

1-1-2017

# Exploring mediators and moderators in the relationship of acculturative stress and internalizing symptoms in Hispanic youth

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EXPLORING MEDIATORS AND MODERATORS IN THE RELATIONSHIP OF  
ACCULTURATIVE STRESS AND INTERNALIZING SYMPTOMS IN HISPANIC  
YOUTH

by

Victoria Schlaut

A Dissertation presented to the  
Faculty of the College of Psychology of  
Nova Southeastern University  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

APPROVAL PAGE

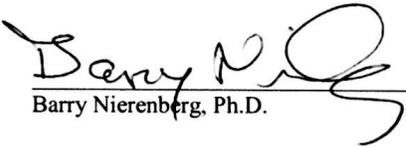
This dissertation was submitted by Victoria A. Schlautt under the direction of the Chairperson of the dissertation committee listed below. It was submitted to the College of Psychology and approved in partial fulfillment of the requirements of the degree of Doctor of Philosophy in Clinical Psychology at Nova Southeastern University.

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## ACKNOWLEDGEMENTS

I would like to thank many people for their support and kindness during the preparation of this document. First and foremost, my adviser, Dr. Suarez-Morales: your guidance through this process has been indispensable to me and I thank you for your wisdom, advice, and encouragement. We have accomplished so much together in four short years, and I look forward to continuing to publish with you and continuing our work together in the years to come. Next, Dr. Black and Dr. Nierenberg: you have supported me through the creation of this dissertation both by helping with practical or theoretical issues and truly believing in my idea and ability to complete this project. Thank you.

I would be remiss if I didn't mention the beautiful support I have gained from my friends during this experience. Whether it be sitting with me at coffee shops for hours on end, talking through my results to help me make sense of things, or just being there to remind me to take a break, you guys have been incredible through it all.

I'd like to thank my family. My parents and sister gave me unending support through the sometimes-grueling endeavor I have accomplished this year. I have asked for help with editing when my eyes can no longer see the page, for an ear when I needed to vent, and for love and encouragement when I felt beaten down by the process; you guys have given me all of these things and so much more. Thank you for believing in me, for loving me, and helping me become the person I am today.

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## **ABSTRACT**

# **EXPLORING MEDIATORS AND MODERATORS IN THE RELATIONSHIP OF ACCULTURATIVE STRESS AND INTERNALIZING SYMPTOMS IN HISPANIC YOUTH**

**by**

**Victoria Schlaudt**

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The population of Hispanic children is quickly growing in the United States. Unfortunately, this group has a significant risk of developing internalizing symptoms. The present study examined the complex relationships of cultural and cognitive factors with symptoms of anxiety and depression. Literature suggests that acculturative stress, or the difficulty experienced when adjusting to a new culture, is related to depression and anxiety in Hispanic youth. However, the mechanisms by which acculturative stress relates to anxiety and depression in this population are unknown. Thus, this study attempted to fill these gaps in the current literature by examining potential mediators and/or moderators. Specifically, negative automatic thoughts, which refer to biases and errors in information processing, were considered as a potential mediator of the relationship between acculturative stress and internalizing symptoms. Further, mindfulness, defined as present moment awareness and nonjudgmentalness, was considered as a potential mediator and moderator of the relationship between acculturative stress and internalizing symptoms. These relationships were tested in a sample of 274 middle school-aged Hispanic participants using self-report measures of internalizing symptoms, mindfulness, automatic thoughts, and acculturative stress.

Results revealed that both mindfulness and automatic thoughts mediated the relationship of acculturative stress to anxiety and depression. In addition, mindfulness moderated the pathways from acculturative stress to automatic thoughts and from acculturative stress to anxiety. Clinical implications and future directions are discussed.

## CHAPTER I

### Statement of the Problem

The United States is currently home to 17.1 million Hispanic children aged 17 or younger (Passel, Cohn, & Hugo Lopez, 2011; U.S. Census Bureau, 2010). The current population estimate of Hispanic youth represents a 39% increase in the past decade (Passel et al., 2011). Additionally, approximately half of Hispanic children in the United States (48%) have at least one parent who was born outside of the country and about 18% of Hispanic youth are foreign born (Brindis, Driscoll, Biggs, & Valderrama, 2002). Thus, millions of Hispanic children, representing a large sector of the U.S. population, are either immigrants or first generation Americans grappling with the experience of acculturating to the American culture and way of life.

Acculturation has been defined as a process in which people incorporate new values, beliefs, and cultural practices of a new country after immigration (Gibson, 2001). This process may involve stress or discomfort as an individual learns to navigate a new culture. The strain that accompanies the experience of acculturation to a new society and culture has been termed “acculturative stress” (Suarez-Morales & Lopez, 2009). Acculturative stress seems to be associated with internalizing symptoms, such as anxiety and depression in Hispanic youth (Crockett, Iturbide, Torres Stone, McGinley, Raffaelli, & Carlo, 2007; Suarez-Morales & Lopez, 2009), but the sparse literature available has failed to provide a clear understanding of the mechanisms involved in this relationship. Examining these mechanisms is of vital importance,

given that this population demonstrates high rates of depressive and anxious symptoms when compared to other ethnic groups (U.S. Department of Health and Human Services, 2001).

Several factors could serve as mediators and moderators of the association between acculturative stress and internalizing symptoms. One proposed mechanism is negative automatic thoughts, which are cognitive products that stem from errors in information processing (Beck, 1976). Theoretical explanations implicate negative automatic thoughts in the development of anxiety and depression and other negative emotional states (Beck, 1976). However, there is a gap in the current literature, which has not considered the relationship between acculturative stress and negative automatic thoughts, anxiety, and depression in Hispanic youth samples.

In contrast to negative automatic thoughts, which have been linked to negative emotional states and internalizing symptoms, engaging in mindfulness has been associated with a host of positive outcomes, such as lowered anxiety and depression. Mindfulness refers to nonjudgmental awareness in the present (Edwards, Adams, Waldo, Hadfield, Biegel, 2014). This concept could serve as one of the potential moderating or mediating factors of the relationship between acculturative stress and internalizing symptoms. The present literature has not investigated the role mindfulness plays in the lives of Hispanic youth. Additionally, there is a dearth of information regarding how mindfulness operates. Specifically, it is unclear whether mindfulness affects levels of stress, lowers the prevalence of negative automatic thoughts, or weakens the relationship of negative automatic thoughts to anxiety and depression, etcetera. Thus, it is vital to

elucidate mindfulness' mechanism of action and expand the current literature to Hispanic youth.

Overall, the purpose of this study is to further explore the relationships of acculturative stress, mindfulness, automatic thoughts and internalizing symptoms in Hispanic youth. This research will help to inform future research and interventions in order to best serve this vulnerable ethnic minority population.

## CHAPTER II

### Review of the Literature

#### *Prevalence of Depression and Anxiety in Hispanic Youth*

Past research has reported a high prevalence rate of depression and anxiety symptoms in Hispanic youth. Depression refers to the “presence of sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual’s capacity to function” (American Psychiatric Association, 2013, p. 155). Based on data from a nationally representative sample of 9,863 middle and high school children, 22% of Hispanic youth experienced symptoms of depression in the past year. This rate of symptomology is higher than the prevalence rate reported by white, African American, and Asian American children in the same study (Saluja, Iachan, Scheidt, Overpeck, Sunn & Giedd, 2004). In another study with 3,196 Hispanic and white youth ages 12-17, Hispanic youth were nearly twice as likely to report symptoms of depression (10.5% vs. 5.5%) than white youth (Mikolajczyk, Bredehorst, Khelaifat, Maier, & Maxwell, 2007). However, these differences disappeared when examining these symptoms only in disadvantaged youth of both ethnicities. Further, a national study including 10,123 youth (ages 13-18) found that Hispanic youth were more likely to report symptoms of a mood disorder (e.g. depression, bipolar I, or bipolar II) than non-Hispanic whites (Merikangas et al., 2010). Additionally, in a community sample of 281 Hispanic students ages 12-19, 7% exceeded the clinical cutoff score for depression (Potochnik & Perreira, 2010). Anderson and Mayes (2010) conducted a review that demonstrated that across studies, Hispanic youth report higher depressive symptoms than Asian Americans, African Americans, and Caucasian youth. Consistent with these results, the U.S.

Department of Health and Human Services (2001) reported that non-Hispanic white youth experience less depression than their Hispanic counterparts.

Similarly, high rates have been reported for anxiety symptoms in Hispanic youth. Anxiety refers to the “anticipation of future threat” (American Psychiatric Association, 2013, p. 189). However, when anxiety reaches a clinical level, the person frequently experiences excessive fear, tension, and a tendency to “overestimate[s] the danger in situations they fear or avoid” leading to inappropriate behavioral, emotional, and cognitive responses to situations (American Psychiatric Association, 2013, p. 189). Only one nationally representative study has explored the differences in anxiety symptomology across ethnicity. The study by Merikangas and colleagues (2010) reported that 31.9% of adolescents in their study met criteria for an anxiety disorder and explained that they found no differences in prevalence rates across ethnic groups. Unfortunately, these results are clouded by the inclusion of symptoms of posttraumatic stress disorder, conduct disorder, oppositional defiant disorder, and attention-deficit/hyperactivity disorder as part of the “anxiety” subgroup. In the study cited above by Potochnik and Perreira (2010), the incidence of anxiety was also explored. Anxiety scores above a clinical cut off were found for 29% of the community-based sample (Potochnik & Perreira, 2010), demonstrating that a larger proportion of the sample reported clinical levels of anxiety than depression. In a clinical sample of 152 youth ages 5-17, Pina and Silverman (2004) reported that the rate of anxious symptomology was very similar across white and Hispanic youth. Differences emerged only in somatic symptoms reported across the two groups, with Hispanic youth reporting more somatic symptoms than white youth. Therefore, an important consideration in anxiety rates in Hispanic youth is that anxiety

may be overlooked in this population due to a high rate of somatization of anxious symptoms (Koss, 1990). In the review cited above, Anderson and Mayes (2010) also reported that rates of anxiety, especially separation anxiety, were found to be higher in Hispanic children than their Caucasian counterparts. In addition, the report of the U.S. Department of Health and Human Services (2001) stated that Hispanic youth experience more symptoms of anxiety than non-Hispanic white youth.

Overall, the current literature supports a high prevalence of internalizing symptoms in Hispanic youth, despite the differences in methodology and prevalence rates. Further, there is some evidence that Hispanic youth experience more symptoms of anxiety and depression than their non-Hispanic counterparts. However, the current literature has a few gaps. Namely, there are no nationally representative studies that assess the rate of anxiety symptoms across ethnicity, as the Merikangas and colleagues (2010) study does not examine anxiety symptoms on their own. Additionally, there is little replication of the rates of anxiety and depression symptoms in both clinical and community samples. More research is necessary to understand the prevalence of these symptoms in Hispanic youth. Further, it is vital to understand the mechanisms that lead to the high rates of internalizing symptoms in this ethnic minority population.

#### ***Acculturation and Acculturative Stress in Relation to Anxiety and Depression***

This section will describe cultural constructs, specifically acculturation and acculturative stress, and summarize research that examines the relationship of these cultural constructs to anxiety and depression symptoms in Hispanic populations. First, definitions of acculturation and acculturative stress will be provided. Next, the literature exploring the relationships between acculturative stress and depression, anxiety, and

overall internalizing symptoms will be described, respectively. Finally, implications and future directions of this research will be highlighted.

### ***Definitions of acculturation and acculturative stress***

Acculturation is the process that occurs when groups of individuals from “different cultures come into continuous first-hand contact with one another and [it] results in subsequent changes in the original cultural patterns of either or both groups” (Redfield, Linton, & Herskovits, 1936, p.149). This definition, which was first proposed by an anthropologist, has been redefined by psychologists in multiple ways over time. Acculturation was once understood as a continuous process in which a person would try to become adapted to a new culture, thus acquiring behaviors and values of a new culture while relinquishing the behaviors and values of the culture of origin (Berry, 1997). Newer definitions view acculturation as either a bidirectional process in which a person retains some aspects of their culture of origin while adapting and acquiring behaviors of the new location’s culture (Phinney, Horenczyk, Liebkind, & Vedder, 2001), or a multi-dimensional process. The multi-dimensional process, posited by Schwartz, Unger, Zamboanga, and Szapocznik (2010), states that acculturation occurs on multiple levels or dimensions including cultural identification, cultural values, and cultural practices. For example, one can identify as an American while still holding cultural values (e.g. spiritual, gender roles) or cultural practices (e.g. language) of his/her country of origin. Thus, a person’s acculturation level can be different across different dimensions of the construct (Schwartz et al., 2010).

Psychology related to immigration has focused on acculturation as a main tenet. Despite this focus, the manner in which acculturation is studied has been inconsistent,

which obfuscates a reliable understanding of the construct and its effects on those who experience it. Most measures of acculturation focus on language use (Phinney, Berry, Vedder, Liebkind, 2006) and engagement with customs or behaviors that are consistent with the values of the host culture, the culture of origin, or both (Vedder & van de Vijver, 2006). This limited measurement perpetuates a shortage of knowledge regarding the multiple processes that one can experience through acculturation and creates a restricted view of the construct. Researchers in the field have commented on this measurement difficulty. Celenk and van de Vijver (2011) reported that most measures of acculturation only capture a small portion of this multidimensional process, thus demonstrating a gap in the ability to fully measure and understand this phenomenon. In addition, a person is viewed to be successfully acculturated when he/she achieves in school or work, is psychologically and physically healthy, has a high quality of life, and experiences high self-esteem (Phinney et al., 2001). This definition is confounded as it could be argued that successful acculturation and psychological well-being are one in the same.

Despite varying definitions used for the concept of acculturation, similarities remain. Individuals undergoing this process may struggle to learn a new language, lack social support and social capital, and experience discrimination (Concha, Sanchez, de la Rosa, & Villar, 2013), all of which can be quite distressing. These problematic experiences relate to the construct of acculturative stress, which directly refers to discomfort or stress in the process of acculturation. Acculturative stress is defined as “being exposed to new, novel, and challenging events and situations [that] require some form of psychological and behavioral adjustments” (Cervantes & Cordova, 2011, p. 338) when becoming accustomed to a new culture.

Acculturative stress is understood as having two dimensions, perceived discrimination and immigration-related stress. Perceived discrimination refers to feelings of limitation due to membership in a cultural group and feelings of being marginalized (Suarez-Morales, Dillon, & Szapocznik, 2007). On the other hand, immigration-related stress refers to difficulty regarding language acquisition and use, and challenging emotions involved with leaving one's country of origin and settling into a new country (Suarez-Morales et al., 2007).

### ***Depression and acculturative stress***

Acculturative stress may be one of the variables contributing to high depression rates in Hispanic youth. Specifically, the link between acculturative stress and depression has been supported among high school and college students, particularly of Mexican descent. In one study with 148 college students from Texas and California (ages 18-30, 67% female) researchers measured acculturative stress using the Social, Attitudinal, Familial, and Environmental Acculturative Stress Scale (SAFE; Mena, Padilla, & Maldonado, 1987), which is a scale that measures stress regarding acculturation across several domains. The results supported that increased acculturative stress was associated with higher levels of depressive symptomology (Crockett, Iturbide, Stone, McGinley, Raffaelli, & Carlo, 2007). Moreover, this relationship has been demonstrated in high school students of Mexican (87%), Central American, South American, and Spanish descent (Hovey & King, 1996). In this study, the results demonstrated that in 70 high school students, acculturative stress, as measured by the SAFE, predicted depression. Thus, past research with college and high school students of Hispanic descent supported a link between these variables.

The aspect of acculturative stress that seems to be most detrimental, and leads to symptoms of depression, is perceived discrimination. This connection has been demonstrated by a group of researchers that examined the effects of perceived discrimination and acculturation in a sample of 1,124 Hispanic high school students in 9<sup>th</sup>, 10<sup>th</sup>, and 11<sup>th</sup> grades (Lorenzo-Blanco, Ritt-Olson, Soto, & Baezconde-Garbanati, 2011). In this study, perceived discrimination was assessed using a ten-item measure that evaluated the everyday discrimination experiences of adolescents. The researchers determined that the relationship of acculturation at Time 1 to depressive symptoms at Time 3 was mediated by perceived discrimination at Time 2 in both boys and girls. The longitudinal nature of this study allows for stronger statements regarding the predictive nature of perceived discrimination in the outcome of depression. Another study supported this finding in a cross-sectional investigation. Stein, Gonzalez, and Huq (2012) studied acculturative stress and depression in 171 Hispanic students in 7<sup>th</sup>-10<sup>th</sup> grade. The researchers utilized a regression to determine if acculturative stress, as measured by the 20-item Bicultural Stress Scale, and discrimination, as measured by a 19-item discrimination measure, significantly predicted depression. The results demonstrated that only discrimination, and not acculturative stress, predicted depression. Unfortunately, both studies mentioned conceptualize discrimination experiences as separate from acculturative stress, whereas other researchers posit that perceived discrimination is a subcategory of the experience of acculturative stress (Suarez-Morales, Dillon, & Szapocznik, 2007).

In general, the literature supports an association between acculturative stress and depression in Hispanic youth. However, this research has been mostly conducted with

college and high school students of a Mexican-American background. Thus, the current literature cannot be easily applied to younger Hispanic children or youth of non-Mexican descent.

### *Anxiety and acculturative stress*

There is a scarcity of literature that has attempted to understand the relationship between acculturative stress and anxiety in Hispanic youth. Despite the lack of information on the topic, there is evidence for an association between the two variables. In pre-adolescent Hispanic children (aged 10-12 years), Suarez-Morales and Lopez (2009) demonstrated that acculturative stress, as measured by the Acculturative Stress Inventory for Children (ASIC), predicted anxiety symptoms. Specifically, oversensitivity/worry and social concerns/concentration difficulties were significantly predicted by acculturative stress, and a trend demonstrated that acculturative stress may be associated with more physiological symptoms of anxiety. This study demonstrates that the relationship of acculturative stress to anxiety is robust in younger Hispanic children, and that it is associated with several types of anxiety symptoms (Suarez-Morales & Lopez, 2009). Additionally, one study has measured the relationship of anxiety to acculturative stress in a college sample. In the study described above, Crockett and colleagues (2007) examined acculturative stress and anxiety symptoms utilizing the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) with 148 Hispanic college students. They found that an increase in acculturative stress was associated with an increase in anxiety symptoms in this older Hispanic population (Crockett et al., 2007).

Of the two subtypes of acculturative stress, perceived discrimination seems to be more predictive of anxiety than immigration-related stress (Suarez-Morales & Lopez,

2009). Suarez-Morales and Lopez (2009) found that perceived discrimination was significantly related to three types of anxiety (i.e. oversensitivity/worry, social concerns/concentration, and physiological anxiety symptoms), whereas immigration-related stress was only associated with oversensitivity/worry. This finding is similar to the results of previously mentioned research that associated depression with perceived discrimination, suggesting an overall link between perceived discrimination and internalizing symptoms.

The scant literature supports a link between acculturative stress and anxiety in Hispanic youth. However, these findings are limited to two studies, one with young children and the other one with a college population; thus, creating a gap in the age group in which acculturative stress has been studied. Therefore, more research examining acculturative stress and anxiety symptoms is necessary in order to understand the relationship between the two variables and its intricacies across populations.

### ***Internalizing symptoms and acculturative stress***

There are several studies that have examined the relationship of acculturative stress to overall internalizing symptoms, which refers to a combination of anxiety and depression symptoms. The results of these studies have been mixed. In a recent study, Katsiaficas and colleagues (2013) found a significant relationship between acculturative stress, measured by the SAFE, and internalizing symptoms in a longitudinal study with a sample of 304 adolescents from various ethnic backgrounds (45.7% Hispanic, 24.3% Asian, 13.8% Black/West Indian, 12.2% mixed racial background, 2% European American, 2% other). Similarly, Sirin and colleagues (2013) supported this link when examining acculturative stress, using a short version of the SAFE, in a sample of 332

immigrant students using a longitudinal design. This study was conducted with 10<sup>th</sup> graders who were assessed every year for three consecutive years. The authors found that for each unit increase in acculturative stress, anxious/depressed symptoms increased by .1 units and withdrawn/depressed symptoms increased by .08 units, which suggests a strong relationship between these constructs. In contrast, Gudiño and colleagues (2011) conducted a longitudinal study in which they measured the relationship of acculturative stress, using the Bicultural Stressors Scale (Romero & Roberts, 2003), and internalizing symptoms in a community sample of 164 Hispanic youth, ages 11-13. Interestingly, although acculturative stress was significantly related to internalizing symptoms at both Time 1 and Time 2 (measured six months apart), acculturative stress did not predict Time 2 symptoms after controlling for demographic variables, Time 1 symptoms, violence exposure and other acculturation-related variables. Smokowski, Rose, and Bacallao (2010) also found conflicting evidence in a longitudinal study including 349 Hispanic youth who were in 10<sup>th</sup> grade at the time of the first assessment. In this study, acculturative stress, specifically perceived discrimination measured by three Likert type items, did not significantly predict internalizing symptoms at four different times over a span of two years. Conversely, using the cross-sectional sample from the same parent study ( $n = 323$ ), Smokowski and Bacallao (2007) reported that perceived discrimination was highly predictive of internalizing symptoms in 11 to 19 year old Hispanic youth.

These studies offer confusing results regarding the relationship between acculturative stress and internalizing symptoms. Although there is some evidence for an association and even causal link between the two, there is also evidence that acculturative stress may not predict internalizing symptoms over time. The methodological decision in

these studies to report overall internalizing symptoms instead of anxiety or depression limits the conclusions that can be made about specific symptom clusters (i.e., anxiety or depression symptoms). Finally, the measure that is often used to assess acculturative stress may not be appropriate, as previous researchers have argued that the SAFE may measure general life stressors instead of stress specific to acculturation (Joiner & Walker, 2002). Thus, these methodological issues may obscure the understanding of the effects of acculturative stress on anxiety and depression in Hispanic youth.

### ***Summary and implications***

It is clear that acculturative stress creates a significant barrier and challenge for Hispanic youth. As demonstrated, Hispanic youth may experience more symptoms of anxiety and depression than the general population, which could be partially explained by the detrimental effects of acculturative stress. More specifically, several studies suggest that depression and anxiety are strongly associated with a subtype of acculturative stress, namely perceived discrimination. Overall, although cross-sectional studies provide strong evidence for these relationships, the literature examining these constructs longitudinally has offered less conclusive evidence. Several limitations complicate the results and call for future research to improve on the current literature. Specifically, the manner in which acculturative stress was assessed in the studies varied widely and makes it difficult to determine whether this construct is being captured the same way across studies. Other measures included in the studies lack evidence regarding their psychometric properties and may not be valid to use with Hispanic populations. Further, the samples in the studies may not represent the variability of the Hispanic population in the United States or are

simply limited in the age group examined, which prevents conclusions from being made about Hispanic individuals from other subgroups or ages.

### ***Moderating and Mediating Factors Associated with Anxiety and Depression in Youth***

Research studies examining the relationship of acculturative stress to overall internalizing symptoms or specifically to anxiety and depression symptoms have rarely considered potential mediators or moderators of these relationships. A mediator refers to a variable that is the mechanism of the relationship between two other variables. That is, the predictor variable influences the outcome variable through its influence on the mediator. Moderators, in contrast, are variables that affect the strength, size, or sign of the relationship between two other variables. In other words, the predictor variable and the moderator interact to influence the outcome variable. Using constructs suggested by well-known and accepted theories of anxiety and depression, the following section will discuss potential moderators and mediators of the relationship between acculturative stress and anxiety, as well as acculturative stress and depression. First, automatic thoughts will be considered. This construct will be defined using cognitive theories and studies examining the relationships of stress, anxiety, depression and automatic thoughts will be reviewed. Next, the literature on mindfulness will be explored and its potential as a moderator and mediator of the relationship between acculturative stress and internalizing symptoms will be explicated. In contrast to the section on acculturative stress, most of the research regarding automatic thoughts and mindfulness has been conducted with majority populations, as these concepts have been sparsely studied with ethnic minority populations. The available literature, however, will provide a strong

theoretical and empirical framework to examine these relationships with minority populations, in particular Hispanic youth, in the present study.

### *Automatic thoughts*

Prominent cognitive researcher and psychologist, Aaron Beck, defined automatic thoughts as “nonvolitional, stream of consciousness cognitions” (1976, as cited in Beck, Brown, Eidelson, Steer, & Riskind, 1987) that come in both images and verbal forms (Beck, 2011). These thoughts influence the way situations are experienced and interpreted. Automatic thoughts can be quite negative regarding oneself, others, and the world, which in turn leads to a negative perspective and understanding of one’s life circumstances. When this occurs, negative automatic thoughts can be indicative of a bias in information processing which leads to undue focus on anxiogenic (anxiety-provoking) or depressogenic (depression-provoking) stimuli or aspects of a situation. When characteristics or situations that are negative or threatening are the focus of one’s attention, the individual begins to generalize these negative thoughts about situations to a broader world-view. Plainly put, when a person concentrates on adverse experiences, his/her thoughts may be unduly negative (Beck, 1976). Over time, one’s biased view and perspective becomes a pattern, and the person develops a general bias in which he/she views the world as negative or dangerous (Muris, Mayer, den Adel, Roos & van Wamelen, 2009). This pattern, which results in consistent viewing of the world in a negative or threatening fashion, can predispose an individual to internalizing symptoms (Muris et al., 2009).

***Empirical evidence regarding the relationship between anxiety/depression and automatic thoughts***

Negative automatic thoughts have been found to predict anxiety and depression in pre-adolescents and adolescents. In a clinical setting, Schniering and Rapee (2004) were interested in the types of automatic thoughts that were associated with anxiety and depression in a sample of children from Australia, ages 7-16. Automatic thoughts were assessed using the Children's Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002), which is a measure that assesses automatic thoughts regarding social threat, physical threat, personal failure, and hostility. Automatic thoughts related to social threat predicted symptoms of anxiety, whereas thoughts of personal failure were related to depression. Also, automatic thoughts about hostility predicted aggression, whereas automatic thoughts related to physical threat were not associated with any symptoms of psychopathology. The contrast in findings demonstrates that negative automatic thoughts do not broadly predict internalizing symptoms. Instead, the content of the negative automatic thought is specific to the symptoms, supporting the idea of content-specificity within internalizing symptoms and negative automatic thoughts.

Similarly, Weems, Berman, Silverman and Saavedra (2001) measured the relationship of negative automatic thoughts to anxiety and depression in a diverse sample of children ages 6-17 ( $n = 251$ ) who had been referred to an anxiety treatment clinic. They found that cognitive errors were significantly correlated with self-report measures of anxiety and depression. Specifically, they utilized the Children's Negative Cognitive Error Questionnaire (CNCEQ; Leitenberg, Yost, & Carroll-Wilson, 1986) to assess which cognitive errors were most associated with depression and anxiety. Weems and

colleagues (2001) reported that overgeneralization (making conclusions based on scarce information) and selective abstraction (taking details out of context and focusing on them) predicted depression while overgeneralization predicted trait anxiety, and catastrophizing (assuming that the worst possible outcome will come true) and personalizing (believing negative events or situations are focused on you or are about you) predicted anxiety sensitivity and state anxiety. Similarly to Schniering and Rapee (2004), this study revealed that anxiety and depression were most strongly associated with different cognitive errors. A similar study using the CNCEQ-R in a clinical sample ( $n = 201$ , ages 9-18) found that overgeneralizing and underestimation of ability to cope significantly predicted depression, whereas mind reading, underestimation of ability to cope, overgeneralizing, and personalizing without mind reading significantly predicted anxiety (Stevanovic, Lalic, Batinic, Damjanovic, Jovic, Brcik-Cvetkovic & Jancic, 2016).

Additionally, one clinical research study examined the relationship of negative automatic thoughts to specific anxiety disorders. In this study, Muris and colleagues (2009) found that anxiety symptoms and negative automatic thoughts were positively associated in a sample of 178 children aged 9-12. After the cross-sectional study, the researchers conducted a treatment study with 45 of the children from the original sample. The results demonstrated that a decrease in negative automatic thoughts as measured by the CATS was related to less symptoms of anxiety following a cognitive-behavioral intervention. In addition, negative automatic thoughts accounted for more variance in separation anxiety disorder than other subtypes of anxiety, and were not a significant predictor of change in social phobia (Muris et al., 2009). These results are intriguing when considered in light of findings mentioned before regarding the high prevalence of

separation anxiety disorder in Hispanic youth (Anderson & Mayes, 2010). Thus, this relationship may be important to explore in future studies with a Hispanic population. This study demonstrates further that negative automatic thoughts do not predict all types of anxiety equally, which is similar to the findings by Schniering and Rapee (2004) described above. Though the sample was small ( $n = 45$ ), the results of this investigation suggest that negative automatic thoughts are a potential mechanism through which general anxiety or certain subtypes of anxiety is increased or decreased.

In addition to studies conducted with clinical populations, other studies have evaluated the relationship of negative automatic thoughts and cognitive errors to internalizing symptoms in community samples. The most relevant studies supporting the link between these two constructs will be highlighted for the purpose of this investigation. The study reported above by Schniering and Rapee (2004) evaluated the relationship of depression and anxiety to negative automatic thoughts in a sample of 200 youth from the community. Similar to the clinical sample, thoughts of social threat predicted anxiety, whereas thoughts of personal failure predicted depression. However, thoughts about hostility did not predict externalizing symptoms in the community sample. Supporting the finding that youth from clinical and community samples utilize similar cognitive errors, Stevanovic and colleagues (2016) found that overgeneralizing significantly predicted depression, whereas mind reading predicted anxiety in a community sample of 257 youth ages 9-18. In another study with 278 youth ages 9-17 from the community, results showed that depression was predicted by overgeneralization and selective abstraction (Schwartz & Maric, 2015), which is identical to the findings of Weems and colleagues (2001) with a clinical sample. However, for anxiety the findings

were a bit different in the two studies such that underestimation of ability to cope and mind reading were associated with anxiety (Schwartz & Maric, 2015), as opposed to overgeneralization, catastrophizing, and personalization (Weems et al., 2001). In a more recent study conducted by Weems, Costa, Watts, Taylor, and Cannon (2007) in a community sample with 145 children ages 6-17, each type of cognitive error (i.e., overgeneralization, catastrophizing, personalization, and selective abstraction) predicted anxiety, whereas only overgeneralization predicted depression.

Overall, there is disagreement regarding the exact cognitive errors that predict anxiety and depression in youth, but the relationship is well established over many studies. Most importantly, both anxiety and depression have been tied to negative automatic thoughts or cognitive errors in clinical and community samples. This robustly studied relationship is vital in cognitive-behavioral models of therapy for anxiety and depression as it serves as one of the targets for intervention. To date, very few studies have corroborated these relationships in diverse samples. There is only one study that has examined these relationships with Hispanic adolescents, in a sample of 98 youth between the ages of 14 and 18 years in a non-clinical setting. The findings demonstrated a significant correlation of depression to cognitive errors using the CNCEQ. Additionally, cognitive errors predicted depression in a six-month follow up (Kennard, Stewart, Hughes, Patel, & Emslie, 2006). However, no studies to date have examined the relationship of automatic thoughts to anxiety in a community sample of Hispanic youth. Thus, an important area of investigation in the literature regarding internalizing symptoms and negative automatic thoughts is to examine this relationship in ethnic minority children.

*Empirical evidence regarding the relationship between negative automatic thoughts and stress*

Life stress is associated with an increase in negative automatic thoughts. In a sample of 557 participants aged 10-19, negative automatic thoughts mediated the relationship of life stressors to emotional and behavioral problems (i.e. “hyperactivity, emotional, conduct, and peer problems”, p. 47) (Flouri & Panourgia, 2014). In this study, negative automatic thoughts were measured using CATS, whereas life stress was assessed by the Adverse Life Events Scale (Tiet, Bird, Davies, Hoven, Cohen, Jensen, & Goodman, 1998), which asks about significant stressors in the past year and over one’s lifetime. Unfortunately, the sample of this study did not include any Hispanic participants, making it difficult to determine if the results apply to this population. This is the only study conducted to date that examines the relationship between automatic thoughts and life stressors. Further research is necessary to replicate this study’s findings. Additionally, there is no current research that demonstrates a relationship between acculturative stress and automatic thoughts. Thus, it is vital to determine if the association between stress and automatic thoughts is consistent when investigating the relationship between cognitive factors and stress regarding acculturation. Overall, the literature supports that stress may increase the incidence of negative automatic thoughts and suggests that negative automatic thoughts are a mechanism by which stress is related to increased symptoms of psychopathology.

***Future research directions examining negative automatic thoughts as a mediator of stress and internalizing symptoms***

Integrating the findings of the previous studies, it is postulated that stress leads to negative automatic thoughts, which in turn leads to anxiety and depression symptoms. Unfortunately, gaps and limitations in the previous research remain. First, there is a general lack of replication in the aforementioned studies. It is vital to reproduce the findings of these studies to more confidently state that the associations mentioned are not spurious. Further, future studies should determine if negative automatic thoughts are a mediator of the relationship between acculturative stress and internalizing symptoms. Moreover, it is vital to investigate the relationship of negative automatic thoughts to depression and anxiety, and the relationship of acculturative stress to negative automatic thoughts in a sample of diverse youth. The previously discussed studies test the relationships between stress, negative automatic thoughts, and internalizing symptoms in mostly Caucasian youth samples. This lack of diversity in the previous studies precludes generalization. Because ethnicity is an important factor related to cognition and mental health, researchers must expand the current body of literature in order to understand these relationships in Hispanic youth (U.S. Department of Health and Human Services, 2001).

***Mindfulness***

Mindfulness has been defined as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145). By this definition, those who are mindful are focused on the events of the present and not the past or future. Therefore, mindfulness becomes the antithesis to anxiety and depression, as those with

depression tend to focus on negative past events, whereas in anxiety disorders the person focuses on threats in the future (Eysenck, Payne, & Santos, 2006).

In fact, countering anxiety and depression is one of the fundamental principles mindfulness supports. Hofmann, Sawyer, Witt, and Oh (2010) reported, “the basic premise underlying mindfulness practice is that experiencing the present moment nonjudgmentally and openly can effectively counter the effects of stressors, because excessive orientation toward the past or future when dealing with stressors can be related to feelings of depression and anxiety” (p.2). Additionally, Yeung (2013) proposed that mindfulness could even prevent negative thought by allowing people to focus on present moment occurrences without interpretation or negative bias. Thus, in theory, mindfulness can be an excellent tool to aid people in focusing on the present moment while also preventing negative interpretation of the behaviors or cognitions of oneself and others.

***Empirical evidence regarding the relationship between mindfulness and anxiety/depression***

Mindfulness has been widely theorized and studied in relation to adults, and it has been connected to a host of positive outcomes. The concept of mindfulness has been linked to fewer symptoms of anxiety and depression in many studies (Curtiss & Klemanski, 2014; Frewen, Evans, Maraj, Dozois, & Partridge, 2008; Yeung, 2013). Thus, one’s dispositional mindfulness is a powerful indicator of present moment focus that allows disengagement from internalizing symptomology in adults. In addition, mindfulness has been demonstrated to be a moderator of depression and negative thinking in adults (Gilbert & Christopher, 2010). Therefore, prior research supports the

idea that mindfulness could be impactful in the relationship of cognitive factors to internalizing symptoms.

Upon understanding its profound effects, researchers attempted to understand the effect of mindfulness on youth populations. In a clinical sample of older teenagers and young adults who were experiencing depression (ages 15-25,  $n = 107$ ), researchers demonstrated that greater dispositional mindfulness, as measured by the Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) was associated with lower levels of depressive and anxious symptoms, reduced levels of rumination, and an increase in quality of life (Chambers, Gullone, Hased, Knight, Garvin, & Allen, 2015). The researchers also measured the effects of mindfulness in a longitudinal design. They found that baseline level of mindfulness predicted improvement in utilization of cognitive reappraisals, less depression and rumination, and greater quality of life at eight weeks after initial assessment. Unfortunately, high attrition rates complicate the findings (Chambers et al., 2015). This study replicated the positive effects of mindfulness in older youth that had been found in adults, along with demonstrating additional benefits. In contrast, another study examining dispositional mindfulness and mental health outcomes had very different results. In this study, dispositional mindfulness, as assessed by the MAAS, was not associated with any symptom outcome including depression, suicidality, panic, and posttraumatic stress in a community sample of 64 students aged 15-19 who had been exposed to a natural disaster (Zeller, Yuval, Nitzan-Assayag, & Bernstein, 2015). The contradictory findings may be explained by differences in sample characteristics. Specifically, it is possible that mindfulness may be more helpful for individuals experiencing clinical levels of depression or in those who have not recently

experienced a traumatic experience, such as a natural disaster. Future studies should aim to clarify these results.

***Empirical evidence regarding the relationship between mindfulness and stress***

Mindfulness has been examined as a moderator of stress and internalizing symptoms in older teens in two studies. Ciesla, Reilly, Dickson, Emanuel, and Updegraff (2012) found that mindfulness, as measured by the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), served as a buffer in the relationship between stress and daily dysphoria in a sample of 78 participants aged 14-18. Specifically, the findings suggest that mindfulness weakened the relationship of stress to internalizing symptoms in youth. Another study, conducted with 317 high schoolers in Australia found that mindfulness scores on the MAAS served as a significant moderator of the relationship of life hassles to depression, anxiety, and tension (Marks, Sobanski, & Hine, 2010). Together, these studies demonstrate that mindfulness can have powerful positive effects on one's mental health.

***Empirical evidence regarding the relationship between mindfulness and negative automatic thoughts***

To date, just one published study examined the relationship of negative automatic thoughts to mindfulness. This study measured mindfulness using the MAAS and negative automatic thoughts using the University of British Columbia Cognition Inventory- 'Letting Go'-Revised Version (Woody, Taylor, McLean, & Koch, 1998) in 64 college students in Canada. The results demonstrated that mindfulness was negatively associated with several types of negative automatic thoughts including worrisome, depressive, and social thoughts, as well as with difficulty letting go of negative automatic thoughts

(Frewen et al., 2008). In the same study, the researchers examined the efficacy of a mindfulness intervention on reducing the frequency of negative automatic thoughts and the difficulty letting go of thoughts with 43 college students. Their results supported a decrease in the outcomes of interest from pre to post intervention. However, because a control group was not utilized in this study, it is difficult to determine if the intervention is responsible for the changes in symptomology (Frewen et al., 2008). It is important to replicate this methodology in a sample of youth, as well as include a control groups to test the efficacy of the intervention.

***Future research directions examining mindfulness as a mediator and/or moderator of acculturative stress, automatic thoughts, and internalizing symptoms***

Some gaps and problems remain in the current body of literature regarding mindfulness. Primarily, most of the research regarding dispositional mindfulness has been limited to Caucasian populations and it has been sparsely studied in child populations. Most studies examining mindfulness interventions have been conducted without a clear theory regarding dispositional mindfulness to guide the research. A review of the literature on mindfulness interventions is beyond the scope of this paper (for a comprehensive review of the effects of mindfulness interventions with youth, see Hofmann et al, 2010). Nonetheless, a large gap exists in the research regarding the relationship of dispositional mindfulness to depression and anxiety, including the potential positive cognitive effects of mindfulness for younger children and ethnic minorities. This lack of research emphasizes the need to conduct future studies to understand the function of mindfulness in diverse youth as well as its value for

successfully treating internalizing disorders with this population. Specifically, the impact of mindfulness on the detrimental effect that acculturative stress has on Hispanic youth's mental health has not been explored. One potential avenue for future research is to determine if mindfulness can serve as a mediator and moderator of the relationship between acculturative stress and symptoms of anxiety and depression, as well as the relationship of both acculturative stress and internalizing symptoms to automatic thoughts. Determining the relationship of mindfulness to acculturative stress, automatic thoughts, and anxiety/depression in Hispanic youth will help clinicians gain an understanding of the types of problems that mindfulness can help with. This knowledge will aid in targeting of mindfulness interventions for Hispanic youth.

#### ***Summary of the Literature and Purpose of the Study***

The growing population of Hispanic youth in the United States calls for a focus on research with this vulnerable population to understand and ensure appropriate psychological services. The process of acculturation to the American culture can be challenging and stressful for Hispanic immigrants and may be associated with an increase in internalizing symptoms, specifically anxiety and depression. There is a need to understand the mechanisms that may contribute to how stress leads to anxiety and depression as well as the processes that could ameliorate the effects of acculturative stress. Cognitive theories suggest that cognitive errors, in particular negative automatic thoughts, are associated with symptoms of anxiety and depression and empirical evidence supports this relationship in samples of pre-adolescents and adolescents. Furthermore, the small body of literature that does exist suggests that negative automatic thoughts are a mediator of the association between stress and internalizing symptoms in youth.

Unfortunately, the relationship of automatic thoughts to psychopathology has been sparsely examined in Hispanic samples. Last, the available research does not assess if a relationship exists between acculturative stress and negative automatic thoughts.

Mindfulness is an additional possible mediator and moderator in the relationship between acculturative stress and internalizing symptoms. This construct has been associated with a host of positive outcomes in children and adults, though it has been primarily tested in intervention settings. Thus, a gap remains in the literature as to the effects of dispositional mindfulness and its connection to mental health outcomes. Specifically, lack of mindfulness could serve as a mechanism of the relationship of acculturative stress to anxiety and depression in Hispanic youth. It could also moderate the relationship between acculturative stress, automatic thoughts, and internalizing symptoms.

### ***Purpose of the study***

Given the increasing numbers of Hispanic youth in the U.S., in addition to the high prevalence of internalizing disorders in this population (Anderson & Mayes, 2010), further research is needed to understand the factors associated with the manifestation of anxiety and depression symptoms in Hispanic youth. The current study attempted to expand the literature regarding the concepts of acculturative stress, negative automatic thoughts, and mindfulness, and how these variables relate to anxiety and depression in Hispanic youth. Using a pre-existing dataset with 274 participants from South Florida middle schools (ages 10-16), these relationships were tested. First, this study explored the association of acculturative stress and internalizing symptoms in Hispanic youth. Next, potential mediators and moderators of these relationships were examined; specifically,

the effects of negative automatic thoughts and mindfulness were tested. The two subtypes of acculturative stress were evaluated to determine whether they could differentially be associated with anxiety and depression.

The following hypotheses were tested in the study. Table 1 summarizes the primary hypotheses and a secondary hypothesis. Figures 1 and 2 visually depict the hypothesized relationships.

***Primary hypotheses***

1. Acculturative stress predicts depression and anxiety. This hypothesis is based on prior research that supported this link in Hispanic youth and adolescents (Crockett et al., 2007; Hovey & King, 1996; Katsiaficas et al., 2013; Sirin et al., 2013; Smokowski & Bacallao, 2007; Suarez-Morales & Lopez, 2009).
2. Automatic thoughts mediate the relationship between acculturative stress and depression, and between acculturative stress and anxiety. That is, change in acculturative stress leads to change in automatic thoughts, which then leads to variation in anxiety and depression. Previous research has tied negative automatic thoughts to anxiety and depression (e.g. Schniering & Rapee, 2004; Weems et al., 2001). Additionally, stress has been associated to automatic thoughts (Flouri & Panourgia, 2014). The findings of this hypothesis were intended to fill the gap that exists in the literature, which does not address if acculturative stress predicts automatic thoughts and if previous studies' results could be replicated with the current study's population.
3. Mindfulness mediates the relationship between acculturative stress and anxiety, and acculturative stress and depression. This signifies that changes in

acculturative stress predict changes in anxiety and depression through its effects on mindfulness. This hypothesis is consistent with past studies that demonstrated a relationship between mindfulness and less anxiety and depression (Chambers et al., 2015). The current study expanded on these results and tested if mindfulness is a mechanism of action in the relationship of acculturative stress to anxiety and depression.

4. Mindfulness moderates the relationship between acculturative stress and automatic thoughts. That is, the strength of the relationship between acculturative stress and automatic thoughts depends on level of mindfulness. Previous studies have shown that mindfulness is associated with fewer detrimental effects of stress (Ciesla et al., 2012; Marks et al., 2010) and negative automatic thoughts (Frewen et al. 2008). This hypothesis would reveal whether previous results could be replicated when tested with acculturative stress in a Hispanic youth population.
5. Mindfulness moderates the relationship between acculturative stress and anxiety and between acculturative stress and depression. This means that the strength of the relationship between acculturative stress and internalizing outcomes depends on mindfulness level. Past studies have demonstrated that mindfulness can buffer the detrimental impact of stress (Ciesla et al., 2012; Marks et al., 2010). Therefore, this hypothesis would extend these results to test if this relationship is consistent with acculturative stress in a Hispanic youth population.
6. Mindfulness moderates the relationship of automatic thoughts and anxiety and automatic thoughts and depression. Again, this signifies that the strength of the relationship of automatic thoughts to anxiety and depression depends on

mindfulness level. Negative automatic thoughts are associated with anxiety and depression, and mindfulness (e.g. Schniering & Rapee, 2004) is associated with fewer negative automatic thoughts (Frewen et al., 2008). Thus, it is a natural progression of research to test if mindfulness can moderate this relationship.

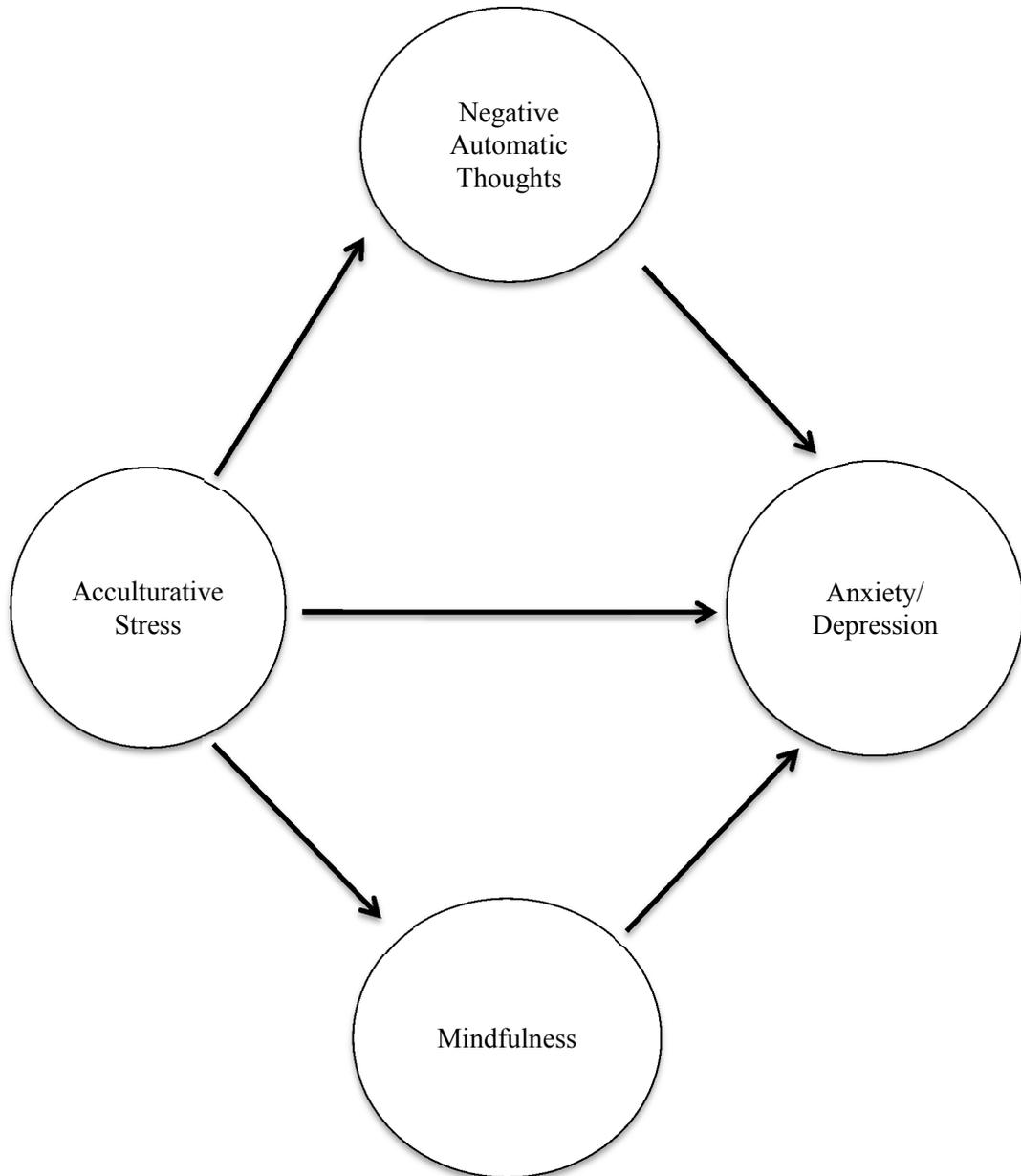
***Secondary hypothesis***

Acculturative stress specific to perceived discrimination is more strongly associated with anxiety symptoms than immigration-related acculturative stress. In addition, perceived discrimination is more strongly associated with depression symptoms than immigration-related stress. This hypothesis is based on past research that demonstrated the strong detrimental effect of perceived discrimination relative to immigration-related stress in relation to internalizing symptoms (Lorenzo-Blanco et al., 2011; Stein et al., 2012; Suarez-Morales et al., 2007; Suarez-Morales & Lopez, 2009).

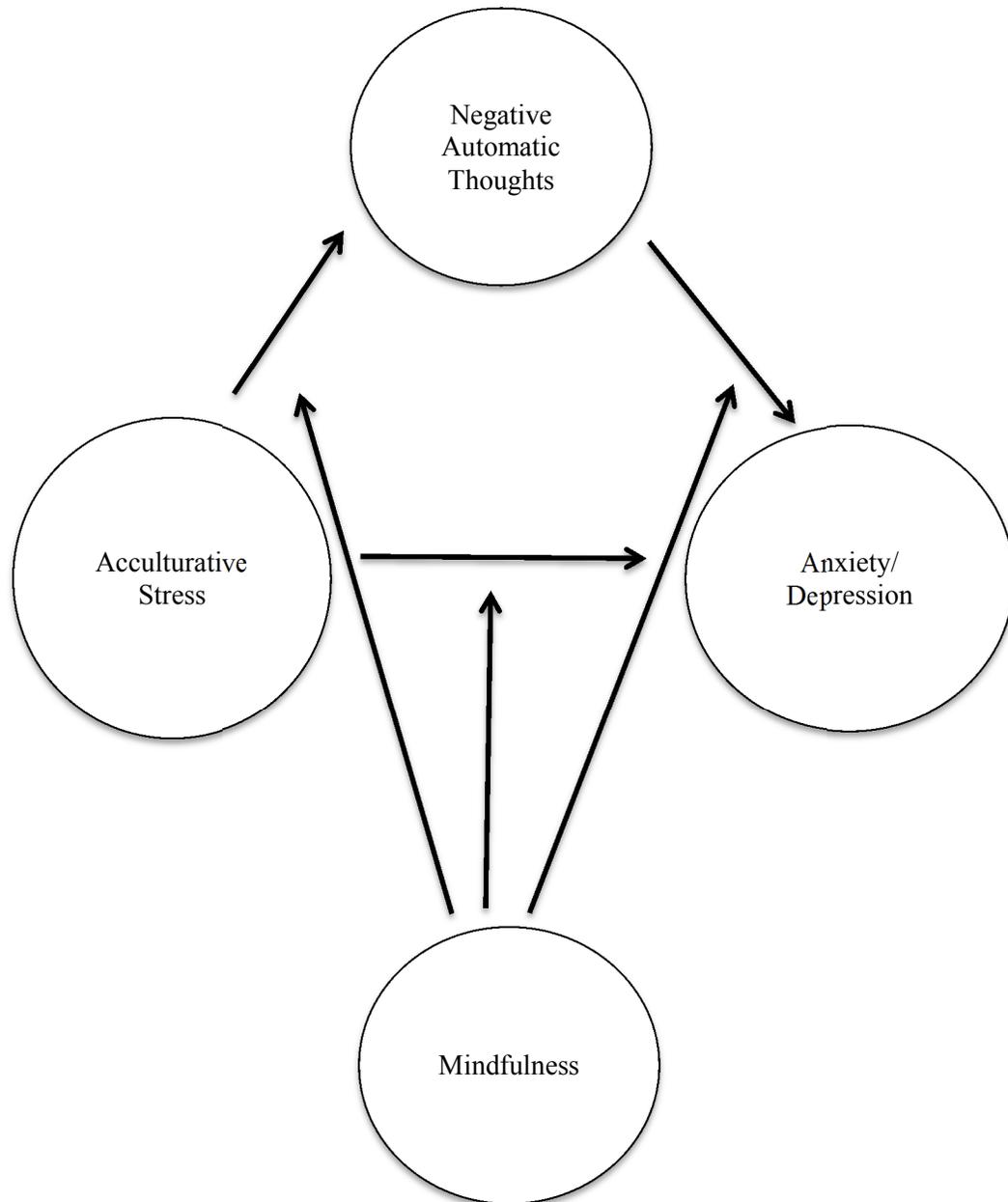
Table 1.

*Main Hypotheses and Study Variables*

Primary Hypotheses	Predictor	Mediator/Moderator	Outcome
Acculturative stress predicts anxiety and depression.	Acculturative stress (ASIC)	None	Anxiety and depression (RCADS)
Automatic thoughts mediate the relationship between acculturative stress and anxiety, and acculturative stress and depression.	Acculturative stress (ASIC)	Automatic thoughts (CATS)	Anxiety and depression (RCADS)
Mindfulness mediates the relationship between acculturative stress and anxiety, and acculturative stress and depression.	Acculturative stress (ASIC)	Mindfulness (CAMM)	Anxiety and depression (RCADS)
Mindfulness moderates the relationship between acculturative stress and automatic thoughts.	Acculturative stress (ASIC)	Mindfulness (CAMM)	Automatic thoughts (CATS)
Mindfulness moderates the relationship between acculturative stress and anxiety and between acculturative stress and depression.	Acculturative stress (ASIC)	Mindfulness (CAMM)	Anxiety and depression (RCADS)
Mindfulness moderates the relationship of automatic thoughts and anxiety and automatic thoughts and depression.	Automatic thoughts (CATS)	Mindfulness (CAMM)	Anxiety and depression (RCADS)
Secondary Hypothesis	Variable 1	Variable 2	Outcome
Acculturative stress specific to perceived discrimination is more strongly associated with anxiety symptoms than immigration-related acculturative stress. In addition, perceived discrimination is more strongly associated with depression symptoms than immigration-related stress.	Perceived discrimination (ASIC)	Immigration Related Stress (ASIC)	Anxiety and depression (RCADS)



*Figure 1.* Proposed model of the relationship of acculturative stress to anxiety and depression with mediators of automatic thoughts and mindfulness.



*Figure 2.* Proposed model of the relationship of acculturative stress and anxiety and depression, with moderation of mindfulness and mediator of automatic thoughts.

## CHAPTER III

### Methodology

#### *Participants*

Participants were 274 middle school-aged children, who self-identified as Hispanic, from two South Florida middle schools. Participants ranged in age from 10-16 ( $M = 12.18$ ,  $SD = 1.03$ ) and over half the sample identified as female (63.5%). Over half the children were born in the United States (65%) and 35% were foreign-born. Most of the children who did not identify as American reported their nationality as Cuban (31.8% of total sample). Additionally, 43.8% of participants born outside the U.S. had lived in America for 5 years or less, 46% for 6-10 years, and 10% for over 10 years. Spanish was the primary language spoken at home for 72% of the participants, English was the primary language for only 16.5%, and both English and Spanish were the primary languages at home for 11.4%.

The participants came from families with a low socio-economic status. A total of 83.2% of participants reported that their household income was \$54,999 or less per year. A total of 16.8% of the youth's families made \$55,000 or above per year. Most of the participants' fathers worked full time (86.2%), 6.9% part time, and 6.9% were unemployed. In addition, over half of the participants' mothers worked full time (58.9%), 14.7% worked part time, and 26.4% were unemployed. Regarding education, the mode number of years of education for participants' mothers was 12 years (38.5%) and 20.6% completed their Bachelor's degrees. Similarly, the mode number of years of education for fathers of participants was 12 years (45%) and 16.3% completed their Bachelor's degrees. Participants identified that their families had a range of 2-10 members ( $M =$

4.18,  $SD = 1.28$ ). See Table 2 for a summary of the demographic characteristics of the sample.

Table 2.

*Summary of Sample Demographics: Frequency and Percentages for Categorical Data and Means and Standard Deviation for Continuous Variables*

Variable	Mean/Frequency (SD/%)
Age	12.18 (1.03)
Gender	
<i>Male</i>	100 (36.5)
<i>Female</i>	174 (63.5)
Race	
<i>Hispanic</i>	274 (100)
Child Nationality	
<i>American</i>	163 (59.5)
<i>Cuban</i>	87 (31.8)
<i>Other Hispanic countries</i>	18 (8.7)
Father Nationality	
<i>American</i>	13 (4.7)
<i>Cuban</i>	178 (65.0)
<i>Other Hispanic countries</i>	39 (20.4)
Mother Nationality	
<i>American</i>	22 (8.0)
<i>Cuban</i>	161 (58.8)
<i>Other Hispanic countries</i>	68 (24.8)
Immigration Status	
<i>U.S. Born</i>	165 (65.0)
<i>Immigrant</i>	89 (35.0)
Language at home	
<i>Spanish</i>	183 (72.0)
<i>English</i>	42 (16.5)
<i>Both</i>	29 (11.4)
Number of years in U.S.	6.29 (3.32)
<i>0-5 years</i>	39 (43.8)
<i>6-10 years</i>	41 (46)
<i>Over 10 years</i>	9 (10)
Number of people in home	4.18 (1.28)
Mother's Work Status	
<i>Full time</i>	152 (58.9)
<i>Part time</i>	38 (14.7)
<i>Unemployed</i>	68 (26.4)
Father's Work Status	
<i>Full time</i>	200 (86.2)
<i>Part time</i>	16 (6.9)
<i>Unemployed</i>	16 (6.9)
Mother's Education Status	

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<i>Elementary School</i>	3 (1.2)
<i>Middle School</i>	5 (1.6)
<i>High School</i>	97 (38.5)
<i>Some College</i>	44 (17.5)
<i>Associate's Degree</i>	22 (8.7)
<i>Bachelor's Degree</i>	52 (20.6)
<i>Vocational School</i>	12 (4.8)
<i>Master's Degree</i>	13 (5.2)
<i>Doctorate Degree</i>	5 (2.0)
Father's Education Status	
<i>Elementary School</i>	2 (.8)
<i>Middle School</i>	7 (2.9)
<i>High School</i>	108 (45.0)
<i>Some College</i>	44 (18.3)
<i>Associate's Degree</i>	9 (3.8)
<i>Bachelor's Degree</i>	39 (16.3)
<i>Vocational School</i>	19 (7.9)
<i>Master's Degree</i>	10 (4.2)
<i>Doctorate Degree</i>	2 (.8)
Family Income	
<i>Below \$10,000</i>	50 (19.9)
<i>\$10,000-24,999</i>	78 (31.1)
<i>\$25,000-39,999</i>	45 (17.9)
<i>\$40,000-54,999</i>	36 (14.3)
<i>\$55,000-69,999</i>	17 (6.8)
<i>\$70,000-84,999</i>	11 (4.4)
<i>\$85,000-99,999</i>	6 (2.4)
<i>\$100,000-114,999</i>	6 (2.4)
<i>Over \$130,000</i>	2 (.8)

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## *Measures*

### *Anxiety and depression symptoms*

The *Revised Children's Anxiety and Depression Scale* (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000) is a 47-item measure that assesses a child's symptoms of depression and anxiety. Participants respond to each item on a scale of 0 = *never* to 3 = *always*. One item assessing cognitions about death was deleted to reduce liability for participants in the study. Scores yield a total internalizing score, a total anxiety scale score, and six subscale scores, including generalized anxiety, obsessive-compulsive disorder, panic disorder, depression, separation anxiety, and social phobia. The current study utilizes only the total anxiety and depression subscale scores. In the original validation study conducted with a community sample, the measure demonstrated adequate internal consistency (Cronbach's alpha of .71-.85; Chorpita, et al., 2000). Evidence of convergent validity of the RCADS was demonstrated. The Children's Depression Inventory (CDI; Kovacs, 1985) was significantly associated with the subscales of the RCADS, and was most related to the depression subscale in most samples (in girls, the panic and generalized anxiety subscales were correlated to the CDI as strongly as the depression subscale and among all children 6-12, the panic subscale was not correlated significantly less to the CDI than the depression subscale). The RCADS was also significantly associated with another measure of anxiety, the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985). The subscales of the RCADS were not associated with the RCMAS Lie scale, which captures socially desirable responding, with the exception of the OCD subscale. Thus, convergent validity of the measure was supported. The reliability of this measure in the current study

for the anxiety subscale was excellent ( $\alpha = .94$ ) and it was good for the depression subscale ( $\alpha = .88$ ).

### *Acculturative stress*

The *Acculturative Stress Inventory for Children* (ASIC) is a 12-item measure empirically created by Suarez-Morales, Dillon, & Szapocznik (2007) that assesses the stress a child faces while acculturating to a new country and way of life. The scale has two subscales: immigration-related stress and perceived discrimination. Participants rate how much they have been bothered by acculturation-related stressors on a scale with 6 anchors: *0 = doesn't apply*, *1 = doesn't bother me much* to *5 = bothers me a lot*. In the initial validation study, Suarez-Morales and colleagues (2007) found that the measure demonstrated adequate reliability for the subscales (perceived discrimination  $\alpha = .79$ ; immigration-related stress  $\alpha = .72$ ) and good reliability for the overall scale ( $\alpha = .82$ ). Adequate validity of this measure has been demonstrated. The ASIC was correlated with a measure of stress, the Total Daily Hassles Score (Wright, Creed, & Zimmer-Gembeck, 2010), and the RCMAS anxiety scores. However, it was not associated with the Lie Scale from the RCMAS, which indicates socially desirable responding. Further, after controlling for parental education and job status, Hispanic children reported more perceived discrimination than European American children. They also endorsed more immigration-related stress and total ASIC scores than African American and European American children. The reliability of the total measure in the current study was adequate ( $\alpha = .79$ ), as was the reliability for the perceived discrimination subscale ( $\alpha = .77$ ). It was below the acceptable reliability level for the immigration-related stress subscale ( $\alpha = .59$ ).

### ***Automatic thoughts***

The *Children's Automatic Thoughts Scale* (CATS) is a 29-item measure (Hogendoorn et al., 2010; Schniering & Rapee, 2002), which assesses automatic thoughts over the past week. Participants respond to questions about how frequently they experience negative automatic thoughts related to social threat, physical threat, and personal failure on a scale from 0 = *never* to 4 = *always*. The positive thoughts and hostility subscales of the CATS were not administered, as the items do not relate to internalizing symptoms. In addition, the item assessing suicidal ideation was deleted to reduce liability for participation in this study. Hogendoorn and colleagues (2010) found good to excellent internal consistency among the subscales of the CATS in their study, with Cronbach's alpha ranging from .82 to .96. Additionally, Hogendoorn et al. (2010) examined the convergent validity of the CATS. They found that the subscales and total score of the CATS were significantly correlated with measures of depression and anxiety including the RCADS, the Spielberger State-Trait Inventory for Children-Trait subscale (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), the Children's Depression Inventory (Kovacs, 1985), and the Strengths and Difficulties Questionnaire (Goodman, 1997; Goodman, Meltzer, & Bailey 1998). The reliability for the CATS in the current study was excellent ( $\alpha = .97$ ).

### ***Mindfulness***

The *Children's Acceptance and Mindfulness Measure* (CAMM; Greco, Baer, & Smith, 2011) is a 10-item measure designed to assess a child's level of mindfulness. Specifically, the measure evaluates the level of nonjudgmental, present moment awareness a child demonstrates regarding thoughts and feelings. Participants rate the

frequency with which they experience thoughts, feelings, and behaviors related to their level of mindfulness using a 5-point Likert scale ( $0 = \textit{never true}$  to  $4 = \textit{always true}$ ). All items were reverse scored so that a higher score on the measure indicated higher levels of mindfulness. The initial validation study of the CAMM (Greco, et al., 2011) reported a Cronbach's alpha of .81, demonstrating good internal consistency of the measure. The CAMM's validity was also examined. The CAMM was inversely associated with measures that captured somatic complaints, internalizing and externalizing symptoms, and was positively correlated with quality of life. In addition, teacher ratings of social skills and academic competence were directly associated with CAMM scores, whereas problem behaviors were inversely associated with CAMM scores. Mindfulness level, as measured by the CAMM, was negatively associated with measures of thought suppression and psychological inflexibility. To ensure that the CAMM demonstrated incremental validity, the researchers first controlled for psychological inflexibility, then thought suppression. The correlations mentioned above (with internalizing and externalizing symptoms, somatic complaints, problem behaviors, academic competence, quality of life, and social skills) were still significant, demonstrating that the CAMM accounts for additional variance in mindfulness processes above and beyond thought suppression and psychological inflexibility. The reliability of this measure in the current study was good ( $\alpha = .89$ ).

### ***Translation of measures***

As mentioned before, a large portion of the participants spoke mostly Spanish at home. Because of the lack of English language proficiency of some participants, it was necessary to translate the measures into Spanish, with the exception of the RCADS, for

which a Spanish version was available. A team was assembled to perform the translation of the other self-report measures. The bilingual team of assessors was trained and coordinated by a supervisor with assessment and measurement experience. The two translators utilized a translation and back-translation procedure to protect the integrity of the instruments that had been validated in previous studies (Kurtines & Szapocznik, 1995). The procedure was as follows: one of the two translators performed the translation of items into Spanish. Next, the second translator back-translated the items into English. The supervisor compared the two English versions and identified any discrepancies. The team discussed the discrepancies between the two English versions and determined if modifications were necessary to the Spanish versions of the instruments.

### *Procedure*

The larger parent study was funded through a Nova Southeastern University President's Research and Development Grant awarded to Dr. Lourdes Suarez-Morales in 2013. The parent study was approved by Nova Southeastern University's Institutional Review Board (IRB) on October 7, 2012 (10011201Exp). In addition, the Miami Dade Public School District IRB approved the study (#1903). The current archival data study was approved by the Nova Southeastern University IRB on October 1, 2016 (#2016-432).

During the parent study, schools were recruited from the Miami Dade Public School District. Request letters for participation were sent to school principals and were followed up by phone calls and school visits by the study's principal investigator (PI). Schools were chosen for their proximity to the university. Additionally, schools were chosen based on the most recent standardized testing rating. Schools with scores below a B on the state's standardized test (FCAT) were not recruited, as they were less likely to

have the time to allow for research due to FCAT preparations. About 10 schools in total were solicited for participation. Two schools, Hialeah Gardens Middle School and Henry Filer Middle School, accepted participation in the research process. Upon gaining approval from the principals of the schools, researchers visited each school to recruit participants.

### ***Recruitment***

As per the preference of the schools, recruitment took place in elective class periods. Research assistants entered the classrooms with approval from teachers and administration, and explained the study to the students. Students were told that participation in the study was voluntary, and were given a package containing a cover letter explaining the purpose of the study, consent forms, and demographic forms to take to their parents. These items were provided in both English and Spanish to facilitate the most understanding possible. Research assistants collected completed consent and demographic forms from elective classes during a period of approximately one month. Recruitment took place in two waves, in the Spring and Fall of 2014. Two waves were necessary in order to increase the number of participants in the study.

### ***Data Collection***

Data collection took place in a group format. Students were brought to the cafeteria or library on a day agreed upon by the principal of the school and the PI. Participants whose parents consented to the study were asked to complete a written assent form to ensure that they agreed to participate as well. Participants were informed that they were able to discontinue participation at any time. Each participant was given a packet containing seven self-report questionnaires, with the order of questionnaires

varied to account for order effects. One student decided to terminate the study early; the data that was completed by this participant was included in the study, and the measures not filled out were considered to be missing data.

To allow for maximum understanding by the participants, who may have varying levels of proficiency in each language, the instruments were administered in both English and Spanish during data collection. Specifically, the Spanish items appeared below each item in English. Participants were able to read the measures in the preferred language without having to disclose a language limitation or confusion of vocabulary to other participants. Research assistants were also available during the data collection session to answer any questions about the measures.

After the participant completed the study battery, a research assistant viewed the documents to ensure that measures were completed properly. If a participant left an item blank, the research assistant asked him/her if he/she would like to fill out that item, though it was not required. If students were absent, an effort was made by the researchers to go back to the school to collect data from these participants. Upon completion of the study, participants were given a \$5 gift card to Target. In the first wave, the PI obtained two \$50 gift cards; participants were entered into a raffle to receive this compensation.

## CHAPTER IV

### Results

#### *Analytical Procedure*

##### *Missing data*

Less than 1% of the data was missing from the measures utilized in this study. The missing data was imputed by calculating the average of the participant's composite score on the measure for the items for which there were valid data. Data was only imputed when 80% of the participant's data for the measure was valid (Krysiak & Finn, 2013). The average was rounded to the nearest integer.

##### *Statistical Analyses*

The macro PROCESS (Hayes, 2013) in SPSS (IBM Corp, 2013) was utilized to analyze the direct and indirect effects across the variables of interest. PROCESS (Hayes, 2013) uses a regression-based approach to evaluate the effects in models that include mediating and moderating variables. The tenability of regression analyses was tested by plotting the standardized predicted values against residuals to ensure a random scattering of points above and below zero (Stevens, 2002). Additionally, a plot of the residuals approximated a normal distribution, thus supporting the use of regression. All effects were evaluated at a significance level of  $\alpha = .05$ . Throughout the results section, per APA style, two decimal points were reported unless more decimal points are needed to show the first non-zero integer (American Psychological Association, 2010).

To test hypotheses 1-3, the macro PROCESS was utilized to evaluate the association of acculturative stress to anxiety, and acculturative stress to depression with automatic thoughts and mindfulness as mediators (see Figure 3 and 4). Hypothesis 1 was

tested by examining the significance of the direct effect in each model. Hypothesis 2 is supported if the indirect effect of acculturative stress on internalizing symptoms through automatic thoughts is significant. Further, hypothesis 3 is supported if the indirect effect of acculturative stress on internalizing symptoms through mindfulness is significant. For estimation of the indirect effects, 10,000 bootstrapped samples were used to construct confidence intervals to test significance. The seed for the bootstrapped samples was fixed to ensure reproducibility of the confidence intervals about the indirect effects. See Appendix A for the statistical equation for these models.

In order to test hypotheses 4-6, two models were estimated in PROCESS examining the moderating effect of mindfulness in the relationship of acculturative stress to automatic thoughts, automatic thoughts to depression/anxiety, and acculturative stress to depression/anxiety (see Figure 5 and 6). To better understand the effect of the moderator when it was significant, the relationship between the variables was inspected at the following values of the moderator: one standard deviation below the mean, the mean, and one standard deviation above the mean. See Appendix B for the statistical equation for these models.

The secondary hypothesis was tested utilizing Zou's (2007) technique of constructing confidence intervals to compare correlations. This technique assesses the difference between dependent, overlapping correlations using a Modified Asymptotic (MA) method with Fisher's  $z$  transformation and confidence intervals based on an  $F$  distribution (Zou, 2007). The MA method was used to compare the correlation of immigration related stress and anxiety to the correlation of perceived discrimination and anxiety. It was employed a second time to compare the correlation of immigration related

stress and depression to the correlation of perceived discrimination and depression. See Table 1 for a complete list of study hypotheses.

Mean, standard deviations, and range were calculated for the variables of interest and are summarized in Table 3. Associations among variables of interests are reported in Table 4.

Table 3.

*Means and Standard Deviations for Variables of Interest.*

Variable	ASIC	CATS	CAMM	RCADS- ANXIETY	RCADS- DEPRESSION
N	273	272	273	274	274
Mean (SD)	9.95 (8.03)	16.96 (22.13)	29.08 (8.99)	29.99 (18.28)	6.67 (5.70)
Range	0-37	0-113	0-40	0-98	0-30
Alpha	.79	.97	.89	.94	.88

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale

Table 4.

*Correlations between Variables of Interest.*

	1. RCADS- Depression	2. RCADS- Anxiety	3 ASIC	4. CAMM	5. CATS
1.	---	---	---	---	---
2.	.73	---	---	---	---
3.	.47	.57	---	---	---
4.	-.63	-.69	-.51	---	---
5.	.74	.75	.59	-.70	---

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale

All correlations significant at  $p < .001$ .

### *Results by Hypothesis*

#### *Hypothesis 1: Acculturative stress predicts anxiety and depression*

Results revealed that acculturative stress (ASIC) significantly predicted anxiety (RCADS) ( $\beta = .16, p = .0007$ ) after accounting for the effects of mindfulness (CAMM) and negative automatic thoughts (CATS). This finding indicates that if one child is one standard deviation higher in acculturative stress than another, the child is estimated to be .16 standard deviations higher on anxiety.

In contrast, the direct effect of the relationship of acculturative stress (ASIC) to depression (RCADS) was not significant ( $\beta = .02, p = .63$ ) after accounting for the effects of mindfulness (CAMM) and negative automatic thoughts (CATS).

#### *Hypothesis 2: Automatic thoughts mediate the relationship between acculturative stress and anxiety, and acculturative stress and depression*

The indirect effect of acculturative stress (ASIC) on anxiety (RCADS) through automatic thoughts (CATS) was significant ( $\beta = 0.27$ , Lower Limit Confidence Interval (LLCI) = .20, Upper Limit Confidence Interval (ULCI) = .35). This finding shows that if one child is one standard deviation higher in acculturative stress than another, the child is estimated to be .27 standard deviations higher on anxiety as a result of the effect of acculturative stress on automatic thoughts, which in turn influences anxiety. As acculturative stress increases, automatic thoughts increase, which leads to anxiety. See Tables 5 and 6.

The indirect effect of acculturative stress (ASIC) on depression (RCADS) through negative automatic thoughts (CATS) was significant ( $\beta = .33$ , LLCI = .24, ULCI = .42). If one child is one standard deviation higher in acculturative stress than another, the child

is estimated to be .33 standard deviations higher on depression as a result of the effect of acculturative stress on automatic thoughts, which in turn influences depression level.

Table 5.

*Mediation Analyses for Anxiety*

Consequen t	M <sub>1</sub> : CATS			M <sub>2</sub> : CAMM			Y: RCADS-Anxiety		
	Coefficient	SE	p	Coefficien	SE	p	Coefficien	SE	p
Antecedent									
X: ASIC	1.63	.14	<.000	-.58	.0	<.000	.36	.11	.0007
			1			6			1
M <sub>1</sub> : CATS	---	---	---	---	---	---	.38	.05	<.000
									1
M <sub>2</sub> : CAMM	---	---	---	---	---	---	-.60	.11	<.000
									1
Constant	.81	1.7	.64	34.78	.7	<.000	37.39	3.8	<.000
			3			4			7
									1
	R <sup>2</sup> = .35			R <sup>2</sup> = .27			R <sup>2</sup> = .64		
	F(1, 270) = 144.31, p <.0001			F(1, 270) = 98.50, p <.0001			F(3, 268) = 156.66, p <.0001		

*Note.* CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale

Table 6.

*Mediation Analyses for Anxiety, Direct and Indirect Effects*

Consequent: RCADS- Anxiety								
	$\beta$	<i>SE</i>	LLCI	ULCI	$\beta^*$	<i>SE</i> *	LLCI*	ULCI*
X: ASIC	.36	.11	.15	.57	.16	.05	.07	.25
	ab	<i>SE</i>	LLCI	ULCI	ab*	<i>SE</i> *	LLCI*	ULCI*
Antecedent								
M <sub>1</sub> : CATS	.61	.10	.44	.83	.27	.04	.20	.35
M <sub>2</sub> : CAMM	.35	.08	.21	.52	.15	.03	.09	.22

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic

Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS =

Revised Children's Anxiety and Depression Scale

\*Denotes completely standardized effect.

As acculturative stress increases, automatic thoughts increase, which leads to an increase in depression symptoms. See Tables 7 and 8.

***Hypothesis 3: Mindfulness mediates the relationship between acculturative stress and anxiety, and acculturative stress and depression***

The indirect effect of acculturative stress (ASIC) on anxiety (RCADS) through mindfulness (CAMM) is significant ( $\beta = .15$ , LLCI = .09, ULCI = .22). A child who is one standard deviation higher than another on acculturative stress is estimated to be .15 standard deviations higher on anxiety as a result of its effect on mindfulness, which in turn influences anxiety. In this case, acculturative stress leads to less mindfulness, and less mindfulness leads to more anxiety. See Tables 5 and 6.

The indirect effect of acculturative stress (ASIC) on depression (RCADS) through mindfulness (CAMM) is significant ( $\beta = .12$ , LLCI = .06, ULCI = .19). A child who is one standard deviation higher on acculturative stress than another is estimated to be .12 standard deviations higher on depression as a result of its effect on mindfulness, which in turn affects depression level. Again, increased acculturative stress decreases mindfulness; lower mindfulness leads to more depression. See Tables 7 and 8. Figures 3 and 4 illustrate the relationship between acculturative stress and anxiety/depression with mediators of automatic thoughts and mindfulness.

***Hypothesis 4: Mindfulness moderates the relationship between acculturative stress and automatic thoughts***

Mindfulness (CAMM) moderated the relationship between acculturative stress (ASIC) and automatic thoughts (CATS), ( $\beta = -.06$ ,  $p < .0001$ ; see Table 9). The relationship of acculturative stress to automatic thoughts differs based on mindfulness

level. At a mindfulness level of one standard deviation below the mean and at the mean, the relationship between acculturative stress and automatic thoughts is significant.

Table 7.

*Mediation Analyses for Depression*

Consequent t	M <sub>1</sub> : CATS			M <sub>2</sub> : CAMM			Y: Depression		
	Coefficient	SE	p	Coefficient	SE	p	Coefficient	SE	p
Antecedent									
X: ASIC	1.63	.14	<.0001	-.58	.06	<.0001	.02	.04	.63
M <sub>1</sub> : CATS	---	---	---	---	---	---	.15	.02	<.0001
M <sub>2</sub> : CAMM	---	---	---	---	---	---	-.15	.04	.0001
Constant	.81	1.73	.64	34.78	.74	<.0001	8.37	1.32	<.0001
	R <sup>2</sup> = .35			R <sup>2</sup> = .27			R <sup>2</sup> = .57		
	F(1, 270) = 144.31, p <.0001			F(1, 270) = 98.50, p <.0001			F(3, 268) = 118.13, p <.0001		

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale

Table 8.

*Mediation Analyses for Depression, Direct and Indirect Effects*

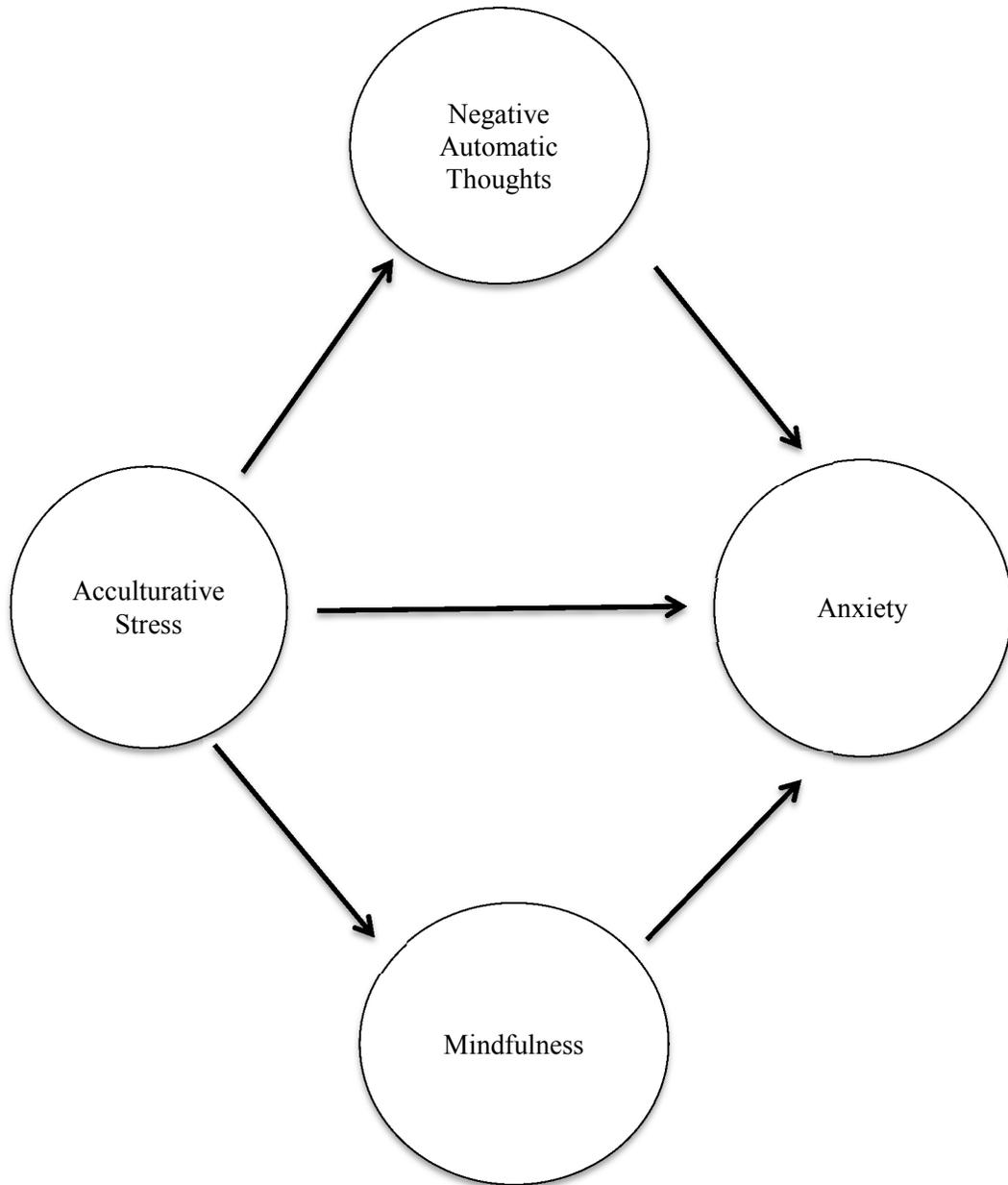
Consequent: Depression								
	$\beta$	<i>SE</i>	LLCI	ULCI	$\beta^*$	<i>SE</i> *	LLCI*	ULCI*
X: ASIC	.02	.04	-.05	.09	.02	.05	-.08	.12
	ab	<i>SE</i>	LLCI	ULCI	ab*	<i>SE</i> *	LLCI*	ULCI*
Antecedent								
M <sub>1</sub> : CATS	.24	.04	.16	.32	.33	.05	.23	.42
M <sub>2</sub> : CAMM	.08	.03	.04	.14	.12	.04	.06	.19

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic

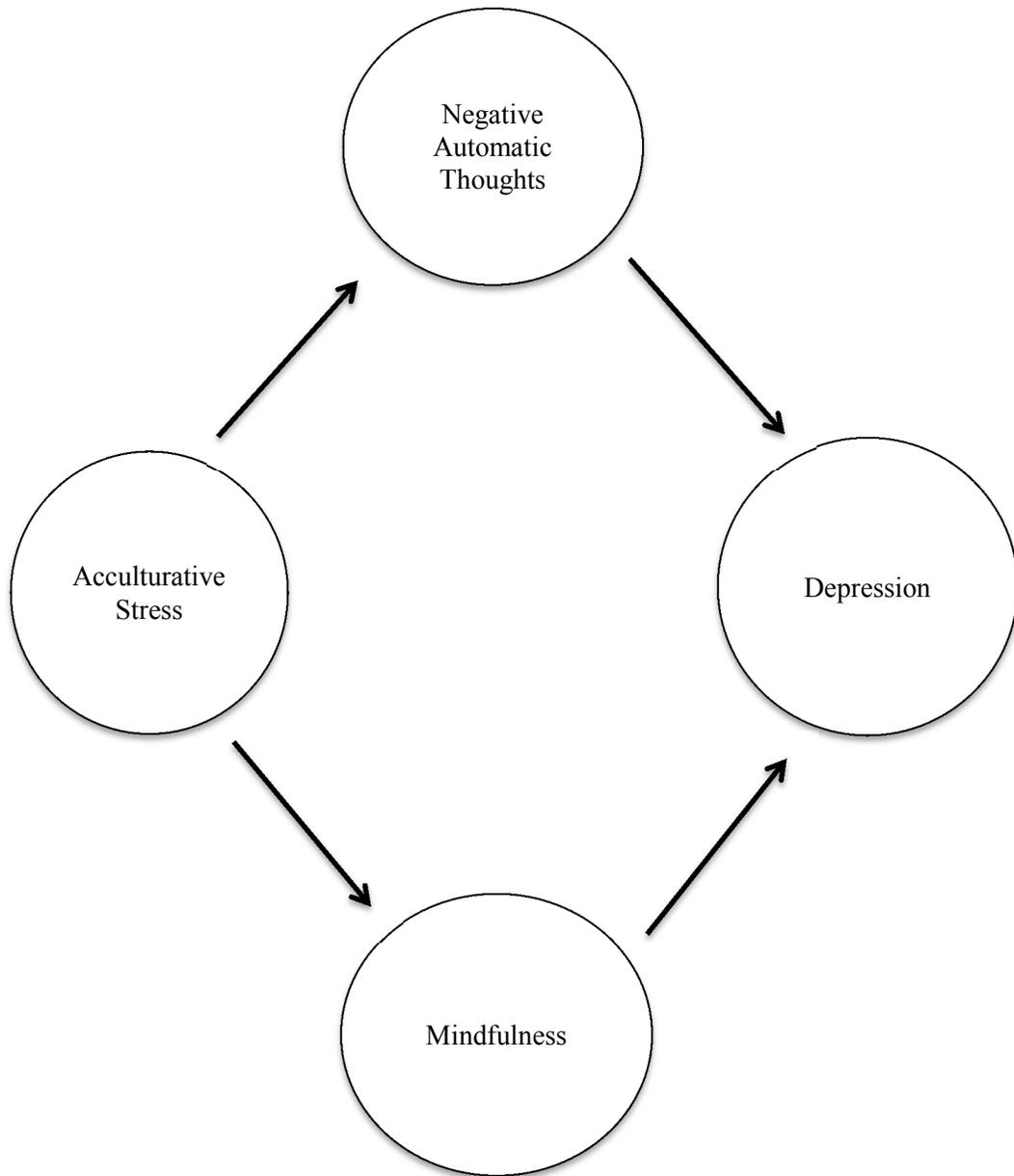
Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS =

Revised Children's Anxiety and Depression Scale

\* Denotes completely standardized effect.



*Figure 3.* Model of the relationship of acculturative stress to anxiety with mediators of automatic thoughts and mindfulness.



*Figure 4.* Model of the relationship of acculturative stress to depression with mediators of automatic thoughts and mindfulness.

Table 9.

*Moderation Analysis for Automatic Thoughts*

Consequent: CATS					
Predictor	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
Constant	25.99	5.58	<.0001	15.00	36.99
ASIC	2.39	.31	<.0001	1.79	2.99
CAMM	-.63	.17	.0002	-.96	-.30
ASIC*CAMM	-.06	.01	<.0001	-.08	-.04

$R^2 = .60$

$F(3, 268) = 135.48, p < .0001$

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure

However, at one standard deviation above the mean, the relationship of acculturative stress to automatic thoughts is no longer significant. That is, at higher levels of mindfulness, the relationship between acculturative stress and automatic thoughts is weaker. See Table 10. Figure 5 depicts this relationship.

***Hypothesis 5: Mindfulness moderates the relationship between acculturative stress and anxiety and between acculturative stress and depression***

Mindfulness (CAMM) moderated the relationship between acculturative stress (ASIC) and anxiety (RCADS) ( $\beta = .02, p = .0482$ ; See Table 11). The relationship of acculturative stress to anxiety is not significant when children report mindfulness levels at one standard deviation below the mean, but it is significant when mindfulness levels are at or above the mean. Thus, as mindfulness level increases, the relationship of acculturative stress to anxiety becomes stronger. See Table 12 and Figure 6.

Mindfulness (CAMM) was not a significant moderator of the relationship between acculturative stress (ASIC) and depression (RCADS) ( $\beta = .0018, p = .64$ ; See Table 13). Mindfulness level does not change the relationship of acculturative stress to depression.

***Hypothesis 6: Mindfulness moderates the relationship of automatic thoughts and anxiety and automatic thoughts and depression***

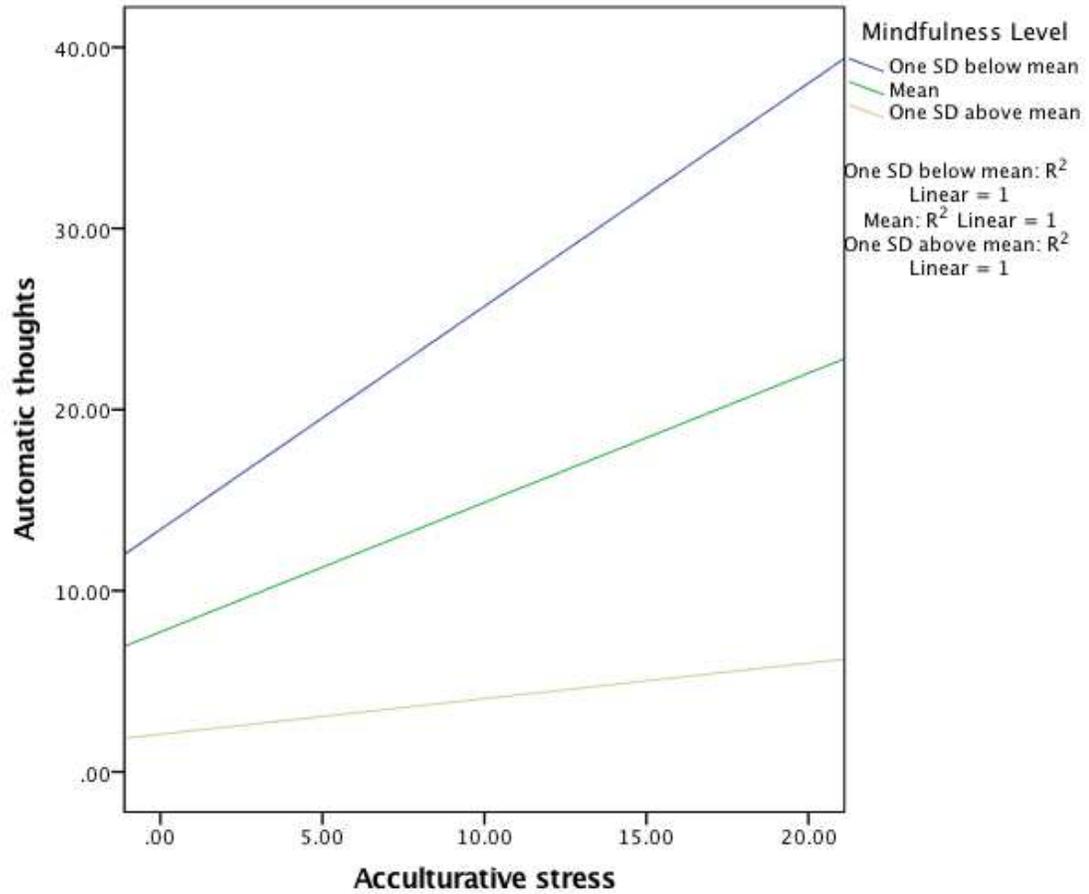
The moderating effect of mindfulness (CAMM) on the relationship of automatic thoughts (CATS) to anxiety (RCADS) was not significant, ( $\beta = .00, p = .99$ ; See Table 11). The effect of automatic thoughts on anxiety does not depend on one's level of mindfulness. Mindfulness (CAMM) was not a significant moderator of the relationship of automatic thoughts (CATS) to depression (RCADS) ( $\beta = -.0002, p = .86$ ; See Table 11).

The effect of automatic thoughts on depression does not differ based on mindfulness level. Figures 7 and 8 depict the moderating relationships of mindfulness.

Table 10.

*Conditional Effects of Acculturative Stress on Automatic Thoughts*

Mindfulness Level	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
One <i>SD</i> below mean	1.23	.14	<.0001	.95	1.51
At the mean	.71	.13	<.0001	.46	.96
One <i>SD</i> above mean	.20	.17	.26	-.15	.54



*Figure 5.* Moderating effect of mindfulness in the relationship of acculturative stress to automatic thoughts.

Table 11.

*Moderation Analysis for Anxiety*

Consequent: RCADS-Anxiety					
Predictor	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
Constant	43.66	4.55	<.0001	34.69	52.62
ASIC	-.26	.32	.41	-.89	.36
CATS	.41	.09	<.0001	.24	.59
CAMM	-.81	.14	<.0001	-1.08	-.55
CATS*CAMM	.00	.004	.99	-.01	.01
ASIC*CAMM	.02	.01	.0482	.0002	.04

$R^2 = .65$

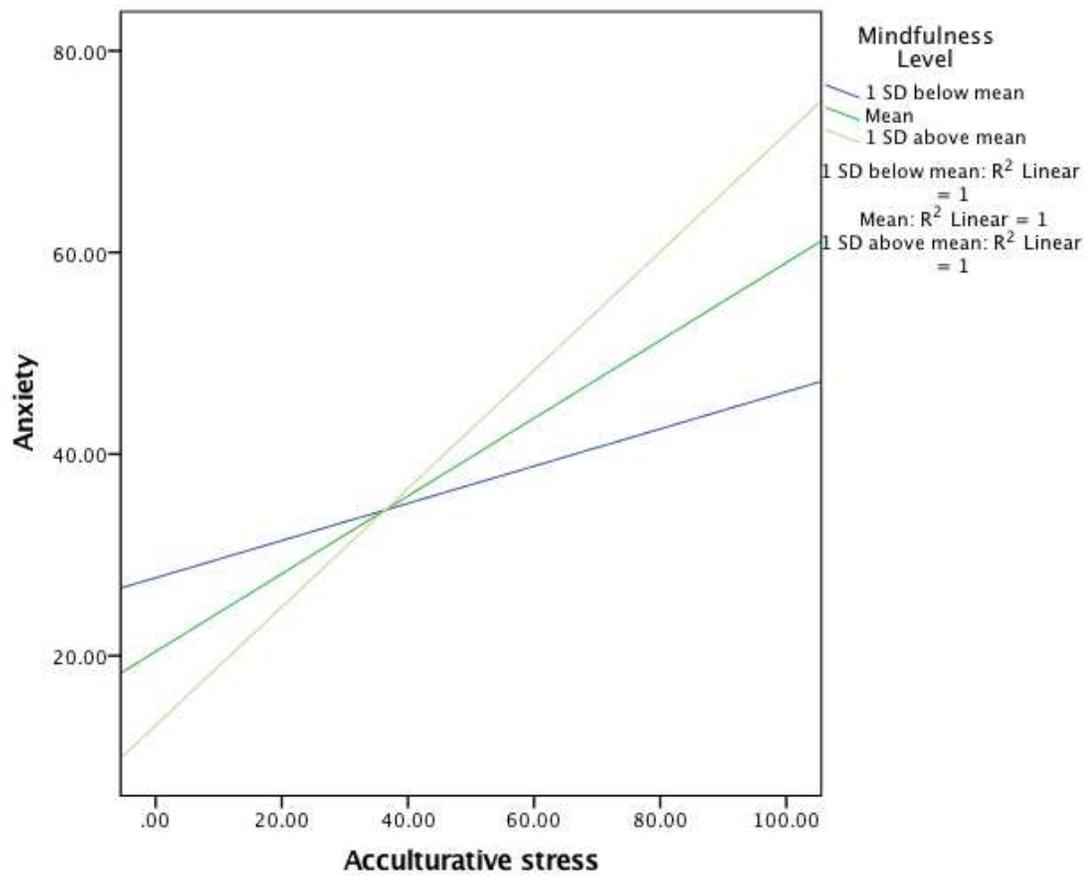
$F(5, 266) = 96.94, p < .0001$

*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale

Table 12.

*Conditional Effects of Acculturative Stress on Anxiety*

Mindfulness Level	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
One <i>SD</i> below mean	.18	.13	.16	-.07	.44
At the mean	.39	.11	.0005	.17	.60
One <i>SD</i> above mean	.59	.17	.0005	.26	.92



*Figure 6.* Moderation of mindfulness in the relationship between acculturative stress and anxiety.

Table 13.

*Moderation Analysis for Depression*


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Consequent: RCADS-Depression

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Predictor	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
Constant	8.77	1.57	<.0001	5.69	11.86
ASIC	-.03	.11	.77	-.25	.18
CATS	.15	.03	<.0001	.09	.21
CAMM	-.16	.05	.0008	-.25	-.07
CATS*CAMM	-.0002	.001	.86	-.0029	.0024
ASIC*CAMM	.0018	.004	.64	-.01	.01

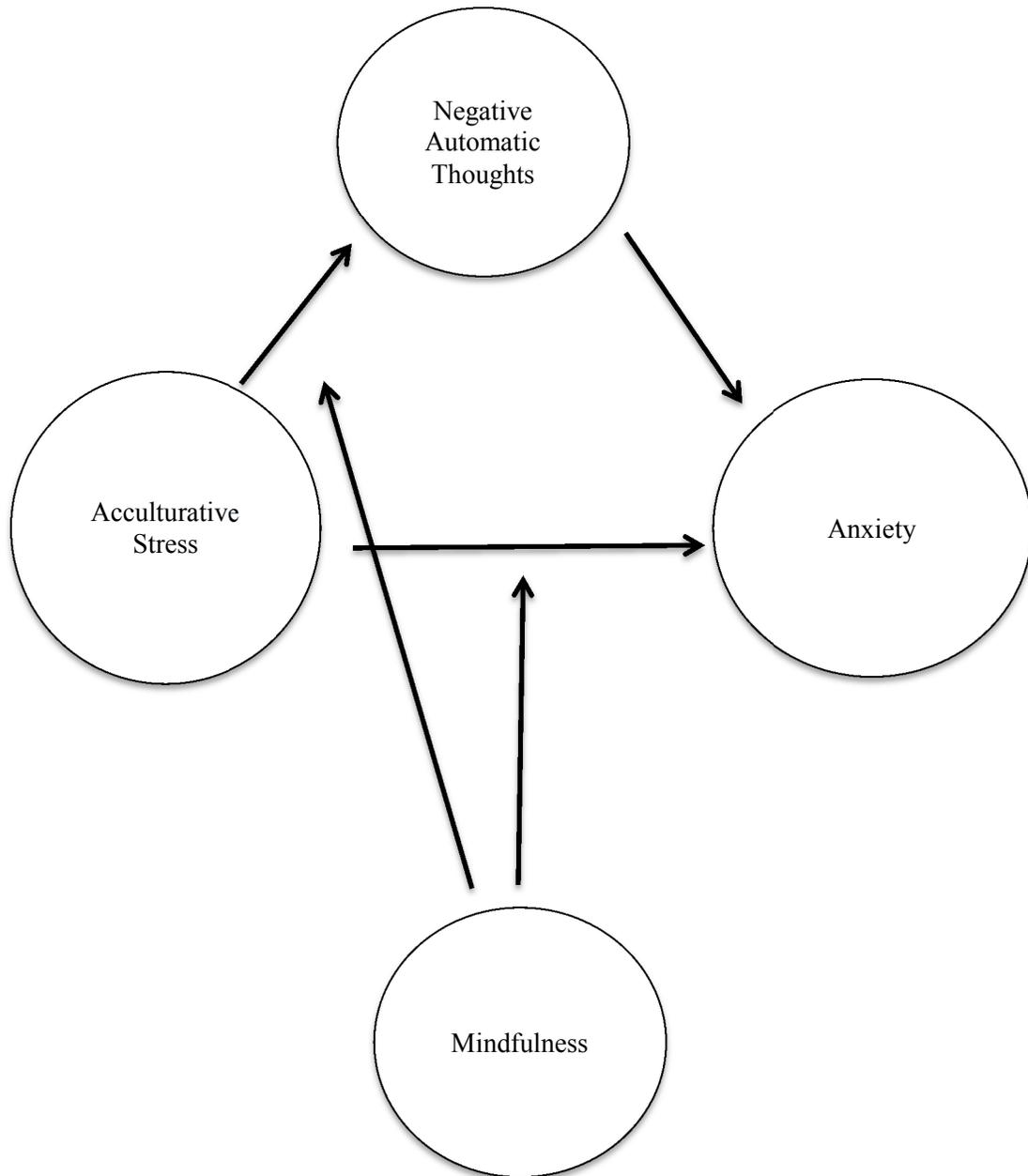
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$R^2 = .57$

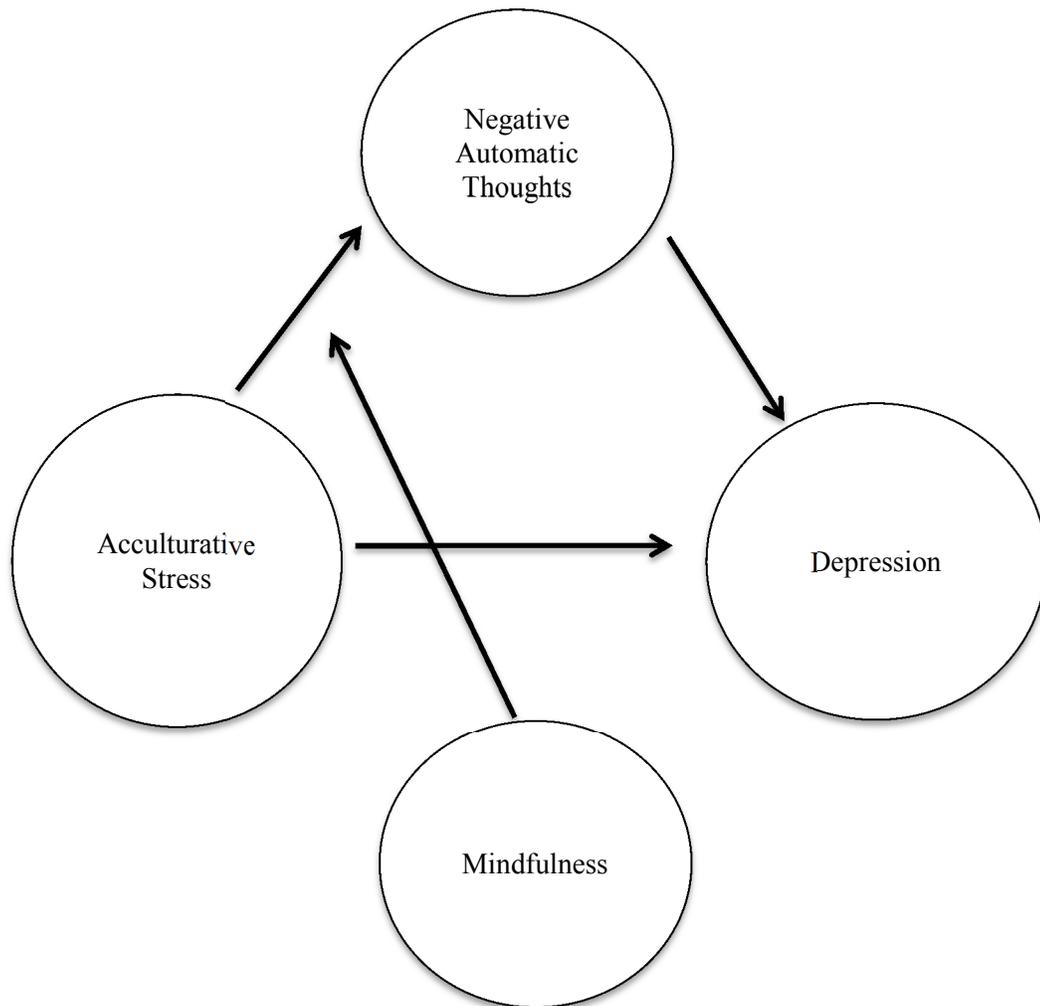
$F(5, 266) = 70.46, p < .0001$

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*Note.* ASIC = Acculturative Stress Inventory for Children, CATS = Children's Automatic Thoughts Scale, CAMM = Children's Acceptance and Mindfulness Measure, RCADS = Revised Children's Anxiety and Depression Scale



*Figure 7.* Model of the relationship of acculturative stress and anxiety, with moderation of mindfulness and mediator of automatic thoughts.



*Figure 8.* Model of the relationship of acculturative stress and depression, with moderation of mindfulness and mediator of automatic thoughts.

***Secondary Hypothesis: Perceived discrimination is more strongly associated with anxiety and depression than immigration-related acculturative stress***

Confidence intervals were constructed utilizing Zou's method for comparing correlations. The 95% confidence interval for the difference in correlation with anxiety for immigration related stress ( $r = .24, p < .001$ ) and perceived discrimination ( $r = .60, p < .001$ ) (ASIC) revealed that there is a significant difference between the correlations (LLCI =  $-.47$ , ULCI =  $-.25$ ). Perceived discrimination was more strongly associated with anxiety than immigration-related stress.

Additionally, the 95% confidence interval exploring the difference in correlation with depression for immigration related stress ( $r = .17, p = .01$ ) and perceived discrimination ( $r = .50, p < .001$ ) also showed that there is a significant difference between the correlations (LLCI =  $-.45$ , ULCI =  $-.22$ ). Again, perceived discrimination is more strongly associated with depression than immigration-related stress.

## CHAPTER V

### Discussion

The main goal of the current study was to better understand the moderating and mediating factors of the relationship between acculturative stress and internalizing symptoms. When considered together, the results reveal several important relationships. First, both mindfulness and automatic thoughts mediate the relationship of acculturative stress to anxiety. Further, acculturative stress is directly associated with changes in anxiety, above and beyond the effects of mindfulness and automatic thoughts. This signifies that acculturative stress has both a direct and indirect impact on anxiety levels in Hispanic youth. Additionally, mindfulness and automatic thoughts mediate the relationship of acculturative stress to depression. In contrast with the findings for anxiety, acculturative stress does not have a direct relationship with depression after accounting for mindfulness and automatic thoughts.

When conceptualized as a moderator, mindfulness is a buffer of the relationship between acculturative stress and automatic thoughts. In line with theory, as mindfulness increases, the relationship between acculturative stress and automatic thoughts becomes weaker. In contrast, the moderating effect of mindfulness in the relationship between acculturative stress and anxiety defied theory; as mindfulness increased, the relationship between acculturative stress and anxiety became stronger, specifically for boys.

The current study can offer important clinical information regarding the type of interventions that will be most helpful for an ethnic minority population. Namely, it provides evidence regarding the ways in which mindfulness and cognitive interventions

can be most effective, thus offering culturally sensitive intervention options for Hispanic youth.

### *Anxiety and Acculturative Stress*

The current study supports a direct relationship between acculturative stress and anxiety in Hispanic youth after accounting for the effects of mindfulness and automatic thoughts.

Only two studies have previously examined the link between anxiety and acculturative stress in Hispanic children (Suarez-Morales & Lopez, 2009) and in college-aged individuals (Crockett, et al., 2007). Suarez-Morales and Lopez (2009) found that acculturative stress predicted anxiety in 10-12 year olds, whereas Crockett and colleagues (2007) demonstrated that there was a direct association between acculturative stress and anxiety. The present study extends the findings to adolescents and demonstrates a consistent link between these two variables.

Additionally, acculturative stress was empirically comprised of two factors, perceived discrimination and immigration-related stress (Suarez-Morales & Lopez, 2009). This previous study revealed that perceived discrimination was related to three different symptoms of anxiety, worry/oversensitivity, social concerns/concentration, and physiological anxiety symptoms, whereas immigration-related stress was associated with just worry/oversensitivity symptoms. Similarly, the current study replicated previous findings with an older sample of youth and indicated that perceived discrimination is more strongly associated with anxiety than immigration-related stress. These results suggest that mental health, particularly anxiety, may be more affected by negative reception during acculturation than by difficulties with language and emotional responses

to leaving one's country and family members. Overall, the literature supports a strong relationship between acculturative stress, particularly the subtype of perceived discrimination, and anxiety in Hispanic individuals.

### ***Depression and Acculturative Stress***

The results of this study demonstrate that acculturative stress is not directly associated with depression after accounting for the effects of mindfulness and automatic thoughts. Previous studies have demonstrated a link between acculturative stress and depression (Crockett et al., 2007), and correlations in the current study support this finding. However, the previously mentioned study did not examine the direct association of the two constructs when considering possible mediating factors. Thus, as the results of this study suggest, it is plausible that the relationship between acculturative stress and depression is accounted for by other variables. In particular, the results demonstrated that both mindfulness and automatic thoughts are mediators of the relationship between acculturative stress and depression. This information is important as it allows for further understanding regarding the ways in which acculturative stress and depression may be related.

Considering the factors that comprise acculturative stress, this study demonstrates that perceived discrimination is more strongly associated with depression than immigration-related stress. This signifies that the manner in which a person is treated while acculturating may affect mental health more strongly than difficulties with practical issues related to acculturation. Interestingly, other studies have conceptualized acculturative stress differently than in this study, which clouds comparisons of results. Stein and colleagues (2012) demonstrated that both perceived discrimination and

acculturative stress were correlated with depression, but perceived discrimination, and not acculturative stress, predicted depression. In the current study, however, perceived discrimination is considered to be a subtype of acculturative stress. This suggests that researchers in the field should come to an agreement regarding the definition of constructs to facilitate similar measurement and consistency between studies. When examining the measures used to assess perceived discrimination and acculturative stress in the study of Stein and colleagues (2012), it appears that their acculturative stress measure closely relates to the concept of immigration-related stress in the current study. Therefore, the results are consistent with the current study in that perceived discrimination is related to depression more strongly than immigration-related stress. Additionally, Lorenzo-Blanco and colleagues (2011) found that perceived discrimination mediated the relationship of acculturation as measured by the Way of Life Scale (Oetting & Beauvais, 1990) and the Revised Acculturation Rating Scale for Mexicans (Cuéllar, Arnold, & Maldonado, 1995) to depression. That is, the stress related to feeling discriminated against in a new culture mediated the relationship of one's level of identification with their culture of origin and host culture to their symptoms of depression. This idea is very interesting, considering that this study supports that the relationship between acculturative stress and depression is mediated by other factors (mindfulness and automatic thoughts). These results, taken together, suggest that there may be a convoluted pathway from acculturation to acculturative stress to cognitive factors to internalizing symptoms; future studies should aim to incorporate all these factors to facilitate an understanding of the development of internalizing symptoms in Hispanic youth. Importantly, this study is the first to consider the effect of acculturative

stress on depression in a sample of middle school-aged Hispanic youth, as previous studies were conducted with older Hispanic youth and college aged individuals.

### *Moderating and Mediating Factors*

#### *Automatic thoughts as a mediator*

Cognitive theory postulates that negative automatic thoughts are partially responsible for the development of anxiety and depression (Beck, 1976). Consistent with this theory, automatic thoughts have been associated with increased risk for anxiety and depression in both clinical and community samples of youth (e.g. Weems et al., 2001; Schniering & Rapee, 2002). Studies have linked separate types of negative automatic thoughts to anxiety and to depression, but overall, the relationship is robust for children aged 6-18. However, only one study has linked automatic thoughts and depression in Hispanic youth (Kennard et al., 2006) and none have examined the relationship of anxiety to automatic thoughts in this population. Additionally, only one previous study has linked life stress to an increase in negative automatic thoughts (Flouri & Panourgia, 2014), and none have investigated this relationship in Hispanic youth. Therefore, previous findings were suggestive of a mediating relationship wherein stress lead to automatic thoughts, which in turn led to internalizing symptoms.

The current study supports this idea in that automatic thoughts mediated the relationship of acculturative stress to internalizing symptoms in Hispanic youth. This is the first study to demonstrate that acculturative stress is related to increased cognitive biases. These findings are vital in that they support cognitive theory with Hispanic youth and because they provide information regarding negative cognitive outcomes related to acculturative stress. Further, they allow for theory to guide our interventions for those

experiencing acculturative stress. Specifically, it suggests that cognitive interventions that target automatic thoughts will be useful in thwarting the development and maintenance of anxiety and depression in Hispanic youth.

### *Mindfulness as a mediator*

The current study revealed that mindfulness, or nonjudgmental awareness of the present, serves as a mediator of the relationship between acculturative stress and anxiety. The results also demonstrated that mindfulness is a mediator of the relationship between acculturative stress and depression. Therefore, lack of mindfulness is a mechanism by which acculturative stress leads to internalizing symptoms in this population. Past studies have linked mindfulness to fewer symptoms of anxiety and depression in adults (Curtiss & Klemanski, 2014; Frewen, et al., 2008; Yeung, 2013). More recently, similar findings have been noted in children (Chambers et al., 2015), though not all studies show consistent results (Zeller, et al., 2015). However, no prior studies have examined whether or not the positive outcomes related to mindfulness are due to a mediating effect. Additionally, this study is the first to examine the way mindfulness relates specifically to stress related to acculturation, taking into account the unique cultural experience that ethnic minorities undergo. The mediating effect of mindfulness demonstrates that increased stress related to the process of acculturation leads to less capacity to focus on the present (less mindfulness), and less mindfulness leads to symptoms of both anxiety and depression. Although many studies have examined the powerful effects of mindfulness through intervention, this is the first that offers insight as to how mindfulness may be related to experiences of stress and internalizing symptoms, particularly in a sample of Hispanic youth.

*Mindfulness as a moderator of the relationship between acculturative stress and automatic thoughts*

Past researchers have stated that increased stress is related to more negative automatic thoughts amongst children (Flouri & Panourgia, 2014), and negative automatic thoughts have been tied to a host of negative outcomes such as anxiety and depression (e.g. Schniering & Rapee, 2004; Stevanovic et al., 2016). In the current study, mindfulness moderated the relationship of acculturative stress to automatic thoughts, suggesting that it can serve as a buffer for the negative cognitive effects related to stress. This finding is consistent with one previous study that has examined mindfulness and automatic thoughts. Frewen and colleagues (2008) reported that mindfulness was negatively associated with several types of negative automatic thoughts; further, they stated that following a mindfulness intervention, a significant decrease in negative automatic thoughts was observed. These results also support past research that has cited mindfulness as a buffer between stress and negative outcomes (Marks et al., 2010; Ciesla et al., 2012). However, this study offers new information as it is the first that measures culture-specific stress and cognitive outcomes in Hispanic youth. The current study demonstrates that mindfulness is related to a weaker relationship between stress and negative automatic thoughts.

*Mindfulness as a moderator of the relationship between acculturative stress and anxiety*

The finding that as mindfulness level increases, the relationship of acculturative stress to anxiety becomes stronger is quite surprising. Theory regarding these constructs would indicate that increased mindfulness would be related to a significant decrease in anxiety (Hofmann et al., 2013; Yeung, 2013). Additionally, these results are inconsistent with past research citing that mindfulness was a buffer of the relationship between life hassles and anxiety (Marks et al., 2010).

These findings, though significant, were near the threshold of non-significance ( $p = .0482$ ). Clearly, in order to better understand these unexpected results, more studies are needed. A post-hoc analysis was conducted to determine if this relationship was related to gender; this relationship was significant for boys and not girls (see Appendix C; boys:  $B = .05, p = .03$ ; girls:  $B = .02, p = .33$ ). This would suggest that as boys become more mindful, the relationship between stress and anxiety becomes stronger. It is possible that the increased self-awareness that is related to mindfulness allows boys to reflect on their experiences of stress and therefore, strengthens the relationship between culture-related stress and anxiety. Clinically, this indicates that it is important to educate boys regarding the fact that mindfulness, while helpful in weakening the relationship of stress to negative cognitive outcomes, may also increase experiences of anxiety. In contrast, for girls, there is no moderating effect of mindfulness in the relationship of acculturative stress to anxiety.

Past reports have explored potential adverse effects related to mindfulness practice, such as impaired reality testing, negative affect, rumination, anxiety, and panic,

though they have been noted in rare cases (Kostanski, Hassed, Gullone, Ciechomski, Chambers, & Allen, 2006). The authors claim that a possible reason for adverse side effects is the awareness and insight into oneself that is allowed by mindfulness practice, as mentioned above. They argue that although the effects feel adverse, they are truly a positive outcome that would be helped through sustained practice. Additionally, they mention that calling anxiety an adverse effect of mindfulness inherently calls an experience “negative,” which judges anxiety and goes against the nonjudgmental tenant of mindful practice (Kostanski et al., 2006). Interestingly, a prior study using a mindfulness intervention with 20 Hispanic youth found that the mindfulness-based stress reduction techniques had no effect on anxiety level (Edwards et al., 2013), which supports the idea that mindfulness may not be useful for decreasing anxiety levels in this population. An important distinction between published studies and the current investigation is that the participants’ dispositional mindfulness was measured in this study compared to engagement in mindfulness practice assessed in other investigations. Therefore, future studies should clarify if dispositional mindfulness, or mindfulness practice only, is linked to the potential “adverse” effect of anxiety found in the current study.

#### ***Pathways lacking moderating effect of mindfulness***

The current study demonstrated that mindfulness did not moderate the relationship of acculturative stress to depression. This information suggests that the effect of mindfulness is less direct, and may work through other variables (such as the moderation of acculturative stress to automatic thoughts). Mindfulness also did not moderate the relationship of automatic thoughts to anxiety and automatic thoughts to

depression. It is possible that these findings are because the moderating effect of mindfulness is captured in its effect on the relationship between acculturative stress and automatic thoughts. Alternately, dispositional mindfulness may be less helpful than mindfulness practice in buffering these relationships. Taken together, these results suggest that mindfulness is effective in buffering the negative cognitive outcomes of stress related to culture, but has less of a positive effect in dealing with the negative mental health outcomes due to cognitive biases. Further, mindfulness does not seem particularly effective in directly buffering the negative psychological outcomes that are related to acculturation-related stressors, namely the pathway from acculturative stress to internalizing symptoms. These non-significant findings provide important information as to the ways in which mindfulness is less useful for Hispanic youth, thus further allowing targeted intervention for this population.

### *Summary*

Taken together, this study posits that automatic thoughts and mindfulness are both mediators of the relationship between acculturative stress and anxiety, and acculturative stress and depression. After accounting for the effects of these mediators, the direct relationship between acculturative stress and anxiety is still significant, but the direct relationship between acculturative stress and depression is not. When conceptualized as a moderator, mindfulness moderates the relationship between acculturative stress and automatic thoughts; the relationship between the two weakens as mindfulness level increases. Mindfulness also moderated the relationship between acculturative stress and anxiety in the opposite direction than expected; as mindfulness increased, the relationship between acculturative stress and anxiety became stronger. Mindfulness was not found to

moderate the relationship between acculturative stress and depression or between automatic thoughts and depression/anxiety.

### *Clinical Implications*

The findings of this study offer important implications for clinicians working with Hispanic youth. This study supports the indirect and direct relationship between acculturative stress and internalizing symptoms. Therefore, clinicians who work with this population should assess their clients' acculturation experiences in order to determine if culture-related stress is a risk factor for internalizing symptoms. This information could also be used in schools to help assess for children who may benefit from preventative interventions; those who endorse high levels of acculturative stress may need targeted intervention to help decrease its deleterious effects. The subtype of acculturative stress, perceived discrimination, was linked to both anxiety and depression, and this association was stronger than the relationship of immigration-related stress to anxiety and depression. This information allows clinicians to identify the particular type of acculturative stress that is harmful to Hispanic youth in order to help with screening and preventative efforts. Additionally, the negative effects of perceived discrimination demonstrate a need for community awareness and sensitivity training in order to lessen the experiences of discrimination faced by this population.

Additionally, the mediating effect of automatic thoughts in the relationship between acculturative stress and internalizing symptoms demonstrates support for cognitive theory and its usefulness with Hispanic children. Only one previous study has linked increased stress to increased negative automatic thoughts (Flouri & Panourgia, 2014). This study demonstrates a similar link; with increased stress, children are at an

increased risk for negative automatic thoughts. The current findings also expand this information as it identifies that culture-specific stressors can also be associated with negative cognitive outcomes. Therefore, children who are experiencing acculturative stress can be identified as those who will mostly benefit by cognitive interventions aimed at evaluating and reframing negative automatic thoughts. This is especially vital given that the current study expands the prior knowledge base by linking negative automatic thoughts to anxiety and depression in a sample of Hispanic youth. Therefore, clinicians working with this population can attempt to identify children experiencing acculturative stress and can utilize cognitive interventions aimed at decreasing the effects of negative automatic thoughts.

This study demonstrates that mindfulness can be helpful when dealing with the potential negative cognitive effects of acculturative stress. The findings support that utilizing a mindfulness intervention with Hispanic youth may help to weaken the risk of developing cognitive biases when experiencing acculturative stress. Therefore, both mindfulness and cognitive interventions may help to target the negative effects of acculturative stress.

Unfortunately, this study also demonstrates that mindfulness decreases when levels of acculturative stress are high, which contributes to internalizing symptoms. This shows that even though mindfulness can be a really helpful tool, it also can be related to more internalizing symptoms if mindfulness decreases due to acculturative stress. Therefore, as acculturative stress levels rise, clinicians may find mindfulness interventions even more critical. Increased mindfulness in the face of acculturative stress can be helpful in that it relates to a weaker relationship between acculturative stress and

negative automatic thoughts. Further, it is a mechanism by which acculturative stress leads to an increase in internalizing symptoms; thus, increasing mindfulness will interrupt the indirect pathway by which acculturative stress increases symptoms of anxiety and depression.

The finding that as mindfulness increases, the relationship between acculturative stress and anxiety becomes stronger in Hispanic boys is interesting. If supported by future research, it may demonstrate that mindfulness increases awareness of stressful experiences and emotions and thus, is related to an increase in reported anxiety. This explanation would offer the opportunity for clinicians to alert their clients to this possibility and advise them as to the possible experience of increased anxiety when increasing mindfulness. Further, future studies could determine if these effects are short or long term, and if they are aided through continued mindfulness practice. Alternatively, it may reveal a previously unknown negative effect of mindfulness in this population. Future studies are needed to understand this phenomenon.

As the numbers of Hispanic youth continue to grow in our nation, tailoring culturally sensitive interventions that can help to decrease the likelihood of developing internalizing symptoms will become even more crucial. Thus, this study supports a link between acculturative stress and internalizing symptoms and helps to identify strategies, namely mindfulness and cognitive interventions, to help this vulnerable ethnic minority population.

### ***Limitations and Future Directions***

The current study is not without its limitations. First, the cross-sectional nature of this data is limiting; that is, statements regarding causal effects and directionality cannot

be made without longitudinal data. Additionally, without longitudinal data, it is impossible to determine if mindfulness is more appropriate when conceptualized as a moderator or a mediator of the relationships examined in this study. Thus, future studies should attempt to observe and examine these relationships over time in order to determine causality and directionality.

Further, the measures in this study were provided in both English and Spanish due to a request from the schools. Although this change facilitated greater understanding by the participants, it is impossible to determine which language the children completed the measures in, and thus, may jeopardize our understanding of the psychometric properties of the measures involved. Moreover, the low reliability and skew of the items in the immigration-related stress scale poses a psychometric issue in this study. This issue calls into question if the results of the secondary hypothesis are useful. Future studies should aim to replicate these findings with more reliable measurement to ensure that the findings are a true representation of the relationships between perceived discrimination, immigration-related stress, and internalizing symptoms.

Another issue with the current study is the reliance on self-report data. Self-report data, while useful, is strengthened with multiple types of measurement or data sources. Future studies would benefit from collecting data from multiple sources such as parent and teacher report and via several types of measurement such as observation. Utilizing multiple data sources would allow for future researchers to find connections between outwardly observed behavior and the internal experiences of Hispanic children. Thus, clinicians and researchers can work together to find the effects of important cognitive and psychological attributes like mindfulness to understand how they affect both internal and

external experiences and behavior, thus creating a more holistic approach to treatment and allowing more familial and environmental influence in treatment.

Future studies should attempt to add more possible moderating and mediating factors such as parent-child conflict and attributional style to the current model in order to create a more robust understanding of the many possible pathways that develop and maintain internalizing symptoms in Hispanic youth. Past research has associated parent-child conflict to internalizing symptoms in this population (Smokowski & Bacallao, 2007), and models have connected acculturative stress and parent-child conflict (Birman & Poff, 2011). Additionally, attributional style has been shown to moderate the relationship of cultural stress to depression in a group of Mexican-Americans from 7<sup>th</sup>-10<sup>th</sup> grade, demonstrating that it could be an important aspect of the pathway relating acculturation-based stress and internalizing symptoms (Stein, Gonzalez, & Huq, 2007). Thus, exploring these potential mediators and moderators is a way to create a greater understanding of the many effects of acculturative stress and the manners by which it can lead to harmful internalizing symptoms. As these models become more complete, interventions can be targeted even further to best help Hispanic youth suffering from the negative effects of acculturative stress.

Other possible avenues for further research to extend the results of this study would be to examine other ethnicities, income-levels, acculturation levels, and gender, as they relate to acculturative stress and internalizing symptoms. The sample in this study is primarily from a Cuban background, which allows questions regarding the generalizability to other Hispanic and non-Hispanic ethnicities. Cuban individuals in South Florida experience an ethnic enclave that may be protective against some of the

deleterious effects of acculturation-related stress (Rumbaut & Rumbaut, 1976), so it is important to consider the ways in which the results of this study may differ when examined in other ethnic groups or in other areas of the United States, where Hispanic groups are truly a minority. Additionally, this sample comes from primarily low-income households. Hispanic individuals are more likely to live in poverty than other ethnic groups, and this particular stressor has been related to internalizing symptoms (Stein, Gonzalez, & Huq, 2007). Therefore, the effect of income or low socioeconomic status on this group may be important to examine in future studies, and may limit generalizability to individuals not experiencing this type of economic stress. Further, acculturation level may be a relevant factor that is associated with acculturative stress and thus, the psychopathology outcomes in this study. The exact acculturation level of this sample, in which 65% was U.S. born, was not assessed in the current study. Prior research has stated that acculturation-related stress is relevant in second and third generation adults, though the literature has not indicated how this applies to children (Cervantes, Padilla, & Salgado de Snyder, 1991). In future studies, an understanding of the acculturation level of the sample would help differentiate between acculturation and acculturative stress and would augment the understanding of the unique relationships between these two constructs and the variables of interest. Additionally, the results may differ in a sample with fewer participants who are born in the United States, which is a limit to the study's external validity. Last, the current study did not examine if the effects in the models tested were significant for both genders (with the exception of the model in Appendix C). This is an important consideration, as previous studies have found differences in internalizing symptoms (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998;

Maughan, Collishaw, & Stringaris, 2013), mindfulness level (Brown, West, Loverich, & Biegel, 2011), and acculturative stress (Lorenzo-Blanco et al., 2011) across gender. Thus, future studies may consider testing gender as a moderator of the relationship between acculturative stress, internalizing symptoms, and other cognitive factors.

### ***Conclusion***

The population of Hispanic youth in the United States is on the rise, and this group is at an increased risk for developing internalizing symptoms. With this change in the country's demographics, research that examines the cultural and cognitive factors related to anxiety and depression in this population is a necessity to inform intervention and future studies. The current study examined the relationships between acculturative stress, cognitive factors, mindfulness, and internalizing symptoms in a sample of 274 Hispanic youth between the ages of 10 and 16. Hypothesized relationships were tested including the direct effects of acculturative stress on anxiety and depression and the mediating effects of negative automatic thoughts and mindfulness in the relationship of acculturative stress to anxiety and acculturative stress to depression. Additionally, mindfulness was explored as a moderator of the relationship between acculturative stress and anxiety, acculturative stress and depression, acculturative stress and automatic thoughts, and automatic thoughts and internalizing symptoms. Last, the two subtypes of acculturative stress (immigration-related stress and perceived discrimination) were examined to understand their relative strength of relationship with anxiety and depression.

Results demonstrated that acculturative stress was directly associated with anxiety after accounting for the effects of automatic thoughts and mindfulness. Additionally, both

mindfulness and automatic thoughts mediated the relationship of acculturative stress to anxiety and depression, and mindfulness moderated the relationship of acculturative stress to anxiety and acculturative stress to automatic thoughts. Further, perceived discrimination was more strongly associated with anxiety and depression than was immigration-related stress.

These results offer important insight into treatment for Hispanic youth. First, they suggest that cognitive interventions are a useful tool for Hispanic youth in the attempt to combat the negative effects of acculturative stress. They also indicate that mindfulness is useful both to buffer the relationship of acculturative stress and negative cognitive outcomes and also because it is a mechanism through which acculturative stress leads to psychopathology. Therefore, mindfulness is helpful in multiple manners. Future studies should aim to replicate these results and examine these relationships longitudinally using multiple methods of data collection. Overall, this study is the first to examine the ways in which acculturative stress is associated with anxiety and depression, including measuring mediators and moderators of these relationships in Hispanic youth. The findings presented can be utilized to inform culturally sensitive clinical interventions with this vulnerable ethnic minority population.

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Appendix A  
Equation for Mediation Analyses

Mediation model for anxiety and depression:

- $M_1 = i_{M_1} + a_1 * X + e_{M_1}$
- $M_2 = i_{M_2} + a_2 * X + e_{M_2}$
- $Y = i_Y + c' * X + b_1 * M_1 + b_2 * M_2 + e_Y$

Where

- Y = Anxiety/Depression (dependent variable)
- X = Acculturative Stress (independent variable)
- $M_1$  = Mindfulness (mediator)
- $M_2$  = Automatic Thoughts (mediator)

Appendix B  
Equation for Moderation Analyses

## Moderation

- $Y = i_y + c'_{1y} * X + c'_{2y} * W_1 + c'_{3y} * (X * W_1) + b_{1y} * M_1 + b_{2y} * (W_1 * M_1) + e_Y$
- $M_1 = i_{M_1} + a_{1M_1} * X + a_{2M_1} * W_1 + a_{3M_1} * (X * W_1) + e_{M_1}$

## Where

- Y = Anxiety/Depression (dependent variable)
- X = Acculturative Stress (independent variable)
- $W_1$  = Mindfulness (moderator)
- $M_1$  = Automatic Thoughts (mediator)

## Appendix C

Post-Hoc Analysis for Moderating Effect of Mindfulness in the Relationship between  
Acculturative Stress and Anxiety

In order to better understand the unexpected finding that as mindfulness increases, the relationship between acculturative stress and anxiety increases, a post hoc analysis was conducted to determine if this relationship is significant for both females and males. Thus, the analysis was run once with males only (CAMM  $M = 31.44$ ) and a second time with females only (CAMM  $M = 27.71$ ). The results demonstrated that the surprising moderation effect was only true for males. That is, as mindfulness increases, the relationship between acculturative stress and anxiety becomes stronger for males ( $\beta = .05, p = .03$ ) and not for females ( $\beta = .02, p = .33$ ). See Tables 14-16 and Figure 9.

Table 14.

*Moderation Analysis for Anxiety for Males*

Consequent: Anxiety					
Predictor	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
Constant	52.99	7.23	<.0001	38.63	67.35
ASIC	-1.20	.65	.07	-2.49	.09
CATS	.43	.18	.02	.07	.79
CAMM	-1.14	.21	<.0001	-1.55	-.73
CATS*CAMM	.01	.01	.31	-.01	.02
ASIC*CAMM	.05	.02	.03	.01	.09

$R^2 = .69$

$F(5, 94) = 42.35, p < .0001$

Table 15.

*Conditional Effects of Acculturative Stress on Anxiety for Males*

Mindfulness Level	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
One <i>SD</i> below mean	-.09	.21	.65	-.51	.32
At the mean	.27	.15	.07	-.03	.56
One <i>SD</i> above mean	.63	.23	.01	.18	1.08

Table 16.

*Moderation Analysis for Anxiety for Females*


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Consequent: Anxiety

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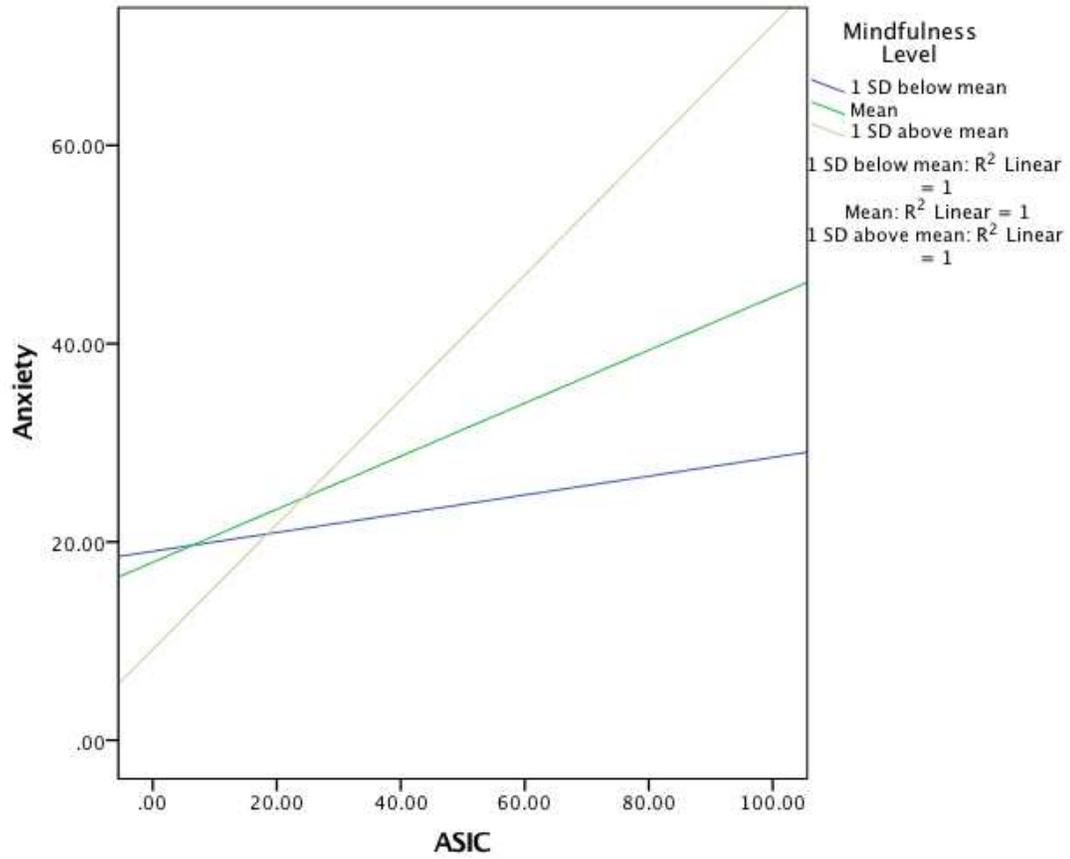
Predictor	$\beta$	<i>SE</i>	<i>p</i>	95% CI	
Constant	37.20	6.09	<.0001	25.18	49.22
ASIC	.01	.40	.97	-.78	.81
CATS	.42	.11	.00	.20	.63
CAMM	-.59	.19	.00	-.96	-.22
CATS*CAMM	-.00	.01	.70	-.01	.01
ASIC*CAMM	.02	.02	.33	-.02	.05

---

$R^2 = .62$

$F(5, 166) = 54.41, p < .0001$

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*Figure 9.* Moderation of mindfulness in the relationship of acculturative stress to anxiety for boys only.