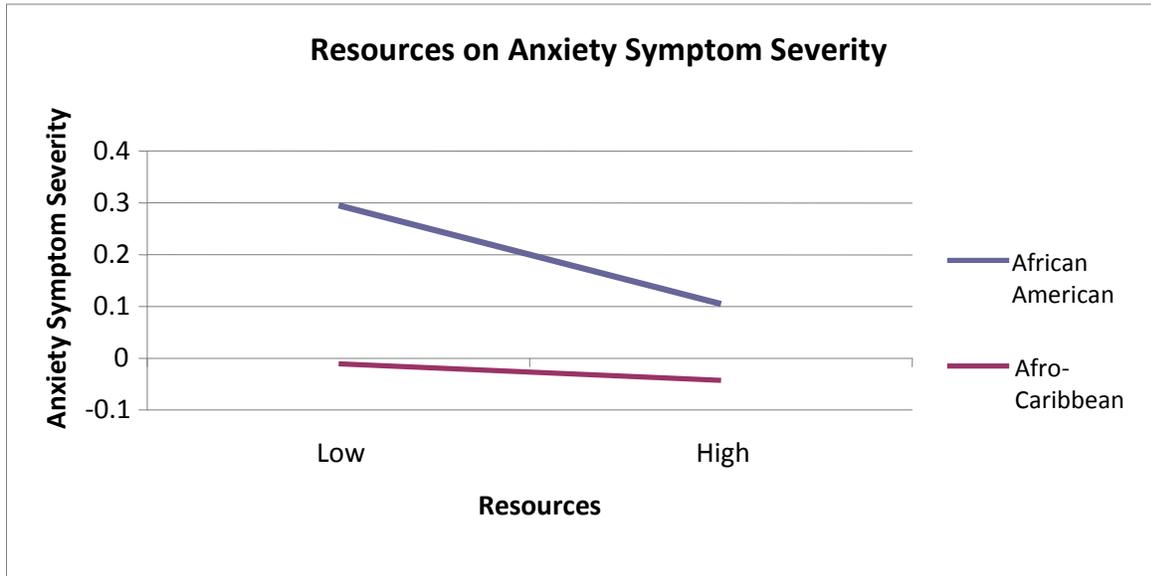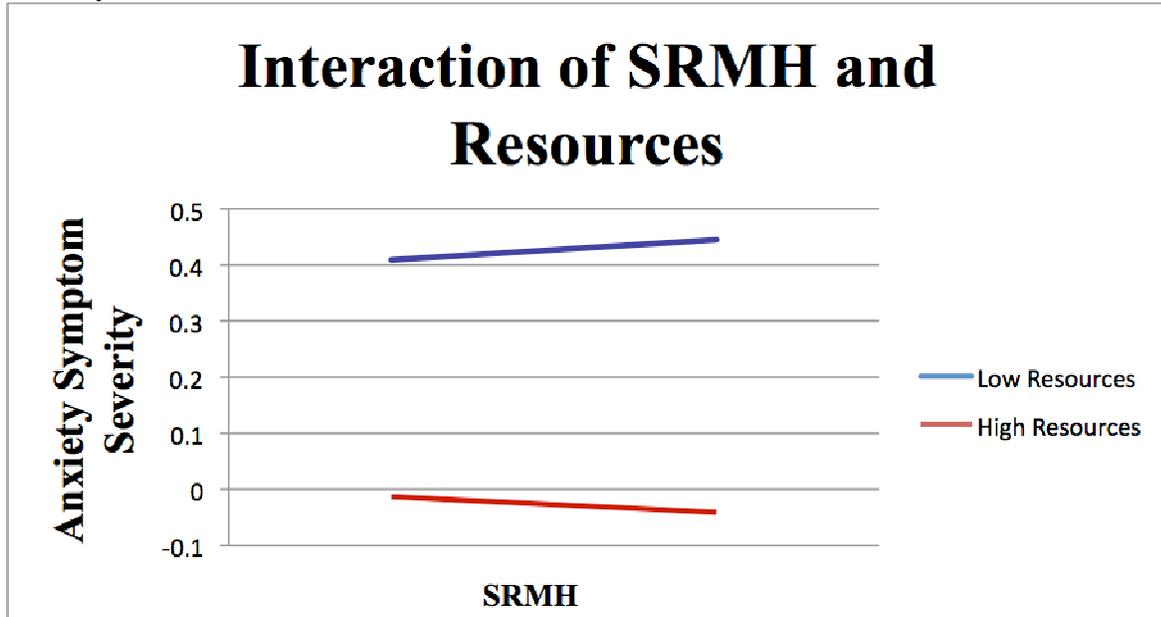Figure 8. Aim 2 Interaction of Resources and Race on Anxiety Symptom Severity

Resources on Anxiety Symptom Severity

Figure 9. Aim 2 Interaction of Self-Rated Mental Health and Resources on Anxiety Symptom Severity

Interaction of SRMH and Resources

Aim 2 Discussion

The Pearlin Model was an effective framework for predicting anxiety symptom severity in individuals of African descent. Unexpectedly, demographic factors including age, gender, education, and ethnicity are consistent predictors influencing each stage of the model. Also inconsistent with hypothesized relations, not all the pathways between the latent constructs of the Pearlin Model were significantly related and some pathways had unexpected relations.

Age was a significant predictor at each stage of the model. Younger adults had greater stressors and greater anxiety symptom severity, but older adults in the sample experienced worse self-rated mental health. While the research on mental health in African American elders has been very limited, anxiety research is especially lacking. Calls for expanding research on predictors of mental health, including self-rated mental health, in older African Americans suggest that an emphasis should be placed on examining socio-historical predictors and influences (Mills & Edwards, 2002). In a small study of African American and European American older adults, Cohen et al (2006) found support for racial difference in subsyndromal anxiety. These differences may represent variation in incidence and prevalence, presentation and symptoms experienced, or a mismatch between culture and diagnostic criteria. In African Americans, the ability to manage distress has been supported by previous research demonstrating greater resilience (Ryff, Keyes, & Hughes, 2003), and greater positive affect (Brenes et al., 2008) compared to other groups. In the Afro-Caribbean sample, the healthy immigrant effect may buffer older adults' experience with anxiety. Alternatively, older adults may experience distress less frequently as anxiety, but rather experience distress as depression or other diagnosable mental illness or, alternatively, negative mental health outcomes. Future research should explore distinct differences in anxiety across the lifespan within this distinct racial/ethnic group.

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The disproportionate negative impact on women across the model is consistent with previous research that has shown greater frequency of anxiety disorders in general in women (McLean, et al., 2011), and African American women in particular. Intersectionality theory within Black feminist thought may provide a framework for understanding the risk of anxiety symptoms and other mental health concerns in women of African descent. Racism, sexism, and classism reduce resources including socioeconomic status. These impact coping, leading to negative effects on mental health (Hamilton-Mason, Hall, & Everett, 2009). The implication for the current research is that women of African descent who do have ineffective or insufficient coping resources to deal with the intersecting stressors in their lives are at risk for poor mental health outcomes (Greer, 2011; Hamilton-Mason et al., 2009). Future research examining psychological health in African descent women should consider how race-related, gender-related and everyday stressors contribute to their experience (Woods-Giscombe & Lobel, 2008). Moreover, greater research regarding how self-rated mental health relates to mental health diagnoses within and between African descent subgroups is warranted. Specifically, anxiety in African descent women should be examined using models that account for "…the persistent stress and chronic active coping that contributes to early health deterioration and increased morbidity, disability, and mortality in African American women" (Lekan, 2009). While this model has examined some stress and coping components using the observed self-rated mental health variable, it also suggests that women have unique needs and risks that may not be measured herein.

Education remained significant at each stage of the SPM, but the level of education has different impacts at different stages. Individuals with less education experience more stressors. However, higher levels of education predict worse self-rated mental health and more severe

anxiety. This conflicts with previous research in older African Americans which suggests lower education predicts psychological distress (Jang, Chiriboga, Kim, & Phillips, 2008). The relation between greater achievement and worse self-rated mental health outcomes in the current study may be related to classism and racism discussed previously (Hamilton-Mason et al., 2009). In addition, the exposure to majority culture and the stressors associated with upward mobility (Hardaway & McLeod, 2009) may be driving the poorer outcomes. Recent research has also found that young African Americans with greater levels of education are less likely to seek treatment for mental illness (Broman, 2012). Also of note, those who have previously received mental health treatment are less likely to return to treatment because of negative experiences with previous treatment (Broman, 2012).

As hypothesized, context variables significantly predicted stressors in the first regression model. Everyday discrimination, years in the U.S., self-rated physical health, role impairment and English speaking ability were included in this latent construct. Differences in ethnicity emerge as African Americans in the sample experienced significantly fewer stressors than Afro-Caribbeans. This may be driven by the differences related in immigration status or exposure to discrimination. The negative impact of discrimination is greater for African Americans compared to Afro-Caribbeans (Soto, Dawson-Andoh, & BeLue, 2010). Health outcomes research comparing individuals of African descent in the U.S. using nativity status have consistently found distinct differences in the role of age, gender, and socioeconomic status on mental health across groups (Griffith, Johnson, Zhang, Neighbors, & Jackson, 2011). More positive health outcomes have been reported previously for Afro-Caribbean older adults in the U.S. compared to African Americans (Keane, Tappen, Williams, & Rosselli, 2009). When immigration status is examined, Afro-Caribbeans born in the U.S. have worse outcomes than immigrant Caribbeans

(Griffith et al., 2011; Williams et al., 2007). Increased exposure to minority status in the U.S. produces negative mental health outcomes for immigrant Afro-Caribbeans (Williams et al., 2007). However, there is a positive generational difference with second and third generation Afro-Caribbeans more likely to seek mental health services compared to African Americans (Jackson, Neighbors, Torres, et al., 2007).

In the second regression, there were unexpected results in the way the model predicted self-rated mental health. As previously discussed, demographics were important in predicting self-rated mental health. However, stressors did not significantly predict self-rated mental health outcomes in this model. Older adults, women, and individuals with more resources had worse self-rated mental health outcomes. Consistent with the hypothesis, resources predicted self-rated mental health outcomes in the expected direction, but the unique construction of self-rated mental health covarying with resources makes this an unusual model. Self-rated mental health standing alone may be performing differently in individuals of African Descent compared to other groups. The cross-loading of the indicator variable of self-rated mental health on the resources construct may also offer some insight into this phenomenon. First, individuals of African Descent were significantly more likely to report very good or excellent self-rated mental health. In fact, 66% of African descent individuals provided this rating compared to Asian Americans (63.9%) and Hispanic and Latinos (59.7%). This is consistent with previous research that has found higher levels of positive affect in African Americans and Caribbean Blacks (Brenes et al., 2008), which may indicate self-perception is not tied to stressors. For individuals of African descent, self-rated mental health cannot be separated from resources. These greater levels of positive self-rated mental health perceptions also may explain the nonsignificant relation between self-rated mental health and anxiety symptom severity in the third regression.

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In the third regression, context variables and fewer resources predicted anxiety symptoms, but self-rated did not predict anxiety symptom severity. Younger adults, those with more education and women experienced more anxiety. Notably, the R-squared change for the third regression is smaller than the second regression, which may suggest that less of the variance is explained in the final model when compared to the prediction of self-rated mental health. The insignificant relation between self-rated mental health and anxiety symptom severity may be the result of cross-loading resources and self-rated mental health in the model.

The influence of resources was consistent across the model. The unique construction of the resources latent construct in this model notably influenced these results. The purposeful inclusion of the predictors (e.g. religious attendance, mastery, and self-esteem) that influence coping abilities provided us with interesting information about stress and coping in African Descent groups. For example, mastery has previously been found to moderate the relation between discrimination and depression in African American men (Watkins, Hudson, Caldwell, Siefert, & Jackson, 2011). Increased resilience from stressful experiences related to race (Ryff, Keyes, & Hughes, 2003) has been suggested to reduce negative emotions. So perhaps these factors that influence coping (e.g. religious attendance, mastery, and self-esteem) reflect (self-rated) mental health in this group. Ethnicity moderated the relation between lower levels of resources and greater anxiety. A lack of resources was more important in predicting African Americans' experienced anxiety symptoms compared to Afro-Caribbeans (See Table 12). This may be related to a previously demonstrated difference between African Americans and Afro-Caribbean. Race-based discrimination has a greater negative impact on lifetime Generalized Anxiety Disorder for African Americans (Soto, Dawson-Andoh, & BeLue, 2010), compared to Afro-Caribbeans. Specifically, resources appear to be extremely important in predicting anxiety

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symptom severity. The individual's perception of their mental health may be indistinguishable

from coping mechanisms like self-esteem and a sense of mastery. A belief in oneself and support

from others is especially important for coping with distress for this group. The important

contribution of resources was not surprising given previous research, which suggests

sociocultural influences impact the development of anxiety disorders in African Americans

(Hunter & Schmidt, 2010).

The Pearlin model is a stress and coping model, and the ability to include mastery and

self-esteem in the resources construct enhances our ability to examine positive supports that

reinforce coping in this model. Differences in demographic factors including ethnicity and

nativity status inform differences in the environmental exposures and the ways in which

individuals develop coping strategies (Griffith et al., 2011). Constructing this model of African

Descent-specific predictors of anxiety provided a more accurate picture compared to Aim 1.

With regard to the impact of resources on anxiety symptom severity, African Americans in the

sample are disproportionately impacted as compared with Afro-Caribbeans (Soto et al., 2010).

However, due to the heterogeneity of the group by ethnicity and immigration status, this model

may not include all predictors that are important in predicting anxiety in individuals of African

Descent. For example, while race-based discrimination is associated with lifetime anxiety in

African Americans, it does not strongly influence Afro-Caribbean's experience of anxiety (Soto

et al., 2010). In addition, due to the persistence of demographic factors across the model, it will

also be important to look at age and gender to pinpoint the most vulnerable individuals. Most

notably, the unique predictive qualities of age in this model for expanding research on predictors

of self-rated mental health in older African Americans suggests that an emphasis should be

placed on examining socio-historical predictors and influences (Mills & Edwards, 2002). The

vulnerability of African American women should be taken into account in future research given the environmental factors that impact their well-being. Considering the intersectionality of gender, race/ethnicity, and socioeconomic status as it impacts women will be important in developing a comprehensive model of stress and coping to meet gender-specific challenges in the environment.

This model can aid in assessment, diagnoses, and intervention for anxiety in individuals of African descent living in the U.S. To extend the findings, future research should examine groups separately based on the context variables of gender, ethnicity, education, and age. Unexplained variance in the model may be related to variables particularly salient to the group such as high-effort coping, ethnic identity and racial socialization that remain unmeasured in our current analyses. Though discrimination was measured in the model, social and environmental factors that influence the experience of individuals of African descent were not available. In addition, the cross-sectional nature of the research prevents us from understanding the temporal relations between these factors. Previous research has suggested that the concepts of mental and physical health may be intertwined in this group, and the distinction of these two elements in the model may have impacted its measurability. In fact, allowing the error of these two variables to covary improved model fit. Future models may wish to explore combining these in the same latent construct.

Aim 3 Results for Asian American Groups

Participants. Participants included Asian (n=1,688) adults, age 18 and older from the following ethnic groups: Vietnamese (n=460, 27%), Filipino (n=475, 28%), Chinese (n=343, 20%), and Other Asian (n=410, 24%).

Measurement model fitting. To address the third aim, three regression models using the latent variable approach (Joreskog, 2000) were used to test the relations between latent constructs in the modified Pearlin Model with ethnicity as a moderator. As shown in Figure 10, context variables were entered into each regression model. Resources were entered as both a main effect and a moderator in regressions two and three. All items were found to be significantly loaded on the corresponding latent constructs, except for everyday discrimination and objective social status. The goodness of fit values for the model suggested the overall fit is poor ($\chi^2(146)$ =2941.67, p<. 001, CFI=. 463, RMSEA=. 129). In addition, the model is not positive definite, which can occur in a covariance matrix when a variable has a linear combination with other variables, collinearity, negative or zero variances, etc. The relation between intrapsychic strain and stressors was removed to improve model fit, resolving the not positive definite status of the model. Modification indices were then used to create a better fitting model. Several notable changes were made, including allowing several observed variables to load onto the intrapsychic strain construct. Specifically, self-rated physical health was removed from stressors and placed in intrapsychic strain. English proficiency contributed to both intrapsychic strain and stressors. Objective social status contributed to both resources and intrapsychic strain. Table 14 presents the goodness of fit values for the model, which suggested that it is acceptable, CFI=.875, RMSEA=.063. The Chi-square was significant, but this is likely due to the large sample size ($\chi2(140)$ =790.78, p<. 001). In the regression models that follow, the

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interactions of the latent constructs with ethnicity, specifically Vietnamese (n=460, 27%),

Filipino (n=475, 28%), Chinese (n=343, 205), and Other Asian (n=410, 24%) subgroups, were

examined.
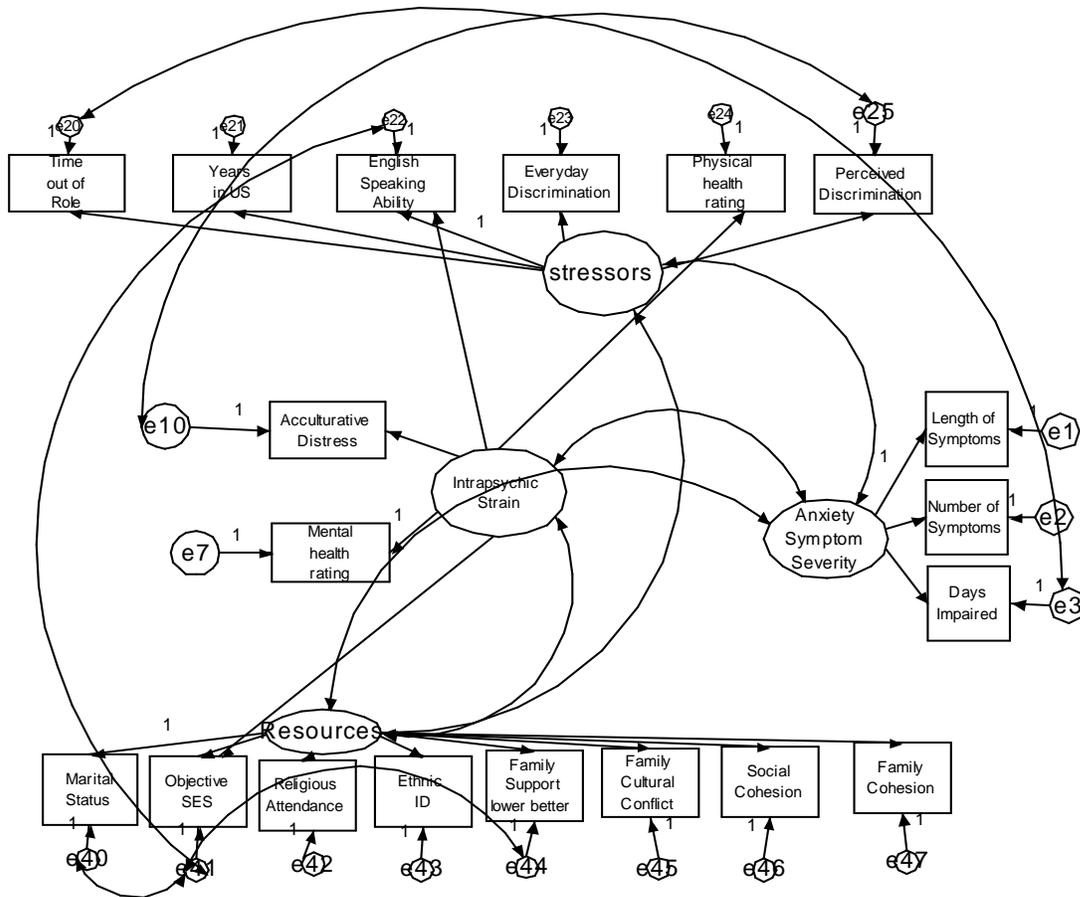
Figure 10. Aim 3 Adapted CFA Model

Table 14. Aim 3 CFA Regression Weights Adapted

			Estimate	S.E.	C.R.	P
Length of Symptoms	<---	Anxiety Symptom Severity	1.000			
Number of Symptoms	<---	Anxiety Symptom Severity	2.116	.156	13.571	***
Days of Impaired Functioning	<---	Anxiety Symptom Severity	-.242	.135	-1.787	.074
Marital Status	<---	Resources	1.000			
Ethnic Identity	<---	Resources	1.106	.188	5.879	***
Family Support	<---	Resources	.468	.471	.992	.321
Family Cultural Conflict	<---	Resources	6.275	.865	7.255	***
Social Cohesion	<---	Resources	3.624	.627	5.780	***
Family Cohesion	<---	Resources	3.638	.510	7.135	***
Acculturative Distress	<---	Intrapsychic Strain	.275	.055	5.021	***
Role Impairment	<---	Stressors	3.105	1.234	2.516	.012
Number of Years in the US	<---	Stressors	.634	.144	4.417	***
English Proficiency	<---	Stressors	1.000			
Everyday Discrimination	<---	Stressors	-17.763	2.113	-8.405	***
Perceived Discrimination	<---	Stressors	-4.081	.476	-8.579	***
Self-Rated Mental Health	<---	Intrapsychic Strain	1.000			
Objective Social Status	<---	Resources	2.409	.948	2.541	.011
Religious attendance	<---	Resources	.582	.331	1.758	.079
Self-Rated Physical Health	<---	Intrapsychic Strain	.958	.062	15.437	***
English Proficiency	<---	Intrapsychic Strain	-.548	.043	-12.869	***
Objective Social Status	<---	Intrapsychic Strain	-1.330	.198	-6.734	***

Regression analyses examining interactions with ethnic subgroups (Asian Americans).

Results from the first regression predicting stressors from context variables revealed that the

model was able to predict variations in stressors (F [6, 1159] =35.67, p<. 001). Significant main

effects for ethnicity, age, and years of education predicted the variability in stressors (See Table 15). Younger adults and those with less education experienced greater stressors. Ethnicity was also a significant predictor of stressors. When the Other Asian group was used as a comparison, Vietnamese, Chinese, and Filipino ethnicities significantly predicted stressors. Post hoc analyses revealed that Vietnamese individuals experienced significantly fewer stressors than the other groups. Filipinos experienced significantly more stressors than Other Asians.

Table 15. Aim 3 First Regression-Stressors

Step 1	B	SE	ß	T	Sig.
Age	-.003	.001	-.155	-4.516	.000
Education	.032	.006	.148	5.516	.000
Gender	-.025	.013	-.051	-1.870	.062
Vietnamese	-.096	.019	-.182	-4.904	.000
Filipino	.083	.020	.149	4.170	.000
Chinese	.043	.021	.068	2.025	.043

Note. R^2=.157

The second regression model predicting Intrapsychic Strain from context variables, stressors, resources, ethnicity X stressors, and resources X stressors revealed that the model was significant (F 15, 1159] = 24.63, p< .001 (See Table 15). There were significant main effects for age, education, ethnicity, and resources. Specifically, older adults and those with less education experienced more intrapsychic strain. Post hoc analyses using ANOVA revealed that Vietnamese individuals experienced significantly less intrapsychic strain compared to Filipino and Other Asians. Though stressors did not significantly predict intrapsychic strain, Chinese ethnicity moderated the relation between stressors and intrapsychic strain. Resources significantly

predicted intrapsychic strain with those who endorsed more resources (e.g. family cohesion, social cohesion, etc) experiencing less intrapsychic strain. The ethnicity by resources interaction and the stressors by resources interaction were not significant.

Table 16. Aim 3 Second Regression-Intrapsychic Strain

Step 1	B	SE	ß	T	Sig
Context					
Age	.014	.001	.283	10.262	.000
Education	-.111	.018	-.172	-6.029	.000
Gender	.044	.038	.031	1.173	.241
Vietnamese	.310	.056	.202	5.512	.000
Filipino	-.085	.058	-.052	-1.470	.142
Chinese	.332	.062	.178	5.362	.000
Stressors					
Stressors	.030	.063	.041	.474	.636
Stressors X Vietnamese	-.100	.084	-.080	-1.191	.234
Stressors X Filipino	-.060	.084	-.045	-.719	.472
Stressors X Chinese	-.211	.096	-.118	-2.192	.029
Resources					
Resources	.212	.063	.293	3.353	.001
Resources X Vietnamese	.016	.080	.013	.201	.841
Resources X Filipino	.023	.085	.016	.272	.786
Resources X Chinese	.041	.090	.025	.450	.653
Resources X Stressors	-.006	.016	-.012	-.361	.718

Note. R^2=.244

Figure 11. Aim 3 Interaction of Stressors and Race on Intrapsychic Strain
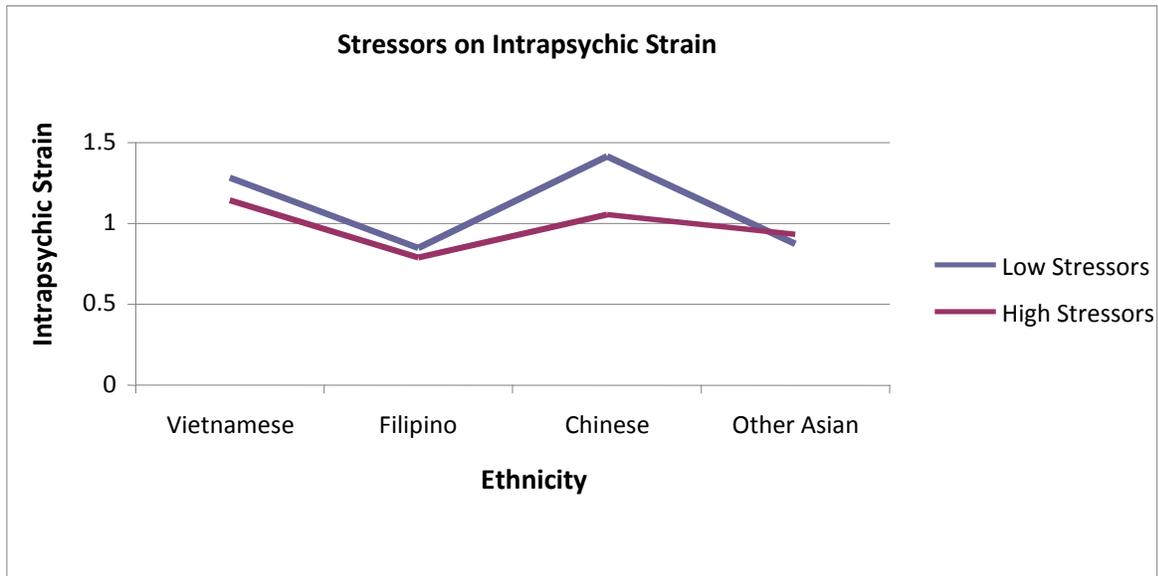
The third regression model predicting anxiety symptom severity from context variables, resources, intrapsychic strain, ethnicity X intrapsychic strain, ethnicity X resources, resources X intrapsychic strain revealed that the model was significant ($F[15, 1159] =20.107$, $p<.001$). There were significant main effects for intrapsychic strain and resources. Specifically, those with more intrapsychic strain, and better resources, had higher levels of anxiety symptoms (See Table 17). There was no significant main effect of race or interactions with ethnicity. There was a significant resource X intrapsychic strain interaction.

Table 17. Aim 3 Third Regression-Anxiety Symptom Severity

Step 1	B	SE	ß	T	Sig
Context					
Age	.001	.001	.023	.782	.434
Education	.016	.012	.037	1.265	.206
Gender	-.016	.025	-.017	-.639	.523
Vietnamese	.002	.039	.002	.043	.966
Filipino	-.053	.041	-.505	-1.317	.188
Chinese	-.048	.044	-.039	-1.095	.274
Intrapsychic Strain					
Intrapsychic Strain	.112	.034	.235	3.311	.001
Intrapsychic Strain X Vietnamese	.036	.039	.505	.923	.356
Intrapsychic Strain X Filipino	-.042	.045	-.039	-.926	.355
Intrapsychic Strain X Chinese	-.064	.045	-.059	-1.417	.157
Resources					
Resources	.154	.031	.324	4.950	.000
Resources X Vietnamese	-.038	.038	-.048	-.993	.321
Resources X Filipino	-.004	.041	-.005	-.110	.912
Resources X Chinese	.014	.043	.013	.314	.754
Resources X Intrapsychic Strain	.069	.012	.161	5.636	.000

Note. R^2=.209

Aim 3 Discussion

The SEM model achieved acceptable fit and regression models were conducted to explore the moderation of relations between the Pearlin constructs by subgroup race/ethnicity. The Pearlin Model predicted anxiety symptom severity for Asian Americans, but demonstrated a distinct pattern from that seen in the full model.

In the first regression model, demographic factors (e.g. being younger, having more education, being a woman) predicted greater stressors. In addition, there were differences in stressors by racial/ethnic subgroups. Post hoc analyses revealed that Vietnamese experienced significantly fewer stressors and less intrapsychic strain compared to Filipinos, Chinese and Other Asians. Filipinos experienced significantly worse intrapsychic strain compared to other Asians. These differences by group membership are concerning in that they indicate certain groups may be at greater risk. Considering the components of the stressor construct may account for differences in experiences with discrimination that make Filipinos especially vulnerable. Filipinos in the U.S. have high English Proficiency and familiarity with American culture due to their longstanding history in the country (Nadal, 2004). The history of exposure to colonial mentality, first through the Spanish and American influences in the Philippines and later in the U.S., has negatively impacted this group (David & Okazaki, 2006). Perhaps this history means Filipinos are more likely to understand discrimination when they encounter it and this negatively impacts their well-being.

Unexpectedly, stressors did not predict intrapsychic strain. There were significant modifications to the intrapsychic strain constructs, which may explain why this hypothesis was not supported. Previous research with Asian American college students found acculturative distress was a risk factor for mental health outcomes independent of other stressors (Hwang & Ting 2008).

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Even without a significant relation between the two latent constructs, ethnicity moderated this relation. Chinese respondents experienced worse intrapsychic strain at lower levels of stressors. While the origins of these group differences are uncertain, it may be driven by only part of the observed variables within the construct of stressors. For example, it may be that discrimination is particularly salient for this group independent of the other variables such as physical health, or number of years in the U.S. Language-based discrimination has been linked to underuse of formal mental health services in Chinese Americans (Qin, Way, & Mukherjee, 2008; Spencer & Chen, 2004; Suinn, 2010).

The adapted intrapsychic strain construct contained acculturative distress, self-rated mental health, English proficiency, objective social status, and physical health. This construct and its prediction of anxiety symptom severity is consistent with research suggesting that Asian Americans may be at a greater risk for experiencing psychological distress (Iwamasa & Hilliard, 1999), due to acculturation (Salant, & Lauderdale, 2003; Hwang & Ting, 2008; Lau et al., 2009), social status (Leu et al., 2008; Jimenez et al., 2010; Min et al., 2005; Masood et al., 2009), self-rated physical health (Gee et al., 2007a), and Limited English proficiency (LEP) (Sorkin et al., 2010; Kim et al., 2011a; Kim et al., 2011b; Qin et al., 2008; Suinn, 2010). Older adults endorsed greater intrapsychic strain, but age did not predict anxiety symptom severity. This is especially interesting in light of the revised model that includes more factors that show relations to immigration such as LEP, physical health and social status, which have previously been correlated with psychological distress in elders (Nguyen, 2011; Kim et al., 2011a; Kim et al., 2011b; Hinton et al., 2009).   Older Asian adults may be especially vulnerable if they have LEP and are of lower social status. These factors of LEP and lower social status are also consistent with lower education predicting greater intrapsychic strain in the model. There were main effects

of ethnicity with Vietnamese and Chinese significantly predicting intrapsychic strain compared to Other Asians. Chinese experienced the most intrapsychic strain followed by Vietnamese, Filipino and finally Other Asians. There were not significant differences between Chinese and Vietnamese or Filipino and Other Asians, but there were significant differences between groups highest and lowest in intrapsychic strain.

Individuals who have more resources experience less intrapsychic strain. Resource variables like social status (Leu et al., 2008; Jimenez et al., 2010), family cohesion (Gee et al., 2007a), low family cultural conflict (Lau, Fung, Wang, & Kang, 2009), social support (Min, Moon, & Lubben, 2005; Masood, Okazaki, & Takeuchi, 2009), and ethnic identity (Gupta et al., 2011) influenced psychological distress in Asian Americans. Furthermore, Asian Americans with more intrapsychic strain and poorer resources experienced more anxiety symptoms. There were no significant differences by ethnicity in anxiety symptom severity. When resources and intrapsychic strain were accounted for in the model, demographic characteristics including ethnicity were no longer important in the prediction of anxiety symptom severity. Though there are not significant differences in anxiety symptom severity by ethnic subgroup within Asian Americans, there are significant differences by ethnicity at the intrapsychic strain level. Because intrapsychic strain significantly predicts anxiety symptom severity along with resources, we should still consider differences by subgroup when designing and implementing interventions for Asian Americans. There are differences in who is at risk for predisposing factors (intrapsychic strain) of anxiety symptom severity. Notably, studies examining differences in mental health in Asian Americans have demonstrated differences in social connections influence this variable (Zhang & Ta, 2009). Family cohesion in particular appears to be important as it has shown independent effects on mental health (Zhang & Ta, 2009).

Using the Pearlin Model as a framework for explaining anxiety symptom severity in Asian Americans was effective at the group level. This ethnicity specific model demonstrated better fit and a different structure than when Asian Americans were examined in the full model (Aim 1) with Hispanic/Latinos and African descent groups. The current study accounted for a number of predictors previously examined individually. It also demonstrated that with increasing focus on latent constructs we can explain more of the variance. In addition, the changes made in the stressors and intrapsychic strain models improved the fit and added to our knowledge about the unique predictors of anxiety symptom severity in Asian Americans. The latter steps of the model were the most important, beginning with an emphasis on intrapsychic strain. These constructs were heavily influenced by factors related to acculturative distress. Ethnic subgroup differences emerged at the early stages of the model and specifically with intrapsychic strain; however, they did not persist at the anxiety symptom severity level. Overall, there was better convergence of the Aim 3 model compared to Aim 1. While demographic factors did not persist as predictors across the model, they do indicate greater risks for subsets of the population. Older adults' increased risk of intrapsychic strain is especially concerning due to the vulnerability of this population and their poorer access to services (Sorkin et al., 2010). Conceptualizations of anxiety in Asian Americans should focus on intrapsychic strain and resources as risk factors and contributors for anxiety symptom severity. Future research should explore older adults in particular, as different factors such as family conflict may disproportionately influence anxiety in older Asians (Kim & Choi, 2010).

In developing a comprehensive framework of predictors of anxiety symptoms in Asian Americans and subgroups that comprise Asian Americans, social or environmental as well as individual factors (Hinton, Park, Hsai, Hofmann, & Pollack, 2009) are important. Asian

Americans were different from other groups in that their model required a number of modifications to the intrapsychic strain construct. With those modifications, factors related to self-rated mental health, acculturative distress and discrimination were key factors in predicting worse anxiety symptom severity. Though few differences emerged between subgroups in the latent constructs, variable level differences in Southeast Asians (e.g. Filipinos) compared to East Asians (e.g. Chinese), should still be considered in working with individuals as ethnic differences in predisposing factors can aid in identifying vulnerable individuals. Understanding the historical construct of acculturation factors such as reason for migration and group history in the U.S. may still play a role in the ways individuals experience distress.

Notably, even with the strong cultural variations within the group, the model converges better and shows distinct patterns compared with the full model (Aim 1). A limited number of ethnicity moderating effects is unexpected and really interesting, but we have to remember two things 1) we are looking at predictors and the stressors may be universal, 2) we broadened our definition of anxiety to a symptom severity outcome, which may account for some of the variations between groups. Overall, the lack of subgroup differences among Asian Americans in anxiety symptom severity is unique and unexpected.

Aim 4 Results for Hispanic or Latino Groups

Participants.   Participants included Hispanic/Latino (n=2,492) adults, age 18 and older

from the following ethnic groups: Puerto Rican (n=456, 18%), Cuban (n=519, 21%), Mexican

(n=814, 33%), and Other Hispanic (n=703, 28%).

Measurement model fitting.   The measurement model was tested though a CFA using

AMOS 17.0. All of the interactions for the latent variables were explored as well as the

interaction with ethnicity within Hispanic and Latino Americans. All indicators loaded

significantly on the corresponding latent constructs, except for religious attendance and self-rated

physical health. The goodness of fit values for the model suggested that fit was poor for the

proposed model (χ^2(146) = 3980.87, p< .001, CFI=.420, RMSEA= .139). The model was not

positive definite and modification indices were used to create a better fitting model. Not positive

definite suggests that the matrix contains eigenvalues that are negative or equal to zero, which

can occur in a covariance matrix when a variable has a linear combination with other variables,

collinearity, negative or zero variances, etc. English proficiency cross-loaded onto both the

Stressors construct (as proposed) and the Intrapsychic Strain construct (not proposed). The

number of years in the U.S. variable was moved to the intrapsychic strain latent construct.

Religious attendance was added to the stressors construct but also remained a part of the

resources construct as originally proposed. Self-rated physical health was removed from the

model entirely. The goodness of fit values for the adapted model (Figure 12) suggest acceptable

fit, CFI=.862, RMSEA=.070. The Chi-square was large and significant, but this is likely due to

the large sample size (χ^2 (125) = 951.50, p<.001). In the regression models that follow, the

interactions of the latent constructs with ethnicity, specifically Cuban, Puerto Rican, Mexican

and Other Hispanic, were examined.
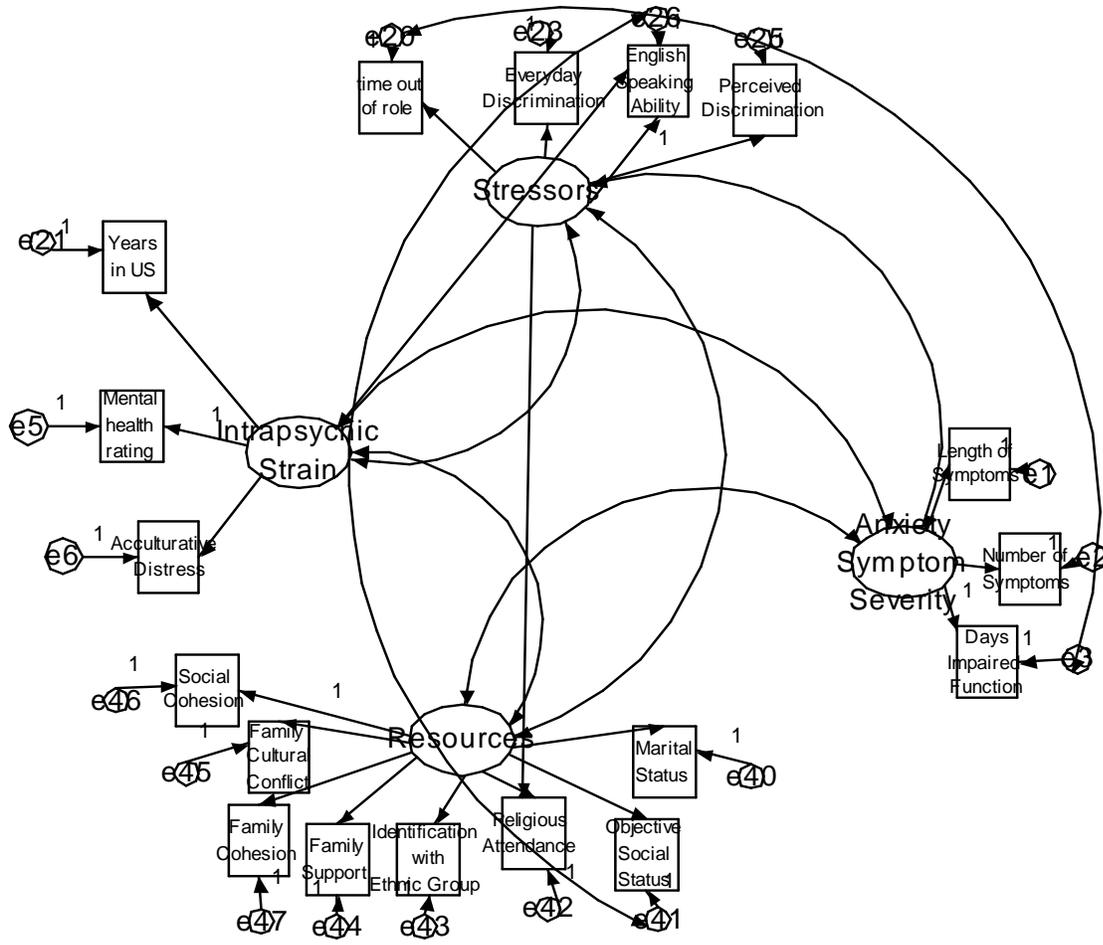
Figure 12. Aim 4 Adapted CFA Model

Table 18. Aim 4 CFA Regression Weights Adapted

			Estimate	S.E.	C.R.	P
Length of Symptoms	<---	Anxiety Symptom Severity	-2.161	.558	-3.876	***
Number of Symptoms	<---	Anxiety Symptom Severity	-4.550	1.175	-3.873	***
Family Support	<---	Resources	.953	.110	8.671	***
Family Cultural Conflict	<---	Resources	1.137	.108	10.484	***
Family Cohesion	<---	Resources	.855	.082	10.420	***
Everyday Discrimination	<---	Stressors	3.138	.219	14.306	***
Perceived Discrimination	<---	Stressors	1.000			
Time out of Role	<---	Stressors	-1.072	.271	-3.951	***
English Proficiency	<---	Stressors	-.328	.040	-8.247	***
Acculturative Distress	<---	Intrapsychic Strain	4.442	.610	7.288	***
English Proficiency	<---	Intrapsychic Strain	-3.151	.477	-6.605	***
Number of Years in the U.S	<---	Intrapsychic Strain	-1.702	.252	-6.751	***
Religious attendance	<---	Stressors	.170	.054	3.135	.002
Days Impaired Function	<---	Anxiety Symptom Severity	1.000			
Self-Rated Mental Health	<---	Intrapsychic Strain	1.000			
Objective Social Status	<---	Resources	-.427	.113	-3.788	***
Marital Status	<---	Resources	.122	.023	5.210	***
Religious Attendance	<---	Resources	.212	.079	2.683	.007
Social Cohesion	<---	Resources	1.000			
Ethnic Identity	<---	Resources	.143	.025	5.634	***

Regression analyses examining interactions with ethnic subgroups (Hispanic/Latinos).

Three regression models using the latent variable approach (Joreskog, 2000) were used to test the relations between latent constructs in the modified Pearlin Model. As shown in Figure 11, context variables were entered into each regression model. Ethnicity and the latent construct of resources were entered as both main effects and moderators in regressions two and three.

In the first regression model, context variables significantly predicted variations in stressors (F [6, 1357] =28.58, p< .001). Significant main effects for ethnicity, age, and gender predicted variability in stressors (See Table 19). Older adults and women experienced greater stressors. All groups with the exception of Puerto Ricans and Cubans were significantly different from each other. Ethnicity was also a significant predictor of stressors. Cubans reported the highest stressors followed by other Hispanics, Mexicans, and Puerto Ricans.

Table 19 Aim 4 First Regression Model-Stressors

	B	SE	ß	T	Sig.
Age	.021	.002	.253	8.629	.000
Education	-.039	.033	-.033	-1.196	.232
Gender	.139	.033	.053	2.070	.039
Cuban	.064	.094	.023	.678	.498
Puerto Rican	-.614	.114	-.160	-5.387	.000
Mexican	-.281	.092	-.100	-3.046	.002

Note. R^2=.113

The second regression model, predicting intrapsychic strain from context variables, stressors, resources, ethnicity X stressors, and resources X stressors, was significant (F 15, 1357] = 58.81, p<.001 (Table 19). In this model, intrapsychic strain was composed of acculturative distress, self-rated mental health, English proficiency and number of years in the U.S. There were significant main effects for age, education, ethnicity, stressors, and resources. Specifically, women, older adults, and those with less education experienced more intrapsychic strain. Mexican Americans experienced significantly more intrapsychic strain than all other subgroups, followed by other Hispanics, Cubans and Puerto Ricans. Fewer stressors and worse resources predicted intrapsychic strain. Ethnicity did not moderate the relations between stressors or resources in predicting intrapsychic strain.

Table 20. Aim 4 Second Regression Model- Intrapsychic Strain

	B	SE	ß	T	Sig
Context					
Age	.001	.000	.065	2.551	.011
Education	-.058	.005	-.283	-12.390	.000
Gender	.032	.010	.071	3.305	.001
Cuban	-.010	.014	-.021	-.729	.466
Puerto Rican	-.119	.017	-.180	-7.084	.000
Mexican	.026	.013	.053	1.958	.050
Stressors					
Stressors	-.125	.012	-.558	-10.483	.000
Stressors X Cuban	-.001	.018	-.003	-.077	.939
Stressors X Puerto Rican	-.008	.021	-.014	-.374	.708
Stressors X Mexican	-.024	.016	-.064	-1.527	.127
Resources					
Resources	-.036	.012	-.160	-2.879	.004
Resources X Cuban	.018	.017	.044	1.065	.287
Resources X Puerto Rican	.010	.020	.019	.503	.615
Resources X Mexican	.016	.017	.038	.952	.341
Resources X Stressors	.001	.004	.003	.118	.906

Note. R^2=.397

The third regression model predicting anxiety symptom severity from context variables, resources, intrapsychic strain, ethnicity X intrapsychic strain, ethnicity X resources, and resources X intrapsychic strain was significant (F[15, 1357] =20.265, p<.001). There were significant main effects for age, gender, intrapsychic strain, and resources (Table 21). Younger adults and men experienced more severe anxiety symptoms. There was a significant effect of ethnicity, and post hoc comparisons revealed that Mexican Americans reported significantly greater anxiety symptom severity than the other groups. Across groups, individuals with less intrapsychic strain and worse resources experienced greater anxiety symptom severity. For

Mexican Americans, ethnicity moderated the relations between intrapsychic strain and anxiety

symptom severity (Figure 13). These results suggest that intrapsychic strain is less important in

explaining anxiety symptom severity in Mexican Americans compared to other Hispanic and

Latino subgroups.

Table 21. Aim 4 Third Regression Model-Anxiety Symptom Severity

	B	SE	ß	T	Sig
Context					
Age	-.002	.001	-.104	-3.605	.000
Education	.000	.008	-.003	-1.104	.917
Gender	-.064	.016	-.098	-3.946	.000
Cuban	-.043	.023	.083	2.592	.010
Puerto Rican	-.070	.030	-.073	-2.346	.019
Mexican	.059	.023	.083	2.592	.020
Intrapsychic Strain					
Intrapsychic Strain	-.085	.018	-.263	-4.819	.000
Intrapsychic Strain X Cuban	-.004	.023	-.007	-.171	.865
Intrapsychic Strain X Puerto Rican	-.025	.031	-.027	-.802	.423
Intrapsychic Strain X Mexican	.056	.023	.103	2.426	.015
Resources					
Resources	-.102	.017	-.312	-5.890	.000
Resources X Cuban	-.010	.023	-.017	-.438	.662
Resources X Puerto Rican	.020	.026	.027	.770	.441
Resources X Mexican	.041	.024	.066	1.719	.086
Resources X Intrapsychic Strain	.007	.008	.022	.836	.403

$R^2 = .185$

Figure 13. Aim 4 Interaction of Intrapsychic Strain and Ethnicity on Anxiety Symptom Severity
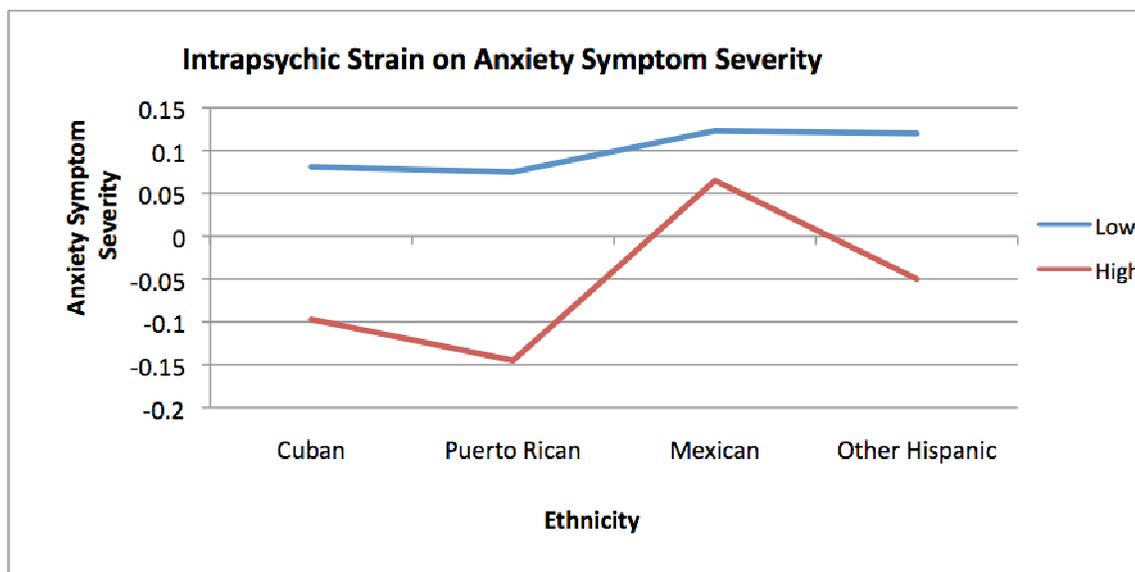
Aim 4 Discussion

The Pearlin SPM is an effective framework for predicting anxiety symptom severity in Hispanic and Latino Americans. Notable differences emerged that inform our understanding of predictors that lead to distress and impairment in this population as well as subgroup differences. Demographic factors including age, gender and ethnicity are consistent predictors influencing each stage of the model. The pathways of the Pearlin Model revealed unexpected relations between the latent variables, which were inconsistent with the hypothesized relations.

Older adults in the sample experienced more stressors and intrapsychic strain, but older age was not a predictor of anxiety symptom severity. Several factors may be at work to explain why older adults experience more distress, but not necessarily anxiety symptoms. First, the socioemotional selectivity theory would suggest that while older adults may experience more distress they are also more skilled than younger adults at managing their emotions (Carstensen, 1992**;** Carstensen, Isaacowitz, & Charles, 1999) This theory would explain why older adults may experience more distress, but manage it so that fewer older adults are impacted by negative emotions (Carstensen, 1992**;** Carstensen, Isaacowitz, & Charles, 1999). Second, older Hispanic/Latinos are more likely to be surrounded by individuals who are culturally similar such as neighbors or family members (Talamantes, & Sanchez-Rielly, 2010) or people who live in the same household as other family members (Aranda & Miranda, 1997). Ties to cultural heritage act as a protective factor in depressed Hispanic adults (Torres, 2010), and these ties may also be protective against anxiety. Alternatively, Hispanic and Latino older adults may be more likely to experience distress in the form of depression or other intrapsychic strain instead of experiencing it as anxiety. Younger age predicted anxiety symptom severity, which may be related to differences in their reasons for immigration, age at immigration, or their status as second or third

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generation in the U.S. Younger adults that are second or third generation are forced to make cultural adaptations rapidly and the stress of this process contributes to psychopathology (Torres, 2010, Vega & Sribney, 2003). As a part of the acculturation process and language acquisition, young adults may adopt expressions of distress that are more consistent with the dominant culture, and therefore may be more likely to meet current diagnostic criteria for anxiety (Andres-Hyman et al., 2006; Hirai et al., 2006; Ortega et al., 2000).

Hispanic and Latina women also demonstrated somewhat paradoxical relations with anxiety. Women were more likely to endorse higher levels of stressors and more intrapsychic strain, but men were more likely to experience anxiety symptoms as measured in this study. Previous research has shown greater frequency of anxiety disorders in general in women (McLean, Asnaani, Litz, & Hofman, 2011). The focus on anxiety symptoms rather than diagnosis as an outcome may explain male gender as a predictor. Anxiety distress in Hispanic/Latino men may be subsyndromal, reflecting a symptom presentation that does not meet criteria in epidemiological studies, but causes distress and impairment. Additionally, this gender discrepancy may be related to social support factors that vary in men and women who immigrate to the U.S. Men are more likely to leave a spouse behind in their country of origin upon initial immigration, while women are more likely to immigrate with their family. Previous research has suggested that this lack of social support for men combined with greater exposure to social marginalization in the workplace is associated with greater anxiety for men (Hiott, Grzywacz, Arcury, & Quandt, 2006).

Within the Pearlin model, stressors are an important first step in the stress process. The indicators of everyday discrimination, perceived discrimination, impairment in functioning, and English speaking ability represent this latent construct. English proficiency was unique in

contributing to stressors and intrapsychic strain. This dual contribution is consistent with previous research that suggests English proficiency in Latinos is related to mental health (Ortega et al., 2000; Alegria, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007). Greater English proficiency reflects greater acculturation and cultural adaptations in Latinos. In the current model, the link between English proficiency and the stress of the acculturation process indicating and leading to distress is consistent with previous research (Torres, 2010, Vega & Sribney, 2003 Alamilla, Kim, & Lam, 2010; Hovey, 2000a; Hovey & King, 2000; Hovey 2000b; Koneru et al., 2007). This relation has been posited to occur in both directions. With increasing English proficiency, individuals may better understand discrimination (Pérez, Fortuna, & Alegria, 2008). Exploring intrapsychic strain in greater depth in future studies will expand our understanding of distress in this population.

Women, older adults, and those with less education experienced more intrapsychic strain, as did those with fewer stressors and worse resources. Greater education has previously been linked to more anxiety in migrant Mexican farmworkers (Hovey & Magaña, 2002). Intrapsychic strain is composed of self-rated mental health, acculturative distress and the number of years in the U.S. Though not originally proposed as an intrapsychic strain variable, including the number of years in the U.S. as an indicator of intrapsychic strain improved model fit. Ethnicity did not moderate the relations at this stage of the model. The unexpected relations seen in this step are again thought to reflect acculturation and the stressors that accompany it. Individuals who have less English proficiency, spend less time in the U.S., and have less acculturative stress are less at risk for distress. With regard to resources, individuals who are at a lower economic station, have greater family support, and have less cultural conflict experience less distress.

Younger adults, men, and those with more intrapsychic strain and fewer resources experienced more severe anxiety symptoms. Examining the contribution of resources in the model requires some explanation given the seemingly odd relation between resources and the outcome variable it predicts at different stages of the model. Low resources were hypothesized to place individuals at greater risk of anxiety symptom severity. However, in the Hispanic/Latino group, this unexpected relation of high resources and greater anxiety may drive conflicts between family/culture and the expectations of the U.S. culture. For example, increased resources may signal upward social mobility which leads to increased conflict between family and native culture and new social and economic changes. Younger adults and those with greater resources may experience greater anxiety due to factors related to more exposure to majority culture (Burchinal, Roberts, Zeisel, & Rowley, 2008; Hardaway & McLeod, 2009), and discrimination (Torres, 2010, Vega & Sribney, 2003). There may also be a dose-response issue that increases generationally: third generation Hispanic/Latinos in the U.S. are more likely to meet current diagnostic criteria for any psychological disorder than first or second-generation adults (Alegria, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007). In addition, this increase in resources and greater exposure may lead to expressions of symptoms that are more consistent with current diagnostic criteria for anxiety (Andres-Hyman et al., 2006; Hirai et al., 2006; Ortega et al., 2000). Similar to the experience of Asian Americans discussed previously, the stressors of acculturation lead to greater conflict between the host and native culture and more experiences with discrimination, which in turn impacts the individual's functioning.

Prior research has shown that family and social cohesion variables' contribution to psychological distress varies by subgroups (Rivera et al., 2008) and immigration status (Almeida, Kawachi, Molnar, & Subramanian, 2009). Similarly, the influence of resources may

not operate the same way across groups. Mexican American group membership moderated the relation between intrapsychic strain and anxiety symptom severity, but in an unexpected way. Compared to other groups, intrapsychic strain was not as important in predicting anxiety symptom severity for Mexican Americans. Notably, Mexican Americans reported greater anxiety symptom severity than any other group. In contrast to previous research (Grant, Stinson, Hasin, Dawson, Chou, & Anderson, 2004), there were no significant differences in anxiety symptom severity based on the number of years in the U.S. The purposeful sampling of census tracks with concentrations of Hispanics and Latinos in the NLAAS (Alegria et al., 2004) may have oversampled individuals living in homogenous neighborhoods. Culturally homogenous neighborhoods can facilitate social cohesion within group, and reduce social comparisons with their new host culture that can lead to distress (Escobar, Hoyos, Nervi, & Gara, 2000). Individuals who remain in predominantly Mexican American neighborhoods, even those that are impoverished, fare better than individuals living in cultural isolation (Almeida et al., 2009; Eschbach, Ostir, Patel, Markides, & Goodwin, 2004).

The Pearlin model can aid in assessment, diagnosis, and intervention for anxiety in Hispanic and Latinos living in the U.S. Important implications for clinicians and policy makers emerged from the model. First, considering *subsyndromal anxiety* highlights the greater number of individuals experiencing distress and impairment that may benefit from intervention. Second, future research as well as clinical work with Hispanic/Latinos should consider multiple ways that the environment and the individual's reaction to and perception of that environment can play a role in subsyndromal anxiety. It is important to continue to conduct research that attends to the distinct needs of the heterogeneous subgroups that comprise Hispanics and Latinos in the U.S. The current study did not include all possible subgroups and in some cases, sample size

necessitated grouping individuals of different backgrounds (e.g. Other Hispanics). However, it does highlight within-group differences that are important in health disparities research. Within-group diversity was not limited to ethnicity, but was also extended to differences in age and gender. Older Hispanic and Latino adults should be examined separately from younger and middle-aged adults in future research to help identify older adults' unique mental health risks.

General Discussion

The Pearlin model can aid in assessment, diagnosis, and intervention for anxiety in diverse groups of adults living in the U.S. Important implications for clinicians and policy makers emerged from the models. First, considering *subsyndromal anxiety* highlights the greater number of individuals experiencing distress and impairment that may benefit from intervention. Using symptom severity rather than current DSM-IV criteria may capture more people that would benefit from intervention or even prevention-based programs for communities. Notably, there are differences between groups and within racial/ethnic subgroups in the variables that are important in predicting anxiety symptom severity.

Second, there are a number of pathways through which risk factors for subsyndromal anxiety can act upon the individual. These pathways, coupled with interactions with the environment and the individual's perception of and reaction to their situation, play a role in the development of subsyndromal anxiety. The broad model in Aim 1 (Figure 1) highlighted several areas of interest that were fleshed out in the group specific models, but particularly for population-based prevention strategies, it is important to note the differences across groups.

First, demographic factors including race/ethnicity were important across all steps of the model from Aim 1 and remained important in Aims 2-4. While race/ethnicity differences exist at the broad group level, it is necessary to consider this as a sociocultural construct. Differences in groups reflect differences in life experience at specific points in time, and exploring these issues

has implications for intervention at the individual coping level as well as the environmental level (i.e. social/policy change). For example, policy changes at the state and federal levels need to focus on inclusion rather than the exclusion of groups. Health care legislation should also help health care providers and systems to facilitate treatment access and culturally competent care for individuals from diverse groups. This will be largely improved by a focus on culturally competent training for health care providers (Office of Minority Health, 2001). In order to do so, it will be important for professionals to receive training that emphasizes how to address mental health issues with acculturative stressors in mind. The Department of Health and Human Services, Office of Minority Health developed national standards for Culturally and Linguistically Appropriate Services (CLAS; 2001) in health care to address the needs of individuals and communities. Employing CLAS in training of mental health and other health care professionals and accounting for these factors in policy decisions will impact mental health outcomes and perceptions of mental health for individuals from this group immensely.

Women were disproportionately negatively impacted across all groups except Asian Americans (Table 21). The negative impact on women of African descent and African American women in particular has been hypothesized in previous research to be a result of the intersection of the stressors of gender, race/ethnicity, and class. Considering the intersectionality of gender, race/ethnicity, and socioeconomic status as it impacts women will be important in developing a comprehensive model of stress and coping to meet gender-specific challenges in the environment. The disproportionate impact on women is consistent with themes argued in black feminist thought and, more specifically, intersectionality theory (Greer, 2011; Hamilton-Mason et al., 2009; Lekan, 2009;Woods-Giscombe & Lobel, 2008). Women of African descent in the U.S. face discrimination at multiple levels and this places them at greater risk for anxiety. Bratter

and Gorman (2011) suggest that discrimination may explain the ethnic differences in health outcomes. However, African descent women with strong social support and resources may be less impacted. In fact, the protective influence of resources was consistent across the model. The relation between the self-rated mental health variable and the latent construct of resources is consistent with other stress and coping models looking at African American mental health outcomes. For this group, and African Americans more specifically, the individual's perception of his/her mental health may be indistinguishable from coping mechanisms like self-esteem and a sense of mastery. Resources are extremely important in the stress process that predicts self-rated mental health among African Americans and Afro-Caribbean as well. The vulnerability of African American women should be taken into account in future research, given the personal (e.g. mastery and self-esteem), sociocultural (e.g. religious attendance) and environmental factors (e.g. education) that impact their well-being.

Hispanic women and Latinas are at greater risk for negative outcomes at earlier stages of the model, including having worse intrapsychic strain. While women from this community experienced higher levels of stressors and more intrapsychic strain, these risk factors did not always lead to anxiety, but place them at risk for mental distress including anxiety. This has implications for treatment providers, who should strive to understand the unique risks women in particular face in mental illness risk. Women across all groups were disproportionately impacted with greater stressors, fewer resources, and worse self-rated mental health or intrapsychic strain. Given this gender disparity, future interventions should consider targeting women for both prevention and intervention services. A unique opportunity may exist to target women at many different health care service points, as they are often the primary caregivers for many family members. Opportunities for access to services and recruitment to intervention programs may be

established as a way to meet the women where they are and extend mini-interventions or s

mental health checkups.

Education was a significant predictor for all groups with the exception of Asian

Americans (Table 21). Uniquely, education demonstrated an unexpected relationship with

anxiety symptom severity such that those with greater education experienced worse outcomes.

The research on education and anxiety is complicated and contradictory with arguments for

relations between less education and more anxiety (Kessler, Foster, Saunders, & Stang, 1995)

and greater education and anxiety (Miech, Caspi, Moffitt, Wright, & Silva, 1999). Cohort effects

have been suggested as a possible confound in these associations (Bjelland et al., 2008).

Research with diverse groups has been more limited, but implies that there are differences across

groups stratified by race/ethnicity and age. For example, greater education levels produces

worse anxiety for migrant Mexican farmworkers (Hovey & Magaña, 2002), but research in older

African Americans suggests lower education predicts psychological distress (Jang, Chiriboga,

Kim, & Phillips, 2008). Though education may be viewed as an individual protective factor, in

the current study it demonstrates the importance of exposure to environmental factors in the

stress process. Specifically, the exposure to majority culture and perhaps the pressure to succeed

in such an environment places individuals at risk. However, the educational environment also

provides a unique opportunity as the framework for implementation of prevention services exists

in education. The identified risks in first generation college students regardless of race/ethnicity

compared to their second generation peers (Hertel, 2002) imply the need for intervention. Given

this disparity, targeted prevention programs should be offered in higher education to address this

need. For example, student organizations could partner with counseling centers and student

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health centers at universities to offer skills-based educational sessions to introduce topics like

health y coping as well as to offer culturally sensitive group and individual therapy.

Table 22. Summary Table of Findings Across Groups

	Full	African Descent	Asian Americans	Hispanic/ Latinos
Women Disproportionately Impacted	X	X	--	X (women at early stages, but being male predicted anxiety symptom severity)
Education (higher – worse outcomes)	X	X	--	X
Older Adults with worse self-rated mental health (or Intrapsychic Strain); Younger adults with worse Anxiety Symptom Severity	X	X	½- older adults had worse self-rated mental health	X
Stressors-Self-Rated Mental Health (Intrapsychic Strain)	X	--	--	X
Self-Rated Mental Health /Intrapsychic Strain	X	--	X**	X***
Resources	X	X*	X	X

* Resources were tied to self-rated mental health constructs
**The adapted intrapsychic strain construct contained acculturative distress, self-rated mental health, English proficiency, objective social status, and self-rated physical health.
*** Intrapsychic strain is composed of self-rated mental health, acculturative distress and the number of years in the U.S.

Older adults had worse self-rated mental health or intrapsychic strain for Asian and Hispanic/Latinos across all stages.   The distinct differences between older and younger adults have implications for future research and treatment considering designs and interventions that account for differences across the lifespan. However, the influence of age contributed in distinctly different ways.

In the African descent model, the unique predictive qualities of age suggest that future research and clinical applications should focus on socio-historical predictors and influences (Mills & Edwards, 2002) for older adults from this group. With the exception of Asian Americans, younger adults were more likely to progress to anxiety symptom severity though older age was associated with stressors and intrapsychic strain. For Hispanic/Latinos, this age difference most likely was a reflection of the differences in the length of time each group has been in the U.S. Unlike African Americans and some Afro-Caribbeans who have been in the U.S. for generations, a number of the young Hispanic and Latinos are first, second, or third generation. These individuals experience increasing exposure to the dominant U.S. culture compared to immigrants, and the greater increased interactions result in greater exposure to discrimination. Hispanic and Latino men were more likely to experience anxiety symptom severity, which is a unique finding from previous studies. The anxiety for Hispanic and Latino men may be better represented by the unique construct that looked at broader symptom severity rather than Generalized Anxiety Disorder. Hispanic and Latino men may be at greater risk due to financial demands that come from immigrating for work and the need to provide for relatives still living outside the U.S. Interestingly, demographic factors including age did not predict anxiety symptoms severity in Asian Americans. This argues for a greater focus on factors that interact with the environment to predict the risk of anxiety in Asian Americans.

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Older adults appear to have unique emotional risks. For example, older age predicted worse self-rated mental health or intrapsychic strain across all groups. These concerns suggest that elders are vulnerable across groups, but the stress process may not lead to anxiety specifically. Interventions with older adults across these racial and ethnic groups should focus on the risk factors identified to address their psychological distress. Special considerations for working with older adults with mental health needs have been identified in the literature and should be considered in designing interventions for this group. For example, older adults may need greater repetition of material during mental health interventions due to age-related declines in cognitive resources (Knight, 2004).

With regard to stressors, individuals of African descent and Hispanic and Latinos experienced greater stressors compared to Asian Americans (Figure 14). In fact, stressors did not predict Intrapsychic Strain for Asian Americans though this relation was significant in the other groups. However, across groups those with fewer resources experienced a greater impact on their perceived mental health. Hispanic and Latinos experienced the greatest anxiety symptom severity, followed by individuals of African Descent and then Asian Americans. It is important to consider that subsyndromal anxiety might better capture experiences, but clinicians and researchers should consider cultural differences in their clients and research participants and how anxiety emerges in different populations. For example, those of African descent were greatly impacted by the presence of resources such that, even with poorer self-rated mental health, they did not progress to subsyndromal anxiety unless their social support was poor.

Given the importance of self-rated mental health and resources in predicting anxiety symptom severity in individuals of African descent in Aim 1, it was expected that Aim 2 would highlight those same factors. In Aim 2, the Pearlin SPM enhanced our ability to model positive

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supports that reinforce coping in individuals of African Descent (Figure 6). The heterogeneity of

the group influenced our ability to model subsyndromal anxiety. Results for the African descent

model displayed the impact of demographic factors, some unusual results for self-rated mental

health, and the importance of resources.

When the ethnic-group-specific model was constructed for Asian Americans, the Pearlin

SPM demonstrated unique changes in the factors that influence each stage of the model. The

within-group ethnic differences emerge at early levels of the model (e.g. intrapsychic strain) but

do not essentially predict anxiety symptom severity. Overall, self-rated mental health,

acculturative distress and discrimination were key factors in predicting anxiety symptom severity

for Asian Americans regardless of subgroup ethnicity. The later steps of the model were the most

important, beginning with an emphasis on intrapsychic strain, which was heavily influenced by

factors related to acculturative distress. Essentially, conceptualizations of anxiety in Asian

Americans should focus on intrapsychic strain and resources as risk factors and contributors for

anxiety symptom severity. The target areas for intervention would be to build up social support

structures and to improve their cognitions about coping. Family involvement has been shown to

be an important part of psychotherapy with Asian Americans (Lee, 2007) and integrating this

support structure can bolster positive outcomes.

The Pearlin SPM predicted anxiety symptom severity in Hispanic and Latino individual

but it was less succinct compared to other groups. Uniquely, demographic factors were constant

predictors, which may indicate that one model is not an effective solution. In some instances

previously documented relations (i.e. more education) (Hovey & Magaña, 2002) emerged and in

a number of cases predictors suggested the more exposure to dominant culture, the worse the

experience of anxiety symptoms. The influence of factors related to acculturation and the

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perception of psychological and acculturative stress in the intrapsychic strain construct highlighted the importance of adaptation to the environment in anxiety symptom severity in Hispanic and Latino adults living in the U.S. For example, the impact of English proficiency, which contributed to both stressors and intrapsychic strain, was a key part of the SPM for this group. The dual contribution is consistent with previous research that suggests English proficiency in Hispanic and Latinos is related to mental health (Ortega et al., 2000; Alegria, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007).

Interventions with this group would first focus on the individual differences that one brings to therapy. Construction of targeted interventions that address subgroup-specific responses to negative environmental interactions with the dominant U.S. culture would be crucial. "Culturally appropriate interventions should seek to decrease psychological distress by strengthening an individual's cultural networks and culturally specific coping skills associated with having a secure commitment to one's ethnic identity" (Torres et al., 2011). Experiences with discrimination can be impacted by ethnic identity as described by Torres and colleagues (2011). With regard to cultural networks, negative interpersonal functioning was strongly related to the development of anxiety in Hispanics and Latinos (Hernandez et al., 2005). Future research may wish to build upon these models by considering additional factors that contribute to the experience of anxiety symptoms. Based on previous research emphasizing the importance of family and interpersonal support in Hispanics and Latinos in the U.S., clinicians should work to incorporate these factors into treatment. For example, encouraging individuals to cultivate relationships and spending time with family (Hernandez, Plant, Sachs-Ericsson, & Joiner, 2005).

Moving forward, it will be important for professionals to receive training that emphasizes how to address mental health issues with acculturative stressors in mind. The Department of

Health and Human Services, Office of Minority Health developed national standards for Culturally and Linguistically Appropriate Services (CLAS) in health care to address the needs of individuals and communities. Employing CLAS in training of mental health and other health professionals and accounting for these factors in policy decisions will impact mental health outcomes for individuals from this group immensely. Additional recommendations for cultural competence in health care to reduce racial/ethnic disparities have been put forth by Betancourt and colleagues (2003).

Using the CPES dataset afforded great advantages in allowing for the examination of nationally representative data to examine differences in anxiety symptom severity. However, with secondary data analyses there are ingrained limitations that should be acknowledged. First, there were some measurement differences between different datasets as seen in questions like the assessment of English proficiency. While the wording and number of response options were slightly different, the overall meanings were equivalent and allowed for the creation of a single representative variable. Second, the use of secondary data does not allow for the inclusion of all possible variables that may have been important across the SPM. However, the lack of existing research examining predictors of anxiety symptoms in racial and ethnic minority groups necessitated the current study. Moreover, a unique aspect of the CPES as a secondary dataset is the use of specific measures across the datasets (e.g. WHO-CIDI) that provide a large and representative national sample unavailable in prior research efforts. Also of great importance is the inclusion of individuals from so many racial/ethnic groups and the very specific classification of individuals into their ethnic subgroups that allows for the exploration of differences at such a specific level. This allowed for micro-level analysis of the risk and protective factors that contribute to anxiety symptom severity.

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The current study did not include all possible subgroups and in some cases, sample size necessitated grouping individuals of different backgrounds (e.g. Other Hispanics, n =703). However, it does highlight both between-and within-group differences that are important in health disparities research. Though this model used ethnicity as a grouping variable to distinguish differences between groups, future studies should examine other factors related to ethnic group membership such as cultural expression. The current research makes salient the importance of considering ethnic diversity, immigration status, and language proficiency as important predictors of anxiety-related distress and impairment across groups.

It is important to consider self-rated mental health in the sample in light of its complexity and its strengths and limitations in the general population as well as the population of interest as identified by previous researchers (Fleishman & Zuvekas, 2007; Zuvekas & Fleishman, 2008; Kim et al., 2011c; Mawani & Gilmour, 2010). As previously discussed, self-rated mental health indicated individuals' perception of psychological distress (Fleishman & Zuvekas, 2007), and is correlated with (Mawani & Gilmour, 2010) but not equivalent to any mental illness (Fleishman & Zuvekas, 2007). Several factors may have helped to increase the validity of the participant responses including participant-interview language matching, and translation of questionnaires in the respondent's preferred language (Pennell et al., 2004). Self-rated mental health aids in identifying individuals who are experiencing psychological distress and who are at risk for or currently experiencing mental health concerns. This could help to identify those who would benefit from early intervention services.

Finally, it is important to highlight resources in protecting against negative mental health outcomes such as increased anxiety symptom severity at all stages of the stress process model. Healthcare providers, organizations, and policy writers should not ignore the importance of

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facilitating group cohesiveness as well as more basic resource needs when planning for interventions. Even when individuals are expressing psychological distress, resources act as a buffer against the progression to psychological disorder. While this appeared to be especially important for individuals of African descent, it was a consistent factor across groups.

The results of the current study provide an initial understanding of predictors of anxiety symptom severity in racial and ethnic minority groups across the adult lifespan. In addition, the results highlight important differences both between and within groups that inform future research, initial interventions, and policy addressing diverse anxiety symptom expression across groups.

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