

THE LONGITUDINAL IMPACT OF DISCRIMINATION ON ATTENTION
PROBLEMS IN LATINX IMMIGRANT YOUTH: EXAMINING THE ROLES OF
SOMATIC SYMPTOMS AND SOCIAL SUPPORT

by

KELSEY L. KUPERMAN

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Student: Kelsey L. Kuperman

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This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Department of Counseling Psychology and Human Services by:

Dr. Benedict McWhirter	Chairperson
Dr. Emily Tanner-Smith	Core Member
Dr. Bertranna Muruthi	Core Member
Dr. Heather McClure	Institutional Representative

and

Dr. Kate Mondloch	Interim Vice Provost and Dean of the Graduate School
-------------------	--

Original approval signatures are on file with the University of Oregon Graduate School.

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DISSERTATION ABSTRACT

Kelsey L. Kuperman

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Department of Counseling Psychology and Human Services

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Title: The Longitudinal Impact of Discrimination on Attention Problems in Latinx Immigrant Youth: Examining the Roles of Somatic Symptoms and Social Support

Youth with attention problems are at significantly higher risk of a wide range of negative outcomes, including academic underachievement, occupational challenges, and socioeconomic disadvantage. Exposure to early adversity, including racial/ethnic discrimination, has been identified as an important risk factor of cognitive impairment, including the development of attention problems. Though significantly understudied, Latinx immigrant youth may be at elevated risk of these negative consequences given their disproportionately higher levels of exposure to discrimination through the immigration and acculturation process. However, a dearth of research has examined the relationship between discrimination and attention problems in this population, and even less is known about potential mediators, such as the manifestation of emotional distress as somatic symptoms, that may help to explain the link between discrimination and attention problems in Latinx immigrant youth. Research is also needed to examine potential moderating factors, such as social support, that may help to protect against the deleterious effects of discrimination on somatic symptoms and attention problems. Using an existing dataset gathered in the Adolescent Latino Acculturation Study (ALAS), the present study address these gaps in the literature by applying a race-based traumatic stress theory and stress and coping model to examine: (a) the direct relationship between

perceived discrimination and attention problems, (b) whether somatic symptoms partially mediate the link between perceived discrimination and attention problems, (c) the possible moderating effect of social support on these relationships, and (d) secondary exploratory analyses investigating the influence of time in U.S. residency on the theorized link between discrimination and attention problems in a sample of 218 Latinx immigrant youth living in Oregon.

CURRICULUM VITAE

NAME OF AUTHOR: Kelsey L. Kuperman

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, OR
University of Georgia, Athens, GA

DEGREES AWARDED:

Doctor of Philosophy, Counseling Psychology, Anticipated 2022, University of Oregon
Master of Science, Counseling, Family and Human Services, 2018, University of Oregon
Bachelor of Science, Psychology, 2012, University of Georgia
Bachelor of Arts, Spanish, 2012, University of Georgia

AREAS OF SPECIAL INTEREST:

Spanish Language Psychological Services and Research Specialization

PROFESSIONAL EXPERIENCE:

Bilingual Therapist Intern, Thornton Outpatient, Community Reach Center,
Denver, Colorado, 2020-2021

Bilingual Behavioral Health Intern, Clínica Tepeyac, Denver, Colorado, 2020-
2021

Psychology Assessment Extern, Strong Integrated Behavioral Health, Eugene,
Oregon, 2019-2020

Bilingual Therapist Intern and Group Facilitator, Trauma Healing Project,
Eugene, Oregon, 2019-2020

Ongoing Support Counselor, Graduate Employee, Accessible Education Center,
University of Oregon, Eugene, Oregon, 2016-2020

Bilingual Therapist Extern, Centro LatinoAmericano, Eugene, Oregon, 2017-
2018

Child/Family Practicum Intern, Child and Family Center, Eugene, Oregon, 2017-2018

Adult Practicum Intern, University Counseling Center, University of Oregon, Eugene, Oregon, 2016-2017

Parenting Coach Interventionist, Oregon Social Learning Center, Eugene, Oregon, 2016-2017

University Supervisor, Graduate Employee, University of Oregon, Eugene, Oregon, 2015-2016

Clinical Research Interviewer, Grady Trauma Project, Emory University, Atlanta, Georgia, 2012-2013, 2014-2015

Psychology Intern and Office Assistant, Angel Lopez Clinic, Duluth, Georgia, 2012-2013, 2014-2015

Senior Research Assistant, University of Georgia, Athens, Georgia, 2011-2012

GRANTS, AWARDS, AND HONORS:

Harvey E. Lee Graduate Scholarship, University of Oregon, 2020

Graduate Student Award, University of Oregon, 2020

Clare Wilkins Chamberlin Award, University of Oregon, 2019

Thomas B. Cooper Memorial Scholarship, University of Oregon, 2019

General University Scholarship, University of Oregon, 2015, 2017, 2018

College of Education Alumni Scholarship Award, University of Oregon, 2016

Outstanding Research Presentation in Developmental Psychology, Young Investigators Symposium, American Psychological Association Annual Convention, 2016

College of Education Doctoral Research Travel Scholarship, University of Oregon, 2016

Interdisciplinary Panel Presentation Award, 7th Annual Graduate Student Research Forum, University of Oregon, 2016

Elected Phi Beta Kappa, University of Georgia, 2012

Honorarium, Psychology Research Lab Training Coordinator, University of Georgia, 2012

2nd Place Poster Presentation Award, Annual Psi Chi Convention of the Behavioral Sciences, University of Georgia, 2012

Presidential Scholar, University of Georgia, 2011 and 2012

HOPE Scholarship, University of Georgia, 2008, 2009, 2010 and 2011

Rotary Club Scholarship, Atlanta Chapter, 2008, 2009, 2010 and 2011

PUBLICATIONS:

Meller, S., **Kuperman, K.L.**, McCullough, C., & Shaffer, A. (2016). Adverse effects of childhood emotional maltreatment on child behavioral outcomes. *Journal of Aggression, Maltreatment and Trauma*, 1-18.

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CHAPTER I

INTRODUCTION

Attention is an important executive function involved in higher-order cognitive processes that are required for learning, task completion, and daily functioning (Eslinger, 1996; Smallwood, Fishman, & Schooler, 2007). Youth attention problems, including distractibility, difficulty concentrating, and disruptions in sustained attention, represent a serious public health concern and an important focus of prevention research given that attention problems during childhood and adolescence have been strongly linked to academic (Polderman, Boomsma, Bartels, Verhulst, & Huizink, 2010), socioeconomic (Galéra et al., 2012), and occupational disparities (Knapp, King, Healey, & Thomas, 2011) later in life. Therefore, researchers have explored social-environmental risk factors that may serve as important targets of intervention to address attention problems (Juster, McEwen, & Lupien, 2010).

Exposure to early adversity has been identified as a strong predictor of cognitive deficits, including the development of attention problems (Brown et al., 2017; Ouyang, Fang, Mercy, Perou, & Grosse, 2008). Framed within the race-based traumatic stress theory (Carter, 2007), racial/ethnic discrimination is highlighted as a specific form of early adversity and traumatic stress shown to disrupt regulatory processes in the body including those required for healthy psychological adjustment and cognitive functioning (Cronholm et al., 2015; Lewis, Cogburn, & Williams, 2015). As such, discrimination has been strongly linked to negative psychological (Schmitt, Branscombe, Postmes, & Garcia, 2014) and cognitive outcomes (Barnes et al., 2012). Still, less is known about the effects of discrimination on attention problems, specifically, representing an important

gap in the literature given the deleterious effects of attention problems on educational and occupational outcomes (Polderman et al., 2010; Knapp et al., 2011).

Latinx adolescents may be at elevated risk of these consequences given the educational disparities that already exist (Lopez, 2009), compounded by the disproportionate levels of Latinx youth (over 80%) who report experiencing racial/ethnic discrimination (Foxen, 2010). Further, Latinx immigrant youth may be particularly vulnerable to attention problems and associated negative outcomes due to the additive risk of experiencing discrimination as a result of the immigration and acculturation process (Caplan, 2007) and heightened anti-immigrant sentiment that exists in the U.S. (Lopez, 2019; Potochnick, Perreira, & Fuligni, 2012; Takei, Saenz, & Li, 2009). However, a scarcity of research has examined the link between discrimination and attention problems among youth in this population, and even less is known about potential underlying mechanisms of this relationship.

One possible pathway by which perceived discrimination might impact attention is through the manifestation of psychological distress as somatic symptoms. Somatic symptoms can be defined as aches and pains (e.g., headaches, stomach aches, back pain) without any known underlying medical cause (Sharpe & Carson, 2001). For instance, research has demonstrated that racial/ethnic discrimination is significantly related to the development of internalizing symptoms such as anxiety and depression (Sirin et al., 2015; Sirin, Sin, Clingain, & Rogers-Sirin, 2019), which, in turn, can often manifest in the form of somatic symptoms (Campo, 2012). This may be particularly true for Latinx immigrant youth due to the culturally normed expression of emotional distress as physical pain and higher reported rates of somatic complaints among Latinx youth as compared to other

racial/ethnic groups (Canino, 2004). Further, much like medically derived pain, somatic symptoms can lead to emotional and cognitive depletion that disrupts regulatory brain networks required for attentional control, thus, contributing to attention problems (Baliki, Geha, Apkarian, & Chialvo, 2008; Dick & Rashedi, 2007). While discrimination-related stress has been linked to somatic symptoms in Latinx adolescents (Sirin et al., 2015), very little research has examined the role of somatic symptoms in explaining the association between discrimination and attention problems in Latinx immigrant youth.

Research is also needed to elucidate protective factors that may help to disrupt the effects of discrimination on attention problems. Consistent with the race-based traumatic stress theory (Carter, 2007) and stress and coping model (Lazarus & Folkman, 1984), racial/ethnic discrimination is an active source of traumatic stress that elicits active coping responses to manage resulting distress. Social support has been identified as an effective source of coping and support that can help protect against the impact of discrimination on psychological adjustment for immigrant youth (Park, Wang, Williams, & Alegría, 2018). Social support may be especially salient for Latinx immigrant youth due to the strong cultural emphasis placed on family- and community-centered values within Latinx cultures (Cauce & Domenech-Rodriguez, 2002; Santiago-Rivera, Arredondo, & Gallardo-Cooper, 2002). However, a paucity of research has explored social support as a possible moderator of the theorized mediating pathway between discrimination and attention through somatic symptoms, particularly for Latinx immigrant youth.

Finally, age at immigration and length of time in U.S. residency may also influence the relationships between discrimination, somatic symptoms, and attention

problems, as well as the protective role of social support, given that immigrants have shown increased risk of internalizing symptoms early on, with psychological symptoms decreasing over time (Cook, Alegría, Lin, & Guo, 2009; Smokowski, Chapman, & Bacallao, 2007). Though the precise nature of the interplay between time in residency and adjustment outcomes remains unclear for Latinx immigrant youth, subsequent research is needed to identify any particularly vulnerable subgroups and inform prevention efforts aimed at protecting these youth against the harmful effects of discrimination.

To address these gaps in the literature, the present study applies a race-based traumatic stress theory and stress and coping model to examine the relationship between perceived discrimination on attention problems, the possible mediating role of somatic symptoms in partially explaining the link between perceived discrimination and attention problems, and the buffering effects of social support in a sample of 218 Latinx immigrant youth living in Oregon. Further, through secondary exploratory analyses, this study aims to examine the influence of time spent living in U.S. residency on these relationships.

Perceived Discrimination and Health Outcomes

Racism is a form of early adversity that is ingrained in the historical roots and current context of American society and is associated with a host of negative psychological, educational, and occupational outcomes (Benner et al., 2018; Paradies et al., 2015). The behavioral expression of racism is racial/ethnic discrimination, defined as harmful actions and inequitable treatment that adversely affect members of a minority racial/ethnic group while benefiting members of the majority group (Brown, 2015; Buckle, 2018). Individuals can experience a wide range of reactions to a given stressor;

therefore, researchers have distinguished between objective encounters (i.e., exposure) and subjective perceptions (i.e., response) of racial/ethnic discrimination (Paradies, 2006). Perceived racial/ethnic discrimination, hereafter referred to as perceived discrimination, has demonstrated more direct effects on adjustment as compared to objective encounters of discriminatory events (Schmitt et al., 2014). For instance, perceived discrimination has been significantly related to internalizing symptoms (e.g., psychological distress, low self-esteem), externalizing behaviors (e.g., risky sexual behavior, substance use, affiliation with deviant peers), and academic underachievement (Benner et al., 2018).

In addition to impacting mental health, perceived discrimination has been shown to have significant physical consequences on the body (Shankar & Hinds, 2017). Guided by the race-based traumatic stress theory (Carter, 2007) and stress and coping model (Torres, Driscoll, & Voell, 2012), exposure to discrimination is understood to function as a chronic stressor, which can disrupt the regulation of stress hormones and related processes in the body, contributing to poorer health outcomes over time (Pascoe & Smart Richman, 2009; Szaflarski & Bauldry, 2019). More specifically, from a neurobiological perspective, researchers have posited that the stressful nature of discriminatory experiences can elicit a chain of negative emotional responses and physiological arousal, which involves the activation of the hypothalamic-pituitary-adrenal (HPA) axis, leading to the release of what is known as the stress-response hormone, cortisol (Berger & Sarnyai, 2014). Cortisol has a range of effects on the body, including long-term changes in areas of cognitive functioning (Juster et al., 2010; Radley et al., 2011).

Perceived Discrimination, Cognitive Functioning, and Attention Problems

Given that chronic stressors are widely shown to negatively influence and disrupt self-regulatory processes required for cognition (Evans & Kim, 2013), researchers have begun to examine the effects of discrimination-related stress on cognitive outcomes. For example, Salvatore and Shelton (2007) examined the cognitive costs of exposure to different types of racial prejudice cues. Results suggested that members of marginalized groups expend additional cognitive effort to interpret and apply cognitive attributes to microaggressions and/or ambiguous prejudice, which may contribute to cognitive depletion and a disrupted ability to focus on cognitively demanding tasks (i.e., disrupting attention). In a cross-sectional study of older African American adults (mean age 72.9 years), Barnes and colleagues (2012) found that perceived discrimination was related to impaired cognitive performance, specifically in tasks of episodic memory and perceptual speed. Additionally, perceived discrimination has been shown to moderate the relationship between diabetes and cognitive decline among African Americans aged 65 years and older, such that diabetes significantly predicted cognitive decline four years later only among individuals with reported histories of discrimination (Crowe et al., 2010). While research suggest that discrimination is linked to cognitive outcomes among aging populations, very little research has focused on the impact of discrimination on attention as a specific cognitive function in adolescent populations. Research is needed to not only clarify the relationship between discrimination and attention independent of the effects of aging on cognition, but also to inform prevention efforts aimed at buffering against discrimination-related risk factors during this formative period of development, particularly for marginalized youth.

The theorized link between perceived discrimination and attention problems, specifically, is grounded in research showing that exposure to early adversity, such as discrimination, has been identified as a strong predictor of attention deficits across a range of psychiatric disorders (Brown et al., 2017; Weinstein, Staffelbach, & Biaggio, 2000). Thus, by conceptualizing discrimination as a marked form of early adversity (Cronholm et al., 2015), one approach to examining the link between discrimination and disruptions in attention is by reviewing the literature on early adversity and symptoms of inattention. For instance, research has shown that early adversity is significantly related to the development of Attention-Deficit/Hyperactivity Disorder (AD/HD) symptoms, including inattention (Ouyang et al., 2008). Additionally, Semiz, Öner, Cengiz, and Bilici (2017) found that individuals who met DSM-IV diagnostic criteria for AD/HD Predominantly Inattentive Type were more likely to report histories of traumatic and stressful experiences during childhood. Though these findings suggest that early stressful life experiences are related to the development of attention problems, there is a dearth of research examining the effects of discrimination, as a specific form of early adversity, on disruptions in attention among Latinx immigrant youth.

Perceived Discrimination and Latinx Immigrant Youth

Adolescence is a particularly important developmental time in which youth begin to examine the role of race/ethnicity in their daily lives (Fisher, Wallace, & Fenton, 2000; Umaña-Taylor, 2016). In grappling with their own ethnic identity and others' perceptions of their racial/ethnic group, adolescents, particularly adolescents of color given the added burden of dealing with frequent discrimination, develop a more nuanced understanding of the implications of racism, power, and privilege in their lives across social realms

(Benner et al., 2018; Quintana & McKown, 2008; Schmitt et al., 2014). Given that over 80% of Latinx youth report experiencing racial/ethnic discrimination (Foxen, 2010), these youth may be at higher risk of the aforementioned negative outcomes. The harmful effects of perceived discrimination on adjustment and well-being have been relatively well documented in Latinx adolescents (Umaña-Taylor, Tynes, Toomey, Williams, & Mitchell, 2015; Umaña-Taylor & Updegraff, 2007). However, although one third of U.S. Latinx adolescents were born outside of the U.S. (Pew Research Center, 2009), researchers have only recently begun to focus on the impact of discrimination on Latinx immigrant youth. For instance, Delgado, Nair, Updegraff, and Umaña-Taylor (2019) found that among a sample of Mexican-origin adolescents in the U.S. ($n = 246$), youth exposed to elevated levels of discrimination during early adolescence reported higher immediate and lasting levels of internalizing symptoms (e.g., depressive symptoms) as compared to youth with lower exposure to discrimination during this sensitive developmental period. These results are in line with other studies that further evidence the lasting, deleterious effects of discrimination on mental and physical health outcomes among Latinx immigrant youth (Davis et al., 2016; Stein et al., 2019). The shift toward focusing on Latinx immigrant youth in particular is critical given that these youth are forced to face a myriad of added immigration- and acculturation-related stressors, while also navigating the heightened anti-immigrant sentiment and oppressive political environment in the U.S. These contextual factors present additional risks of discrimination and negative developmental outcomes for non-U.S. born Latinx immigrant youth living in the U.S. (Lopez, 2019; Potochnick et al., 2012; Takei et al., 2009).

While important strides have been made, very little research has examined the link between discrimination and attention problems, specifically, among adolescents. This is an important gap in the literature given that attention problems during childhood and adolescence are linked to negative outcomes across academic, occupational, and socioeconomic domains (Polderman et al., 2010; Galéra et al., 2012; Knapp et al., 2011). Even without attention problems, Latinx youth in general already face educational disparities, including lower rates of high school completion (KewalRamani, Gilbertson, & Fox, 2007) and college enrollment (Lopez, 2009) as compared to White and Asian American students. These disparities are further pronounced among Latinx immigrant youth, who are more likely to be overlooked and fall through the cracks in academic systems, contributing to lower educational outcomes among Latinx immigrant youth as compared to their U.S.-born peers (Harris, Jamison, & Trujillo, 2008; Lukes, 2015; Sibley & Brabeck, 2017). While Latinx immigrant youth are highly resilient (Cardoso & Thompson, 2010; Borjian, 2018), their increased risk of exposure to discrimination, in conjunction with the educational disparities that immigrants face in the U.S., elucidate the need for research examining the direct link between perceived discrimination and attention problems as an important cognitive function among Latinx immigrant youth. Beyond examining this direct relationship, even less is known about the underlying mechanisms through which perceived discrimination may affect attention problems in this understudied population.

The Role of Somatic Symptoms

One mechanism that might partially explain the relationship between perceived discrimination and attention problems in Latinx immigrant youth is through the

manifestation of psychological distress as somatic symptoms (i.e., aches and pains with no known medical cause) (Sharpe & Carson, 2001). In order to understand the possible mediating effects of somatic symptoms, it is helpful to first highlight the established link between stressful and traumatic life events and higher reported levels of somatic symptoms (Gupta, 2013). This relationship can be conceptualized within the framework of the race-based traumatic stress theory (Carter, 2007), such that perceived discrimination represents a traumatic stressor that contributes to the development of internalizing symptoms such as anxiety and depression (Sirin et al., 2015; Sirin et al., 2019). Emotional distress and internalizing symptoms can then manifest in the form of somatic complaints (Campo, 2012). In fact, Juang, Ittel, Hoferichter, and Gallarin (2016) found that higher levels of perceived discrimination were associated with increased somatization among a group of racially/ethnically diverse college students.

The manifestation of emotional distress as somatic symptoms may be especially prevalent among young adolescents, given that youth often lack a sufficient emotional vocabulary, awareness, and skillset to effectively communicate and process feelings of emotional and psychological distress (Andrei & Petrides, 2013). Without such expression and subsequent support, stressful life experiences and resulting distress can then be internalized and expressed as physical pain and discomfort (i.e., somatic symptoms) (De Gucht & Heiser, 2003). In addition to the potential influence of these developmentally related psychosocial factors, somatic symptoms are culturally normed and more frequently reported among Latinx youth as compared to other racial/ethnic minority groups (Canino, 2004). In fact, researchers have established a positive relationship between acculturation-related stress and somatic symptoms among immigrant youth

(Sirin et al., 2013), as well as increased exposure to discrimination-related stress and higher levels of somatic complaints among Latinx adolescents (Sirin et al., 2015).

Regarding the effects of somatic symptoms on adjustment, research has shown that even when pain-related complaints are “medically unexplained,” recurrent pain has still been shown to negatively affect quality of life and overall mental health among adolescents (Hunfeld et al., 2001). In order to determine possible underlying mechanisms of the disruptive effects of physical pain on attention, specifically, it is important to first explore the protective function of pain. From an evolutionary perspective, pain is paramount for activating an internal alert system to potential threats to an individual’s safety (Eccleston & Crombez, 1999). By sending automatic alert signals to the brain, pain demands immediate and often complete attention in order to ensure that the appropriate responses are taken to promote healing and, ultimately, to maximize a person’s chances of survival (Eccleston & Crombez, 1999; Legrain et al., 2009). Given that pain signals are often perceived as threatening, it would make sense for this alert system to override other concurrent cognitive demands, thus, interfering with attention (Keogh, Moore, Duggan, Payne, & Eccleston, 2013; Moore, Keogh, & Eccleston, 2012). This conceptualization aligns with limited-capacity models of cognition (Broadbent, 1958), which suggest that individuals are unable to process all available information simultaneously, requiring them to selectively attend to the most salient stimuli (e.g., pain). Further, bottom-up theories describe how an individual’s attention is automatically or unintentionally captured by pain, particularly when the pain is intense, novel, and/or threatening (Legrain et al., 2009; Torta, Legrain, Mouraux, & Valentini, 2017). Lastly, neuroimaging and fMRI studies of pain and attention have shown that the midcingulate

cortex plays a central role in detecting novel stimuli, orienting attention, and initiating appropriate behavioral responses (Bingel, Rose, Gläscher, & Büchel, 2007; Peyron, Laurent, & Garcia-Larrea, 2000; Torta et al., 2017), reflecting a brain region likely involved in the process of pain interfering with attention.

As such, chronic pain has long been shown to interrupt regulatory processes in the brain, contributing to disruptions in emotional and attentional control that are required to sustain focus (Eccleston & Crombez, 1999; Eccleston, Crombez, Aldrich, & Stannard, 1997). In a cross-sectional study of early adolescents ($n = 2,213$), both occasional and frequent pain were significantly associated with reduced emotional well-being and reduced self-reported attention (Voerman et al., 2017). While these results highlight different ways in which physical pain may lead to cognitive depletion and disruptions in attention, there is a lack of research looking at the possible mediating role of somatic symptoms in the relationship between discrimination and attention problems, particularly among Latinx immigrant youth.

The Protective Effects of Social Support

The consequences of perceived discrimination on somatic symptoms and the subsequent theorized disruptive effects of somatic symptoms on attention problems emphasize the need for research to identify protective factors that may serve as targets of intervention for Latinx immigrant youth. In applying a stress and coping model (Lazarus & Folkman, 1984), perceived discrimination evokes the utilization of external coping strategies and resources in attempt to manage associated distress. Support from others has been shown to provide validation, emotional support, and an outlet for external processing of discrimination-related stress to help ameliorate the effects of these

damaging experiences on youth development (Juang et al., 2016). As such, social support has been identified as an effective coping mechanism to help buffer against the adverse effects of stress stemming from discrimination on adjustment (Brondolo, Gallo, & Myers, 2009; Cauce, Hannan, & Sargeant, 1992; Cohen, Underwood, & Gottlieb, 2000). In discussing social support, researchers have differentiated between perceived and received social support. Perceived social support can be defined as the belief or perception that an individual is loved, cared for, appreciated, and valued (Gutman, Sameroff, & Eccles, 2002). Received support is understood as a situational factor that occurs in response to stressful circumstances (Uchino, 2009). Perceived social support, hereafter referred to as social support, has been shown to more strongly predict positive physical and psychological outcomes (Wethington & Kessler, 1986).

Extant research focusing on adolescent and young adult populations has established the protective role of social support in mitigating negative psychological adjustment, including internalizing symptoms such as anxiety and depression (Crockett et al., 2007; La Greca & Harrison, 2005). Social support may be particularly protective for Latinx youth given the emphasis on family and community within Latinx cultures (Cauce & Domenech-Rodriguez, 2002). For instance, *familismo*, defined as an ingrained sense of family loyalty, unity, and closeness (Cauce & Domenech-Rodriguez, 2002), is a culturally salient form of familial support shown to buffer the relationship between perceived discrimination and internalizing symptoms among Latinx youth (Ayón, Marsiglia, & Bermudez-Parsai, 2010; Smokowski et al., 2007).

In a study of recent Latinx immigrants, Caplan (2007) found that being separated from family and lacking a sense of community served as the two most common stressors

associated with acculturation. This finding emphasizes the importance of social support during the difficult process of immigrating and adjusting to an entirely new system of beliefs, practices, and social norms. As such, social support has been shown to moderate the discrimination-adjustment link for Latinx immigrant youth (Potochnick & Perreira, 2010). For instance, Park and colleagues (2018) found that social support significantly attenuated the discrimination-adjustment link in a group of 269 Mexican-origin adolescents living in the Midwestern U.S. Additionally, in a longitudinal study of 286 first- and second-generation immigrant adolescents, social support significantly moderated the relationship between acculturative stress and internalizing symptoms of anxiety and depression (Sirin et al., 2013). Given that internalizing symptoms can often manifest as somatic complaints among Latinx youth (Campo, 2012), research is needed to determine whether social support can help disrupt the hypothesized link between discrimination and attention problems through somatic symptoms for youth in this underrepresented group.

Results of such research could help to inform prevention and intervention efforts by determining whether youths' existing social support networks and/or the development of stronger social supports may be effective targets of intervention for reducing somatic symptoms and attention problems in the face of discrimination for Latinx immigrant youth. Should findings demonstrate that social support is not sufficient to buffer against these discrimination-related outcomes, findings would then highlight the need for additional interventions that extend beyond the realm of social support to help protect these youth.

The Influence of Age at Immigration and Time in U.S. Residency

The length of time spent acculturating and adjusting to life in the U.S. has been linked to certain vulnerabilities, as well as some strengths, for recent immigrants as well as immigrants who have been living in the U.S. for more extended periods of time (Gfroerer & Tan, 2003; Koneru, De Mamani, Flynn, & Betancourt, 2007). The complex interplay between immigration- and acculturation-related experiences and developmental processes at distinct life stages may differentially shape youths' risk of developing negative mental and behavioral health outcomes (Martinez, McClure, Eddy, & Wilson, 2011). Thus, age at immigration and time spent in U.S. residency have been postulated to play an important role in predicting adjustment outcomes for immigrant populations (Cook et al., 2009; Smokowski, Buchanan, & Bacallao, 2009).

While studies have demonstrated better mental health among non-U.S.-born Latinx immigrants as compared to their U.S.-born counterparts (Burnam et al., 1987; Ortega, Rosenheck, Alegria, & Desai, 2000), findings are inconclusive regarding specific differences in adjustment outcomes among Latinx immigrants based on their age at arrival and length of time living in the U.S. For instance, researchers have found that recent Latinx immigrants reported better mental health and well-being as compared to those with more time living in the U.S., such that increased time in U.S. residency was associated with higher risk of psychiatric disorders (Cook et al., 2009; Vega et al., 1998). Related to this finding, research has also demonstrated that the longer youth remained in their country of origin, the lower the cumulative risk of onset and lifetime rates of psychiatric disorders (Alegria, Sribney, Woo, Torres, & Guarnaccia, 2007). In thinking

about Latinx immigrant youth of the same age living in the U.S., this finding suggests that those who lived in their countries of origin longer (i.e., more recent immigrants with less time spent living in the U.S.) would be at lower risk of mental health problems compared to their immigrant peers who left their country of origin at a younger age and who have thus spent more time living in the U.S. In fact, a recent study found that higher levels of acculturation, which are often closely tied to longer time spent in the U.S., were significantly associated with a stronger relationship between discrimination and mental illness (Saadi & Ponce, 2020).

Conversely, other studies found that individuals who had recently immigrated to the U.S. reported higher levels of internalizing symptoms and emotional distress early on, with these symptoms weakening over time (Caplan, 2007; Smokowski et al., 2007). In examining potential underlying factors of these relationships, Smokowski and colleagues (2007) found that higher levels of psychological distress among recent immigrant adult and youth may have resulted from having higher levels of acculturative stress mixed with feelings of confusion, overwhelm, and detachment from the host culture early on in the acculturation process. Similarly, this finding may reflect discrimination-related stress, as a form of acculturative stress, that immigrants face and the development and increased use of coping skills in response to discrimination over time (Cabassa, 2003; Edwards & Romero, 2008; Perreira et al., 2015). Within this realm, more recent immigrants have shown higher rates of discrimination-related stress as compared to youth with more time in U.S. residency (Martinez et al., 2011; Edwards & Romero, 2008).

Results from prior research highlight the complex interplays between the length of time spent in residency, the role of acculturation-related risk factors such as

discrimination, and adjustment outcomes among Latinx immigrants. Subsequent research is needed to not only explore the nature of these relationships in Latinx immigrant youth, specifically, but also to seek to understand how the link between discrimination and attention problems and the potential protective role of social support may vary depending upon youths' amount of time in U.S. residency. From an intervention perspective, this research could help to elucidate subgroups of Latinx immigrant youth who may be particularly vulnerable to the effects of discrimination on attention problems based on the developmental stage at which they immigrate, amount of time spent acculturating to the host culture, and/or degree of exposure to discrimination-related stressors during the immigration and acculturation process. Further, in uncovering any differential protective effects of social support for youth based on time in U.S. residency, findings could inform prevention and intervention efforts by targeting immigrants at specific developmental periods and/or highlight the need for additional resources and supports for these youth that extend beyond existing social support networks.

The Present Study

Using longitudinal data from the Adolescent Latino Acculturation Study (ALAS), including a sample of 218 Latinx immigrant youth living in Oregon, the present study applies a race-based traumatic stress theory and stress and coping model to examine the following research questions:

1. Are higher levels of perceived discrimination reported at Time 1 (T1) significantly associated with higher levels of somatic symptoms reported at Time 2 (T2; one year following T1) and higher levels of attention problems reported at Time 3 (T3; two years following T1)?

2. Do somatic symptoms reported at T2 partially mediate the relationship between perceived discrimination at T1 and attention problems at T3?
3. Does social support at T1 moderate the proposed mediated pathway between perceived discrimination at T1 and attention problems at T3 through somatic symptoms at T2 (moderated mediation model)?
4. As a secondary exploratory question, does social support at T1 moderate any identified relationship between perceived discrimination at T1 and attention problems at T3 for some youth but not others depending on the amount of time spent in U.S. residency?

I hypothesize that higher levels of perceived discrimination at T1 will be positively associated with higher levels of somatic symptoms at T2 and higher levels of attention problems at T3 (research question 1), that somatic symptoms at T2 will partially mediate the relationship between perceived discrimination at T1 and attention problems at T2 (research questions 2), and that social support reported at T1 will moderate the theorized mediated pathway between perceived discrimination at T1 and attention problems at T3 through somatic symptoms at T2 (research question 3). More specifically, I hypothesize that perceived discrimination would no longer indirectly, positively predict attention problem through somatic symptoms for youth with higher levels of social support, but not for youth with lower levels of social support, such that the theorized indirect pathway between perceived discrimination and attention problems would remain significant only for youth with lower levels of social support. Regarding secondary exploratory analyses, I hypothesize that social support will moderate the theorized mediated relationship between perceived discrimination and attention problems through

somatic symptoms for youth who have recently immigrated to the U.S. (4 years or less) and those who have spent a significant amount of time (10 or more years) in U.S. residency, but not for those with only a moderate amount of time (6-8 years) spent living in the U.S. (research question 4).

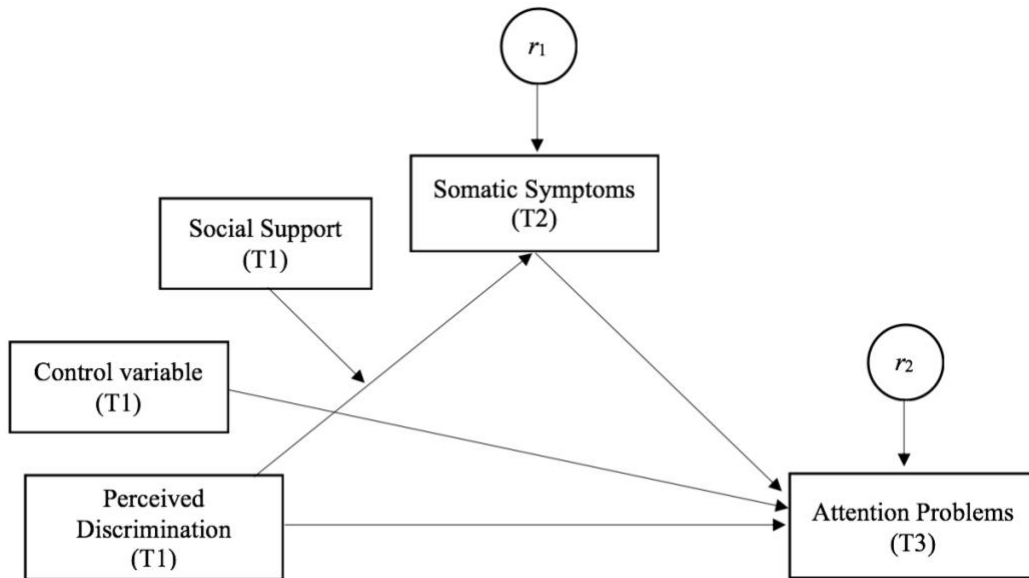


Figure 1. Theoretical moderated mediation model of the role of social support in moderating the indirect relationship between perceived discrimination and attention problems through somatic symptoms among Latinx immigrant youth.

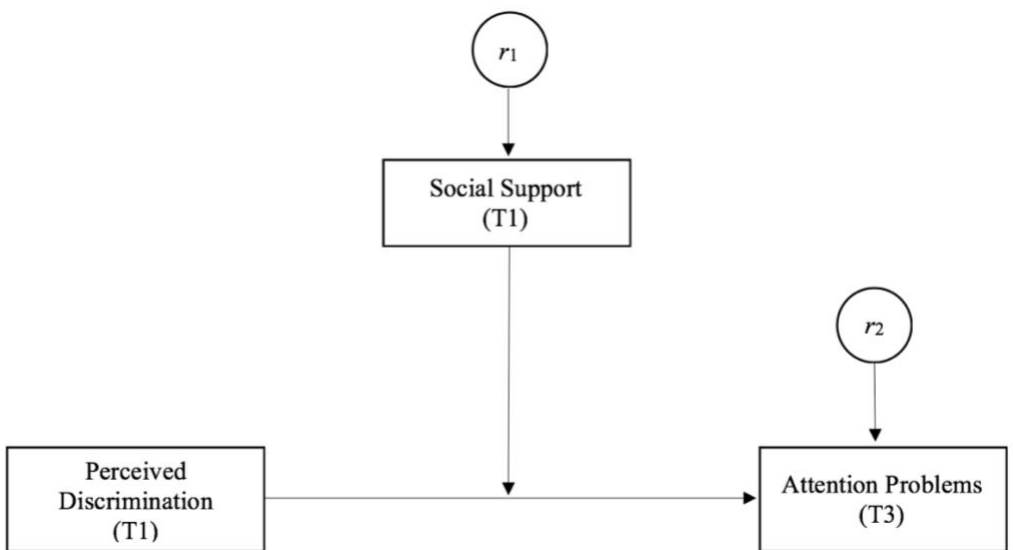


Figure 2. Theoretical moderation model of the role of social support in moderating the relationship between perceived discrimination and attention problems.

CHAPTER II

METHOD

The present study utilizes longitudinal data gathered in the Adolescent Latino Acculturation Study (ALAS; Martinez, McClure, Eddy, & Wilson, 2011), which was designed to document the acculturation processes and stressors that impact family and youth adjustment over the course of three years. Support for this project was provided by a grant from the National Institute on Drug Abuse (NIDA), with Charles Martinez, Jr., Ph.D. serving as the Principal Investigator. The institutional review board at the Oregon Social Learning Center, Eugene, Oregon, approved the research protocol. All participants included in the present study provided written consent (parents) or assent (youth) prior to enrollment. Data from three major assessment waves, including Time 1 (T1), Time 2 (T2; one year following T1), and Time 3 (T3; two years following T1), were included for analysis in the present study.

Participants

The present analysis included a total of 218 Latinx immigrant youth. Participants were recruited for the ALAS study through in-person contacts and in collaboration with community organization partners and local school districts using empirically supported recruitment methods for working with vulnerable populations (Harachi, Catalano, & Hawkins, 1997; Martinez, McClure, Eddy, Ruth, & Hyers, 2012). Inclusion criteria for the present study included individuals who (a) self-identified as “Hispanic” or “Latino,” (b) were non-U.S. born youth in middle school in Oregon, and (c) were in their 2nd through 12th year of U.S. residency. Recruiters initially contacted 628 families to describe the ALAS study, 266 (42%) of whom were determined to be eligible and 219 of whom

were successfully enrolled the overall project (83% participation rate). Among participating youth, 57% self-identified as male and 43% self-identified as female. The average age of youth was 13.4 years ($SD = 1.4$) at T1. All participating youth self-identified as “Hispanic” or “Latino.” The majority of focal youth (94%) reported being born in Mexico, with the remaining participants tracing their roots to countries in Central America ($n = 7$), South America ($n = 5$), and the Caribbean ($n = 2$).

To provide additional context for participating families, 68% of the parents (94% mothers, 6% fathers) reported having a ninth-grade education or less, and 20% reported completing high school and/or receiving post-secondary education. Parents reported an average household of 4.8 people ($SD = 1.6$), with an average reported household monthly income of US\$1,816 ($SD = US\928) after taxes. For the present study, 218 youth had complete data for the variables of interest at T1 and were included in the present analyses. Further details regarding study recruitment for ALAS are presented elsewhere (Martinez et al., 2012). Regarding attrition, over the course of the ALAS study, 10% of families ($n = 22$) either actively elected to discontinue their participation or were permanently lost (after numerous unsuccessful attempts by study staff to re-contact families). Reasons provided for discontinued participation included families moving out of the state or country, divorce or separation, family dissent (one participant might have wanted to continue but another participant did not), and interview fatigue.

Time in U.S. Residency

Youth were recruited into the ALAS study based on their time in U.S. residency (TR) and were placed into one of three subgroups. Youth in the TR1 group had to be in their second-through-fourth year of U.S. residence as of the initial contact ($n = 72$); TR2

included youth in their sixth-through-eighth year ($n = 78$); and youth in TR3 had to be in their tenth-through-twelfth year of U.S. residence ($n = 67$). Regarding youths' average age at arrival in the U.S. and average time in residence based on measurements at T1, youth in TR1 were 11.1 years old ($SD = 1.8$) and had 2.3 years ($SD = 1.1$) in residence on average. Average arrival age of TR2 youth was 7.0 years ($SD = 1.9$) and their time in residence was 6.5 years ($SD = 1.1$) at T1. Lastly, youth in TR3 were 2.7 years old ($SD = 1.5$) on average upon arrival and had 10.6 years ($SD = 1.1$) in residence at T1 on average.

Procedures

After the initial recruitment process, trained bilingual and bicultural professionals conducted home visits with families to discuss the ALAS project, answer questions, and obtain informed consent. At a separate appointment, participating families then completed extensive multiple-method and multiple-agent in-person assessments. Methods for retention and measurement in the ALAS study were based on reliable strategies that have been extensively developed and refined for use with the Latinx population in Oregon (Martinez, McClure, & Eddy, 2009; McClure et al., 2010). English and Spanish versions of the assessment materials were available to youth, and 60% of youth chose to be assessed in English at T1. A total of three major interviews were conducted in person once a year at a project office or at participants' homes as determined by the participants, with interview lasting between two-and-a-half and four hours. All participants received monetary compensation to support their engagement in the study, such that each participating parent received an average of \$360 and each youth received an average of \$165 in total compensation. Additionally, during each session completed throughout the study, families were provided with (or reimbursed for) transportation (\$10), home-based

childcare (\$25), and meals. Families could also receive additional compensation for meeting incentives, including \$30 to families for punctuality and \$10 for providing assessors with updated telephone number(s)/contact information.

Measures

Perceived Discrimination Instrument. An 18-item adapted version of the Perceived Discrimination Instrument (Kessler, Mickelson, & Williams, 1999) was used to measure multiple aspects of youths' perceived discrimination. First, youth responded to questions asking whether they had experienced a discriminatory event (e.g., being treated with less courtesy or respect) in the past three months. If so, youth were then asked to rate the degree of stress they experienced in response to the event on a 5-point scale, ranging from 1 (not at all stressful) to 5 (extremely stressful). Just more than half of youth (51%) reported no discriminatory event in the past three months, resulting in a score of 0 (no reported event). Cronbach's alpha for the discriminatory event scale was .78, indicating high internal reliability, with an average item total correlation for the stress response scale of .77.

Youth Self-Report (YSR). The YSR (Achenbach, 1991) is standardized and widely used self-report measure for that is comprised of multiple subscales designed to assess for emotional symptoms and behavioral problems in youth ages 11-18 years. The present study focused on two subscales of the YSR. First, the Attention Problems subscale of the YSR is a 9-item subtest used to assess for self-reported symptoms of attention problems (e.g., "I have trouble concentrating or paying attention," "I daydream a lot,"). Second, the Somatic Complaints subscale of the broader internalizing symptoms domain of the YSR is a 9-item subtest used to assess for self-reported somatic symptoms

(e.g., “I feel dizzy or lightheaded,” “I feel overtired without good reason,” “I have [aches or pains/headaches/nausea or feel sick/skin problems/stomach aches/vomiting] without known medical cause”). Responses to all subscale items were reported on a 3-point scale ranging from 0 (not true) to 2 (very true or often true). Research demonstrates high reliability and validity of the YSR as a measure of youths’ adjustment (Achenbach & Rescorla, 2001). Further, the YSR somatic complaints subscale ($\alpha = .79$) and attention problems subscale ($\alpha = .79$) each demonstrated strong internal reliability.

Social Support Appraisals Scale (SSAS). The SSAS (Vaux et al., 1986) is a 23-item, self-report measure used to assess levels of perceived social support, or the extent to which individuals perceive themselves to be valued by, and involved with or connected to, family members, friends, and others in their lives. Items are indicated on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Response items are categorized into three main subscales, including family support (e.g., “Can you count on your family for help or advice when you have problems?”), peer support (e.g., “Do you feel left out by your friends?” and “Do you think your friends care about you?”), and school support, which includes questions about support from classmates and teachers (e.g., “Do you feel like you don’t belong in your class (at school)?” and “Do you feel very close to your teachers?”). The present study used the average score of all three subscales combined as an indicator of total social support. Internal reliability was demonstrated for the total social support scale ($\alpha = .92$).

Demographic questionnaire. Participants completed a demographic questionnaire at the initial interview to provide information regarding youths’ age at immigration and time spent living in U.S. residency.

CHAPTER III

ANALYTIC APPROACH

The present analyses were conducted in R statistical software version 3.6.0 (R Core Team, 2020). Longitudinal data were used to address the issue of temporal order. In testing the assumptions of multivariate normality and linearity, I identified violations of the assumption of normality, with significant positive skew and the presence of significant multivariate outliers. However, all identified outliers were retained in the present analyses given that no outliers significantly influenced the model according to Cook's Distance (Cook's $D < |1|$). Non-normal data were accounted for using maximum likelihood estimation with robust standard errors estimation (MLR). In assessing for multicollinearity, correlations between predictor variables all fell within acceptable limits (Field, 2013). After examining levels and patterns of missingness, missing data were accounted for using Full Information Maximum Likelihood (FIML). For the moderated mediation model, data were determined to be missing completely at random (MCAR) as evidenced by a non-significant Little's MCAR test ($\chi^2[35] = 36.07, p = .419$).

I then conducted path analyses within a structural equation modeling (SEM) framework using R Studio and the lavaan package (Gana & Broc, 2019) to test the first three study hypotheses using the theoretical moderated mediation model illustrated in Figure 1. To evaluate goodness of fit of the moderated mediation model, I applied recommended best practices using four model fit indices and their recommended thresholds, including a chi-square minimization p-value greater than .05, a comparative fit index (CFI) greater than .95, a root mean square error approximation (RMSEA) of less than .08, and a standardized root mean square residual (SRMR) of less than .06 (Byrne,

2011; Hu & Bentler, 1999; McDonald & Ho, 2002). Given that bootstrapping allows for non-normal sampling distributions, has been shown to help increase power, and is more robust to Type I and Type II errors (Hayes, 2018), I tested the model pathways by performed the bootstrapping procedure using the recommended 5,000 bootstrapped samples to produce 95% bias-corrected confidence intervals and standard errors for all parameter estimates (MacKinnon, 2008; Preacher & Hayes, 2008). For the moderation portion of the analyses, perceived discrimination and social support (moderator) were mean-centered prior to creating the interaction term that was then entered into the moderated mediation model. Perceived discrimination, social support, perceived discrimination by social support (interaction term), somatic symptoms (mediator), and time in U.S. residency (control variable) were all simultaneously entered into the model, predicting attention problems. Last, to test the fourth hypothesis, I conducted secondary exploratory path analyses in SEM using a simplified moderation model.

CHAPTER IV

RESULTS

Descriptive Statistics

Descriptive statistics and bivariate correlations for all study variables of interest were examined and are reported in Table 1. Perceived discrimination at T1 was significantly and positively correlated with somatic symptoms at the one-year follow-up (T2) and attention problems at the two-year follow-up (T3), such that higher levels of perceived discrimination were associated with higher levels of somatic symptoms and attention problems. Somatic symptoms at T2 were also significantly and positively correlated with attention problems one year later at T3, with higher levels of somatic symptoms related to higher levels of attention problems. Last, social support at T1 was significantly and negatively associated with perceived discrimination at T1, somatic complaints at T2, and attention problems at T3.

Table 1

Descriptive Statistics and Bivariate Correlations for All Study Variables

Variable	1	2	3	4	5
1. Perceived discrimination (T1)	–				
2. Somatic complaints (T2)	.283**	–			
3. Attention problems (T3)	.164*	.311**	–		
4. Social support (T1)	-.419**	-.206**	-.312**	–	
5. Time in U.S. residency	-.046	-.015	.072	.024	–
<i>n</i>	209	172	165	205	218
<i>M</i>	.22	2.01	4.27	4.11	6.89
<i>SD</i>	.39	2.65	3.67	0.55	3.42
Min	0	0	0	1.35	2
Max	2.94	13	15	5.00	12

Note. * $p < .05$. ** $p < .01$.

Hierarchical Linear Regression Analyses

To test the direct relationship between perceived discrimination at T1 and attention problems at T3 while controlling for the effect of time in U.S. residency, I conducted a hierarchical linear regression (see Table 2). In step 1, I entered time in residency as a control variable. Results demonstrated a non-significant association between time in residency and attention problems, $b(SE) = 0.06(0.09)$, $p > .05$, 95% CI [-0.11, 0.23]. In step 2, I entered perceived discrimination as a predictor of attention problems while controlling for the effect of time in U.S. residency. Results indicated a significant and positive association between perceived discrimination at T1 and attention problems at T3, $b(SE) = 1.42(0.69)$, $p < .05$, 95% CI [0.65, 2.77], uniquely accounting for 2.7% of the total variance, $\Delta R^2 = .027$, $\Delta F = 4.28(1, 155)$, $p < .05$.

Table 2

Summary of Hierarchical Linear Regression Predicting Youth Attention Problems by Time in U.S. Residency and Perceived Discrimination

Variable	Step 1		Step 2	
	<i>b(SE)</i>	95% <i>CI</i>	<i>b(SE)</i>	95% <i>CI</i>
Time in residency	0.06(0.09), $p > .05$	[-0.11, 0.23]	0.06(0.09), $p > .05$	[-0.11, 0.23]
Perceived discrimination			1.42(0.69), $p < .05$	[0.65, 2.77]
ΔR^2	.003		.027	
ΔF	0.44, $p > .05$		4.28, $p < .05$	

Conditional Path Analyses: Moderated Mediation Model

Conditional path analyses were conducted in a moderated mediation model to examine the potential moderating role of social support in disrupting the theorized indirect pathway between perceived discrimination and attention problems through somatic symptoms. Regarding goodness of fit, the moderated mediation model only met one recommended fit index threshold with SRMR = 0.04 (< 0.06). The remaining three fit indices, however, did not meet recommended thresholds, including a significant chi-square, $\chi^2 = 11.11$, $p = .011$, CFI = 0.76, and RMSEA = 0.12, indicating poor overall model fit. Results of the SEM moderated mediation model are reported in Figure 3 in the form of standardized path coefficients. However, it is important to note that results should be interpreted with caution.

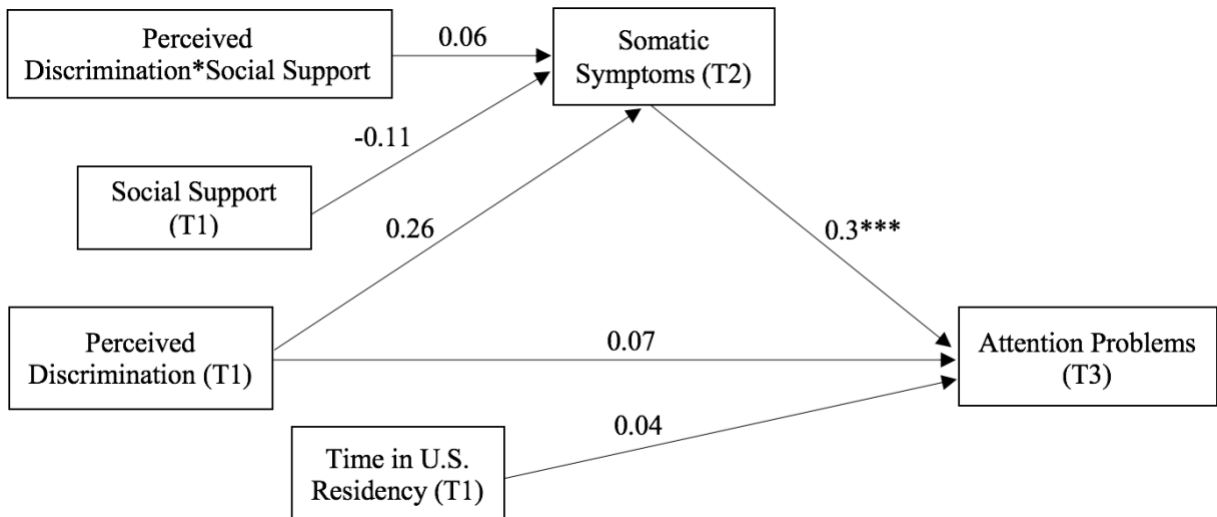


Figure 3. Results of SEM measurement and prediction paths with standardized path coefficients based on 5,000 bootstrapped resamples.

Although the results of analyses using the moderated mediation model cannot be interpreted with confidence, model estimates demonstrated that contrary to the mediation hypothesis, the indirect effect of perceived discrimination on attention problems through somatic symptoms was not statistically significant from zero when controlling for the amount of time spent living in U.S. residency, $p > .05$. While perceived discrimination at T1 was not significantly related to somatic symptoms at T2 ($b(SE) = 1.80(0.95)$, $p = .059$, 95% CI [0.33, 4.07]), somatic symptoms at T2 were significantly and positively associated with attention problems at T3 ($b(SE) = 0.41(0.11)$, $p < .001$, 95% CI [0.18, 0.62]).

The unstandardized indirect effect of perceived discrimination on attention problems through somatic symptoms was positive yet non-significant ($b(SE) = 0.73(0.45)$, $p > .05$, 95% CI [0.14, 1.96]). Further, contrary to the moderation hypothesis, model estimates demonstrated that the interaction effect between perceived discrimination and social support on somatic symptoms was not statistically significant when controlling for time spent living in U.S. residency ($b(SE) = 0.16(0.50)$, $p > .05$, 95% CI [-1.15, 1.06]). As such, social support at T1 did not significantly moderate the indirect pathway between perceived discrimination at T1 and attention problems at T3 through somatic symptoms at T2. Additionally, the conditional effect of social support on somatic symptoms was not statistically different from zero, $p > .05$. Results from the moderated mediation model are summarized in Table 3. It is important to note, however, that given the poor model fit, the results of the moderated mediation conditional path analyses cannot be interpreted with confidence.

Table 3

Summary of the Moderated Mediation Analyses

Parameter	<i>b</i>	<i>SE</i>	<i>Z</i>	95% Confidence interval	
				Lower bound	Upper bound
Conditional effects					
Attention problems (T3) ~					
Discrimination (T1)	0.70	0.75	0.93	-0.79	2.12
Somatic symptoms (T2)	0.41***	0.11	3.64	0.18	0.62
Time in residency (T1)	0.04	0.08	0.54	-0.11	0.21
Somatic symptoms (T2) ~					
Discrimination (T1)	1.80	0.95	1.89	0.33	4.07
Social support (T1)	-0.30	0.24	-1.27	-0.82	0.12
Discrimination x social support	0.16	0.50	0.32	-1.15	1.06
Indirect effects					
Somatic symptoms (T2)	0.73	0.45	1.63	0.14	1.96
Total effects	1.42	0.92	1.55	-0.33	3.30

* $p < .05$; ** $p < .01$; *** $p < .001$

Post-Hoc Analyses: Modified Model

Given that the proposed moderated mediation model demonstrated poor fit to the data and results could not be interpreted with confidence, I re-evaluated the model using the theoretical framework that was previously established in this study to explore other possible paths and relationships that might demonstrate better fit and be more representative of the data. The modified theoretical model to be used in the final analyses is illustrated in Figure 4.

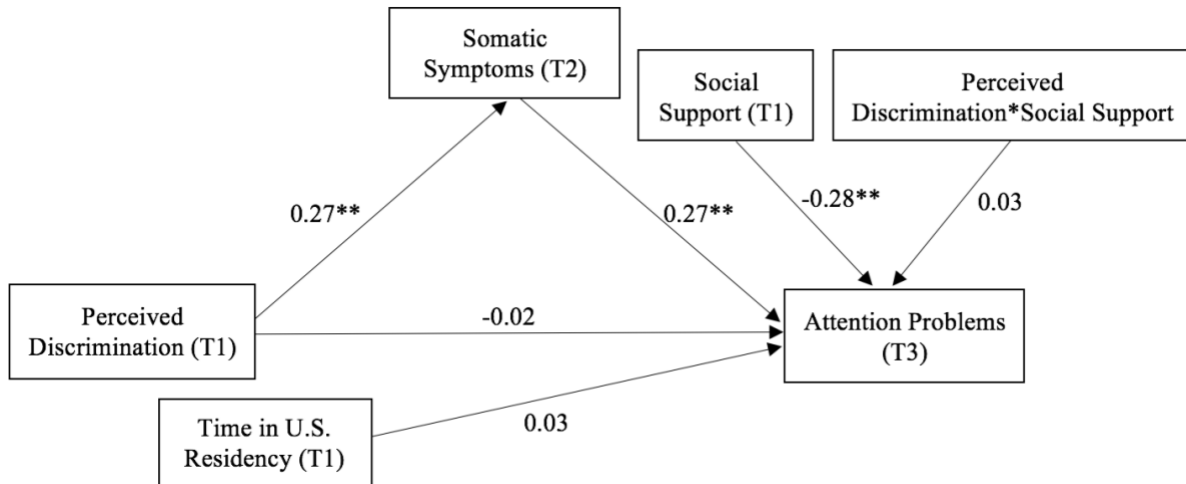


Figure 5. Results from the post-hoc path analyses within SEM framework including standardized path coefficients.

Results from the post-hoc analyses demonstrated that the conditional effect of perceived discrimination at T1 on attention problems at T3 was no longer statistically significant ($p > .05$) when entered into the complete post-hoc model and controlling for time in U.S. residency. In support of the mediation hypothesis, model estimates demonstrated that the indirect effect of perceived discrimination at T1 on attention problems at T3 through somatic symptoms at T2 was statistically different from zero ($p < .01$), above and beyond the effects of time in U.S. residency. Specifically, higher levels of perceived discrimination at T1 significantly predicted higher levels of somatic symptoms at T2 ($b(SE) = 1.86(0.62)$, $p < .01$, 95% CI [0.82, 3.33]), and in turn, higher levels of somatic symptoms at T2 significantly predicted higher levels of attention problems at T3 ($b(SE) = 0.37(0.12)$, $p < .01$, 95% CI [0.13, 0.59]). The unstandardized indirect effect for perceived discrimination on attention problems through somatic symptoms was positive and significant ($b(SE) = 0.70(0.35)$, $p < .05$, 95% CI [0.18, 1.57]), providing evidence of the mediating role of somatic symptoms in partially explaining the indirect link between perceived discrimination and attention problems in this sample. Holding perceived

discrimination constant and increasing somatic symptoms by 1.86 units on average (the conditional effect of perceived discrimination on somatic symptoms), we would expect a significant change of 0.70 units in attention problems on average (the indirect effect estimate). In examining the moderating role of social support in the final post-hoc model, the conditional effect of social support on attention problems was statistically different from zero, $p < .01$. However, contrary to the moderation hypothesis, model estimates demonstrated that the interaction term between perceived discrimination and social support on attention problems was not statistically different from zero ($p > .05$). This finding did not provide evidence of a moderating effect of social support on the relationship between perceived discrimination and attention problems when examined in the final model. Results of post-hoc analyses are summarized in Table 4.

Table 4

Summary of Post-Hoc Analyses of the Mediating Effect of Somatic Symptoms and Moderating Effect of Social Support on the Relationship between Discrimination and Attention Problems in Latinx Immigrant Youth

Parameter	<i>b</i>	<i>SE</i>	<i>Z</i>	95% Confidence interval	
				Lower bound	Upper bound
Conditional effects					
Attention problems (T3) ~					
Discrimination (T1)	-0.16	0.96	-0.17	-1.74	2.06
Somatic symptoms (T2)	0.37**	0.12	3.13	0.13	0.59
Social support (T1)	-1.01**	0.33	-3.06	-1.68	-0.36
Discrimination x social support	0.11	0.58	0.19	-1.28	1.44
Time in residency (T1)	0.03	0.08	0.37	-0.13	0.18
Somatic symptoms (T2) ~					
Discrimination (T1)	1.86**	0.62	3.03	0.82	3.33
Indirect effects					
Somatic symptoms (T2)	0.70*	0.35	2.02	0.18	1.57
Total effects	0.54	1.03	0.52	-1.20	2.78

Secondary Exploratory Analyses: The Influence of Time in U.S. Residency

To understand the influence of time in U.S. residency, I conducted secondary exploratory analyses using a simplified moderation model to examine whether social support moderated any identified relationship between perceived discrimination and attention problems for youth in certain subgroups but not others depending upon the amount of time spent in U.S. residency.

Youth with 2-4 years in U.S. residency (TR1). Measurement and estimation paths for the moderation analysis for a subgroup of youth in TR1 are shown in Figure 6 in the form of standardized coefficients.

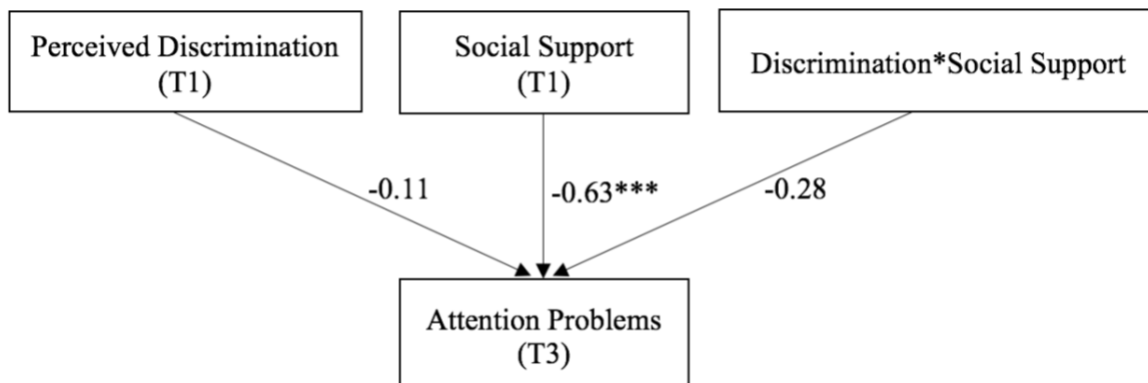


Figure 6. SEM measurement and prediction paths with standardized coefficients for moderation analysis for TR1 (2-4 years in residency). Results are based on 5,000 bootstrapped resamples, including standard errors and 95% bias-corrected confidence intervals.

Regarding the conditional effects of the secondary exploratory analysis for youth in TR1 (2-4 years in U.S. residency), model estimates demonstrated that the effect of perceived discrimination on attention problems was not significantly different from zero ($p > .05$), but that the effect of social support on attention problems was significantly different from zero ($p < .001$). Specifically, higher levels of social support at T1 were

negatively and significantly associated with lower levels of attention problems at T3 for youth in TR1.

Contrary to the moderation hypothesis for youth in TR1, model estimates from the present analyses demonstrated the interaction term between perceived discrimination and attention problems was not significantly different from zero ($b(SE) = -1.14 (0.83)$, $p < .05$, 95% CI [-3.15, 0.22]). This finding did not provide evidence of a moderating effect of social support on the link between perceived discrimination and attention problems for Latinx immigrant youth in TR1 with the least amount of time spent living in the U.S. Results from the moderation analysis for TR1 are reported in Table 5.

Table 5

Summary of Secondary Exploratory Analyses of the Moderating Effect of Discrimination on Attention Problems by Social Support in Latinx Immigrant Youth with Two-to-Four Years in U.S. Residency (TR1, n = 66)

Parameter	<i>b</i>	<i>SE</i>	<i>Z</i>	95% Confidence interval	
				Lower bound	Upper bound
Discrimination (T1)	-0.47	0.70	-0.67	-1.84	1.12
Social support (T1)	-2.61***	0.67	-3.89	-3.79	-1.25
Discrimination x social support	-1.14	0.83	-1.37	-3.15	0.22

* $p < .05$; ** $p < .01$; *** $p < .001$

Youth with 6-8 years in U.S. residency (TR2). Measurement and estimation paths for the moderation analysis for TR2 are shown in Figure 7 in the form of standardized coefficients.

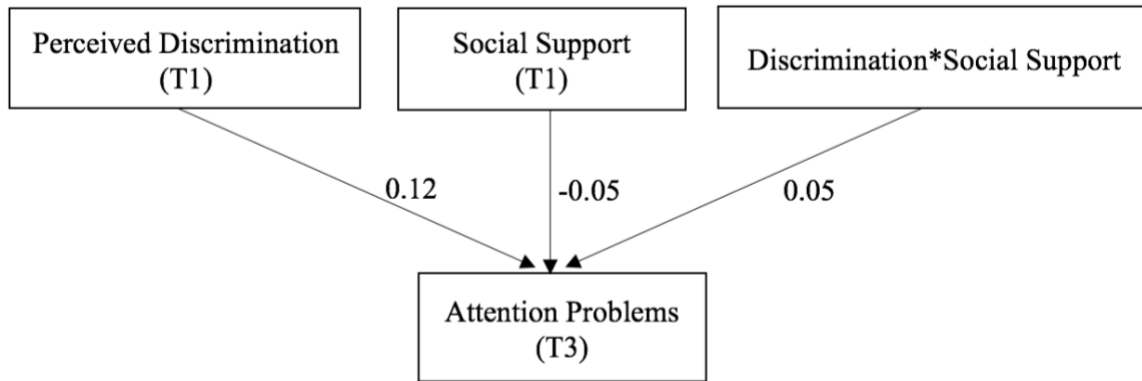


Figure 7. SEM measurement and prediction paths with standardized coefficients for moderation analysis for TR2 (6-8 years in residency). Results are based on 5,000 bootstrapped resamples, including standard errors and 95% bias-corrected confidence intervals.

Regarding the conditional effects of the secondary exploratory analysis for youth in TR2 (6-8 years in U.S. residency), model estimates demonstrated that the effects of perceived discrimination and social support on attention problems were not statistically significant ($p > .05$). Contrary to the moderation hypothesis for youth in TR2, model estimates demonstrated the interaction term between perceived discrimination and attention problems was not significantly different from zero ($b(SE) = 0.20(0.70)$, $p < .05$, 95% CI [-1.20, 1.47]). This finding did not provide evidence of a moderating effect of social support on the link between perceived discrimination and attention problems for Latinx immigrant youth in TR2 with only a moderate amount of time spent living in the U.S. Results from the moderation analysis for TR2 are reported in Table 6.

Table 6

Summary of Secondary Exploratory Analyses of the Moderating Effect of Discrimination on Attention Problems by Social Support in Latinx Immigrant Youth with Six-to-Eight Years in U.S. Residency (TR2, n = 76)

Parameter	<i>b</i>	<i>SE</i>	<i>Z</i>	95% Confidence interval	
				Lower bound	Upper bound
Discrimination (T1)	0.46	0.74	0.61	-1.02	2.04
Social support (T1)	-0.21	0.47	-0.45	-1.06	0.81
Discrimination x social support	0.20	0.70	0.29	-1.20	1.47

p* < .05; *p* < .01; ****p* < .001

Youth with 10-12 years in U.S. residency (TR3). Measurement and estimation paths for the moderation analysis for TR3 are shown in Figure 8 in the form of standardized coefficients.

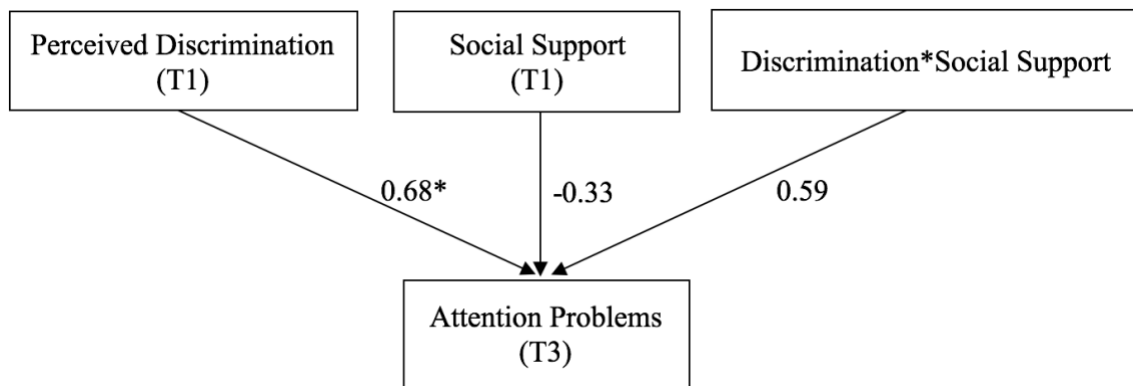


Figure 8. SEM measurement and prediction paths with standardized coefficients for moderation analysis for TR3 (10-12 years in residency). Results are based on 5,000 bootstrapped resamples, including standard errors and 95% bias-corrected confidence intervals.

Regarding the conditional effects of the secondary exploratory analysis for youth in TR3 (10-12 years in U.S. residency), model estimates demonstrated that the effect of perceived discrimination on attention problems was statistically different from zero ($p < .05$), such that higher levels of perceived discrimination at T1 were positively and significantly associated with higher levels of attention problems at T3 for youth in TR3. However, the effect of social support on attention problems was not statistically significant ($p > .05$). Contrary to the moderation hypothesis for youth in TR3, model estimates demonstrated the interaction term between perceived discrimination and attention problems was not significantly different from zero ($b(SE) = 1.88(1.95)$, $p = .08$, 95% CI [-1.08, 4.73]). This finding did not provide evidence of a moderating effect of social support on the link between perceived discrimination and attention problems for Latinx immigrant youth in TR3 with the most time spent living in the U.S (more than 10 years). Results from the moderation analysis for TR3 are reported in Table 7.

Table 7

Summary of Secondary Exploratory Analyses of the Moderating Effect of Discrimination on Attention Problems by Social Support in Latinx Immigrant Youth with 10-12 Years in U.S. Residency (TR3, n = 63)

Parameter	<i>b</i>	<i>SE</i>	<i>Z</i>	95% Confidence interval	
				Lower bound	Upper bound
Discrimination (T1)	2.18*	0.93	2.34	-0.10	3.75
Social support (T1)	-1.06	0.61	-1.75	-2.25	0.16
Discrimination x social support	1.88	1.95	0.97	-1.08	4.73

* $p < .05$; ** $p < .01$; *** $p < .001$

CHAPTER V

DISCUSSION

Summary of Results

The present study provides empirical support for a longitudinal relationship between perceived discrimination and attention problems two years later. Additionally, results provide empirical support for a longitudinal, indirect effect of perceived discrimination on attention problems through somatic symptoms for a group of Latinx immigrant youth living in Oregon. The originally proposed moderated mediation model demonstrated a poor fit to the data and did not clearly capture the relationships of interest in this study. Therefore, results of the original model analysis cannot be interpreted with confidence. In response, I conducted a theory-driven re-analysis of the hypothesized model and explored other possible relationship paths to determine a better model fit to the existing data. As illustrated in Figure 4, the final post-hoc, theory-driven model included the original theorized mediation pathway between perceived discrimination and attention problems through somatic symptoms. However, rather than examining the effect of the interaction between perceived discrimination and social support on somatic symptoms (as depicted in the original theoretical model in Figure 1 and statistical model in Figure 3), the modified post-hoc model (theoretical model depicted in Figure 4 and statistical model in Figure 5) theorized that social support instead moderated the relationship between perceived discrimination and attention problems. The main findings of the final post-hoc analyses will be discussed in this section.

In support of the first hypothesis, perceived discrimination reported at T1 was significantly and positively associated with attention problems two years later (T3), even

when controlling for the amount of time spent in U.S. residency. Additionally, perceived discrimination was significantly and positively associated with somatic symptoms one year later (T2), above and beyond the effect of time in U.S. residency. In support of the second hypothesis, the indirect relationship between perceived discrimination at T1 and attention problems at T3 through somatic symptoms at T2 was found to be statistically significant. When testing this indirect relationship, perceived discrimination no longer significantly predicted attention problems in the final model, highlighting the mediating role of somatic symptoms in partially explaining this indirect relationship. While still controlling for time in U.S. residency, results of the present study did not provide empirical support for the third hypothesis, such that the interaction between discrimination and social support on attention problems was not statistically significant when examined within the overall post-hoc model. Last, using a simplified moderation model, secondary exploratory analyses revealed that contrary to the fourth hypothesis, social support did not significantly moderate the theorized discrimination-attention link for any of the three subgroups (TR1, TR2, or TR3).

Discrimination and Attention Problems

In testing my first hypothesis, results of the present study provide evidence to support a longitudinal, positive association between perceived discrimination and attention problems two years later ($p < .05$) when controlling for the effect of time in U.S. residency. This finding supports prior research demonstrating the deleterious effects of discrimination on areas of cognitive functioning in underrepresented and marginalized groups (Barnes et al., 2012; Crowe et al., 2010; Salvatore & Shelton, 2007). However, little research has focused on the longitudinal association between discrimination and

attention problems, specifically, and even less is known about this relationship among an understudied group of Latinx immigrant youth. Therefore, this finding uniquely contributes to the literature in important ways by suggesting that perceived discrimination exerts lasting effects on attention problems two years later among youth in this underrepresented population.

Discrimination and Somatic Symptoms

Consistent with the extant literature linking higher levels of discrimination with higher levels of somatization (Huynh, 2012; Juang et al., 2016; Torres-Harding, Torres, & Yeo, 2020), this study provided further evidence of a positive, longitudinal relationship between perceived discrimination and somatic symptoms one year later. While this finding supports prior research demonstrating that discrimination is associated with the development of somatic symptoms, previous studies have primarily focused on examining this relationship in racial/ethnic minority college student and adult populations (Juang et al., 2016; Torres-Harding et al., 2020). Of the studies that have explored the link between discrimination and somatic symptoms among Latinx adolescents, many are cross-sectional and correlational in nature (Huynh, 2012), limiting the ability to draw conclusions about the potential lasting effects of discrimination on somatic symptoms over time. Further, few studies have focused on the discrimination-somatization link among Latinx immigrant youth, specifically (Sirin et al., 2015). Therefore, the present study's findings add to the literature by providing empirical support for the lasting adverse consequences of perceived discrimination on somatic symptoms among a particularly understudied group of Latinx immigrant youth.

Discrimination and Attention: Somatic Symptoms as an Indirect Pathway

In support of my second hypothesis, results of the post-hoc analysis using the modified model demonstrated a significant, indirect relationship between perceived discrimination and attention problems through somatic symptoms. Further, the direct pathway between perceived discrimination and attention problems was no longer significant in the complete model. In other words, results provide evidence for the mediating role of somatic symptoms in the indirect relationship between discrimination and attention problems. This finding is consistent with a collection of prior research and theoretical frameworks illustrating the direct relationships from discrimination to somatic symptoms (Campo, 2012; Sirin et al., 2015; Sirin et al., 2019) and pain or somatic symptoms to attention problems (Eccleston & Crombez, 1999; Voerman et al., 2017). However, to my knowledge, no studies to date have examined the mediating role of somatic symptoms as a pathway by which discrimination impacts attention. Even less is known about these relationships among Latinx immigrant youth. Therefore, the present study contributes to the literature by elucidating the role of somatic symptoms in partially explaining the indirect effect of perceived discrimination on attention problems for Latinx immigrant youth. Replication studies using the current mediation model are needed to further establish the relationships between discrimination, somatic symptoms, and attention problems among youth in this understudied population.

Discrimination and Attention: The Protective Effects of Social Support

Contrary to my third hypothesis, results of the current study did not provide empirical evidence for a moderating effect of social support in buffering against the link between discrimination and attention problems. These findings are incongruent with a

large body of research that has identified social support as an important protective factor in buffering against the harmful effects of discrimination on adjustment among Latinx adolescent and immigrant youth populations (Ayón et al., 2010; Park et al., 2018; Potochnick & Perreira, 2010; Sirin et al., 2013; Smokowski et al., 2007). Previous studies, however, did not simultaneously test for the indirect effects of discrimination on attention problems through somatic symptoms, while also controlling for time spent in U.S. residency. The process of analyzing all of these factors concurrently in the model may have reduced the degree of power needed to detect a moderating effect of social support in the present study. Based on the current study results, future studies should use a larger sample to examine the moderating role of social support separately in a simplified model. Additionally, prior research suggests that youth with higher levels of perceived discrimination tend to report lower levels of social support (Buckle, 2018), highlighting the complex interplay between discrimination and social support. This finding emphasizes the need for future research to identify additional protective factors beyond social support that may help to buffer against the impact of discrimination on negative youth outcomes.

Time in U.S. Residency: Secondary Exploratory Analyses

Through secondary exploratory analyses, I used a simplified moderation model to examine whether social support at T1 moderated the theorized link between perceived discrimination at T1 and attention problems at T3 for some youth and not others based on the amount of time spent in U.S. residency. Results demonstrated that, contrary to the fourth hypothesis, the interaction between perceived discrimination and social support on attention problems was not statistically significant for any of the three subgroups of

Latinx immigrant youth (TR1, TR2, or TR3). A likely explanation for this null finding is the small sample sizes of each TR group, such that the power and ability to detect significant pathways was limited when analyzing each subgroup separately in the model.

Though not primary research questions in the study, results from exploratory analyses revealed some interesting findings regarding the direct pathways examined in the simplified moderation model. First, for youth in TR1 (2-4 years in U.S. residency), social support exerted a significant inverse effect on attention problems two years later, while perceived discrimination was not directly associated with attention problems for youth in TR1. This finding suggests that, although not serving as a significant moderator in the present study, social support may still exert protective effects on cognition for recent immigrant youth, such that higher levels of support related to lower levels of attention problems two years later among youth in this subgroup.

Given the intersecting relationship between time spent in U.S. residency and level of acculturation (Caplan, 2007; Lara, Gamboa, Kahramanian, Morales, & Hayes Bautista, 2005; Smokowski et al., 2009), it is helpful to turn to the literature on acculturation to further understand and interpret the present findings. Using the same dataset that was analyzed in the present study, Martinez and colleagues (2011) found that youth in TR1 (i.e., less time in U.S. residency) reported lower levels of acculturation than did youth in TR2 or TR3 (i.e., more time in U.S. residency). Building upon this groundwork, this first finding supports existing literature suggesting that social support, particularly support from family and friends from youths' countries of origin, represents an important protective factor for recent Latinx immigrant youth with less time spent acculturating to the U.S. (Lee, Hong, Zhou, & Robles, 2020; Zavala, Curry, & Morales, 2020). Regarding

the null finding for the relationship between discrimination and attention problems among youth in TR1, this finding may reflect how contextual factors such as language barriers and lack of familiarity with social nuances could influence the extent to which youth pick up on and are impacted by discriminatory comments and behaviors earlier on in the immigration and acculturation process (Gonzales-Backen et al., 2018; Martinez et al., 2011; Suárez-Orozco & Todorova, 2003).

Second, for youth in TR2 (6-8 years in U.S. Residency), neither discrimination nor social support demonstrated significant effects on attention problems. While the subgroup sample size may have been too limited to detect small effects, these null findings may still highlight the unique experiences of immigrant youth during the “in-between” stage of adapting to life in the U.S. For instance, in line with the identification-attribution model, it is possible that lower levels of ethnic identity exploration among these youth could contribute to less of awareness of racial/ethnic stigma and a smaller likelihood of attributing negative social experiences to discrimination (Gonzales-Backen et al., 2018). Another possible explanation is that youth in TR2 may be undergoing a shift in their social support groups. For instance, they may be transitioning away from previously significant sources of support from friends and family in their countries of origin due to the impact of distance and acculturation on these relationships, while also not having fully formed strong social support networks in their new social environments (Cook et al., 2009; Suárez-Orozco & Todorova, 2003). This transitional period could potentially play a role in mollifying the influence of social support in the model.

Last, for youth in TR3 (10-12 years in U.S. residency), perceived discrimination was significantly and positively associated with attention problems two years later, while

social support was not a significant predictor in the model for youth in this subgroup. One possible explanation is that youth with more time living in the U.S. have higher chances of exposure to discrimination, potentially with greater frequency and persistence (Cook et al., 2009; Stanton-Salazar, 2001). Further, the longer that youth have lived in the U.S., likely the higher their level of English fluency and understanding of cultural norms, which may increase youths' ability to detect more subtle forms of discrimination. Exposure to such subtle or ambiguous forms of discrimination (e.g., microaggressions) have been shown to contribute to cognitive depletion, given the increased cognitive energy required to endure, interpret, and process these events, which can impact attention (Ozier, Taylor, & Murphy, 2019; Salvatore & Shelton, 2007). Therefore, longer time spent in U.S. residency may exacerbate the impact of discrimination on cognitive functioning, including attention problems, for these youth. To better understand this relationship, future research should examine time in U.S. residency as a potential moderator of link between discrimination and attention problems among Latinx immigrant youth.

Regarding the role of social support, research applying stress and coping models suggests that youth with more time in U.S. residency and higher reported levels of acculturation are often forced to develop coping strategies in response to discrimination in order to confront and heal from the effects of repeated exposure (Edwards & Romero, 2008). As such, youth with more time in residency may start to rely more heavily upon internal or individualized coping strategies (e.g., ignoring/disengaging, emotional modulation, cognitive restructuring, distracting) that may be more readily available to them in the face of discrimination, rather than pulling from external sources of social

support to cope with discrimination-related stress (Cabassa, 2003). This may reduce the importance or weight placed on social support for these youth. Further, while the present study did not examine specific types and combinations of social support separately in the model, research shows that immigrant youths' relationships with their parents often change as youth integrate into U.S. culture due to "acculturation gaps" that commonly develop between immigrant parents and their children over time (Finch & Vega, 2003; Martinez et al., 2011). In fact, prior research using the current dataset showed that families of youth in TR1 reported significant smaller acculturation gaps than did families in TR2 or TR3, reflecting a relationship between more time spent in U.S. residency and larger acculturation gaps in immigrant families (Martinez et al., 2011). Given that acculturation gaps can alter the nature, degree, and quality of support youth feel they receive from their parents (Nair, Roche, & White, 2017), this trend may help to explain in part why social support may play a lesser role as a protective factor for youth who have spent more time living in the U.S. Future research should examine other protective factors that may buffer against cognitive consequences of discrimination among youth with higher levels of acculturation and more time in U.S. residency.

Taken together, the findings of the current exploratory analyses contribute to the literature given that a dearth of research has explored the impact of discrimination on attention problems and the influence of social support on this relationship for Latinx immigrant youth at different stages in the process of adjusting to life in the U.S.

Limitations

While the present study contributes to the literature in important ways by providing insight into the longitudinal relationship between perceived discrimination and

attention problems and the mediating role of somatic symptoms, a number of limitations should be considered. First, the sample size was modest ($n = 218$), which limits the strength of statistical power and ability to detect small effects. Second, the generalizability of results to the general population is limited due to the specifics of the sample, which comprised Latinx immigrant youth living in Oregon. Given that Latinx immigrants in Oregon represent a relatively newer, emerging immigrant community (Bussel, 2008; López Salinas, 2016) and that a majority of participants in the present study were of Mexican descent, results may not be transferable to more well-established Latinx immigrant communities across the U.S. and/or other ethnic subgroups not well represented in the sample.

Third, all measures used in the present study were self-report and the somatic complaints measure did not account for the duration, frequency, intensity or consequences of the somatic symptoms. Future research should use a multiple method approach to capture a more comprehensive understanding of each variable of interest and the nature of the relationships in the model. Additionally, the present study examined the amount of time spent in U.S. residency, but did not assess for levels of acculturation or acculturative stress. Given that acculturation-related factors intersect with the length of time spent living in the U.S. and are shown to impact psychological adjustment (Caplan, 2007; Smokowski et al., 2009), acculturation may play a stronger role in influencing the relationships in the model and should therefore be further examined as a multifaceted construct in future studies. Further, the negative consequences of race-based discrimination are complex and far-reaching, making it difficult to differentiate between the impact of discrimination independent of other prevalent and culturally salient

stressors that many Latinx immigrant youth, like other traditionally marginalized groups, experience and endure, including socioeconomic disadvantages (e.g., poverty, restricted educational and occupational opportunities) and institutional racism/systemic oppression, which often lead to chronic stress (Brondolo et al., 2009). Last, while the present study focused on examining protective factors on a more individual level (i.e., perceived social support), it is imperative to consider the broader influence of systemic racism and the ways in which institutional oppression is woven into the fabrics of our society. The recognition of system-level factors calls for policy reform, widespread action to teach and implement anti-racism practices, and macro-level changes to address racism and oppression in a more comprehensive, sustaining manner.

Implications for Prevention and Intervention

Despite these limitations, the present study also has several notable strengths. For instance, the present study uniquely contributes to the literature by examining the relationship between perceived discrimination, a culturally relevant stressor, and attention problems among Latinx immigrant youth, a group that has been historically underrepresented and understudied in research (Martinez et al., 2011). Further, to my knowledge, this study is among the first to examine the mediating role of somatic symptoms in the theorized link between discrimination and attention problems. The longitudinal analyses used in the present study also help to elucidate the lasting, deleterious effects of discrimination on youth adjustment over time. While not all study hypotheses were supported, the current results have important implications for prevention and intervention efforts. Beyond the critical need for increased efforts aimed at reducing youths' exposure to race-based discrimination, the observed effect of perceived

discrimination on attention problems and the mediating role of somatic symptoms call for the identification of protective factors, effective coping strategies, and culturally sound interventions aimed at ameliorating the impact of discrimination on emotional, physical, and cognitive outcomes for youth.

Regarding individual-level resources, self-esteem has been identified as key internal resources shown to help increase resiliency and reduce susceptibility to the negative effects of discrimination for Latinx youth (Umaña-Taylor & Updegraff, 2007). The role of self-esteem is interesting within the context of discrimination, given that higher levels of discrimination are associated with lower levels of self-esteem (Lee & Ahn, 2012; Smokowski & Bacallao, 2007). However, when self-esteem is targeted and increased among youth, it has demonstrated buffering effects against discrimination-related negative outcomes, highlighting the protective effects of higher levels of self-esteem for youth (Umaña-Taylor & Updegraff, 2007). In examining additional individual-level protective factors, researchers have found ethnic identity to not only be significantly and positively associated with higher levels of self-esteem among Latinx youth (Toomey & Umana-Taylor, 2012), but it also has also been shown to disrupt the link between discrimination and psychological adjustment among Latinx populations (Park et al., 2018; Torres, Yznaga, & Moore, 2011). In discussing possible underlying mechanisms of these relationships, Umaña-Taylor (2016) posited that the process of exploring one's ethnic identity can provide youth with clarity and a more positive sense of self-assuredness regarding their racial/ethnic background, which can protect them against ethnic/racial-based threats, such as discrimination. It is important to note, however, that ethnic identity is a multifaceted construct, such that different aspects of

ethnic identity development, including exploration, affirmation, commitment, and resolution, may exert differential effects on youth outcomes (Baldwin-White, Kiehne, Umaña-Taylor, & Marsiglia, 2017; Umaña-Taylor, Wong, Gonzales, & Dumka, 2012). Still, these findings indicate that self-esteem and ethnic identity may be particularly important targets of intervention for supporting Latinx youth combat the negative consequences of discrimination on youth adjustment.

Further, in applying a stress and coping model (Lazarus & Folkman, 1984), racial/ethnic discrimination is conceptualized as an active source of stress that calls for the use of coping strategies to help manage resulting distress and mitigate the negative effects of discrimination on youth outcomes. Prevention and intervention programs that introduce and encourage the use of adaptive coping strategies may be particularly important given that perceived discrimination has been significantly associated with maladaptive behaviors, including increased substance use, among Latinx immigrant youth (Kulis, Marsiglia, & Nieri, 2009) and other racial/ethnic groups (Jelsma & Varner, 2020). In a meta-analytic review, Pascoe and Smart Richman (2009) found that active or problem-focused coping (i.e., direct coping with the stressor or one's emotions) was shown to be the most effective type of coping in response to discrimination, particularly for buffering against the impact of discrimination on health. This is in line with subsequent research with Latinx youth and young adult populations that further evidenced the efficacy of active or engagement (e.g. problem solving, cognitive restructuring, expression of emotion) versus disengagement (e.g., self-criticism, social disengagement, problem avoidance) coping strategies in response to discrimination (Sanchez, Adams, Arango, & Flannigan, 2018; Villegas-Gold & Yoo, 2014). Therefore,

the integration of engagement coping strategies as core intervention components may help youth to replace maladaptive behaviors with adaptive coping strategies when responding to and managing the emotional and psychological distress associated with discrimination. Future research should examine culturally-specific coping strategies, such as communalistic coping, that may be particularly protective and culturally congruent for Latinx immigrant youth (Gaylord-Harden & Cunningham, 2009; Kuo, 2013).

In addition to being effective for youth in response to discrimination, such strategies might also be helpful for coping with the physical pain associated with somatic symptoms and reducing the disruptive effects of such pain on attention. For instance, skills training for coping with pain-related somatic symptoms, including mindfulness, attention management, and cognitive-behavioral strategies, have been shown to help regulate pain responses and increase the ability to shift one's focus away from pain and towards the task at hand (Legrain et al., 2009).

Beyond internal resources and coping strategies, parents of Latinx immigrant youth can play a key role in influencing how their children understand and process experiences of discrimination through their interactions, including comforting their children, modeling advocacy, and fostering ethnic pride (Ayón, 2016). In line with this research, interventions that involve parents and family members have shown promising effects for supporting Latinx immigrant youth (López-Zerón, Parra-Cardona, & Yeh, 2020; Parra-Cardona et al., 2019). However, such evidence-based practices and interventions still remain limited and understudied in the literature. Further, contextual factors, such as the amount of time adolescents spend outside of the home, the quality of parent-child relationships, and restricted time and energy parents might understandably

have due to extensive occupational demands and immigration- and acculturation-related stressors of their own, emphasize the need for additional, external sources of support for Latinx immigrant youth (Lorenzo-Blanco et al., 2017; Ayón, Valencia-Garcia, & Kim, 2017).

Implications of the present study can extend beyond individual factors and family contexts to also reach educators, and ultimately, to inform culturally responsive teaching practices. For instance, insight into the potential underlying factors that may be contributing to the disruption of student learning could encourage teachers to shift away from conclusions about students “simply not caring” about learning. Instead, teachers might consider how attentional problems may stem from somatic symptoms, including pain and physical discomfort, that students could be experiencing. Taking this one step further, these somatic symptoms may trace back to the harmful effects of discrimination on youth adjustment and cognition. With an increased understanding of these connections, teachers might experience and practice additional compassion towards disengaged students, which could influence how instructors respond to students and the degree to which students are willing and able to state their needs and/or re-engage in class. In this way, the present study reinforces the importance of applying a more contextualized approach to teaching and creating culturally responsive and inclusive learning environments for youth with diverse and intersecting identities.

While the scope of the current study does not address community-level and systemic factors, the findings call for mental health professionals, community leaders, educators, and administrators to expand our roles as social justice advocates whenever possible to push back against anti-immigrant sentiment and promote broader system-level

changes (Ayón, 2016). As Lee and Ahn stated in 2012, an essential part of ameliorating the impact of discrimination on Latinx individuals' lives may require extending “beyond the confines of traditional counseling and psychotherapy” in order to develop systemic interventions, including programming across academic and other professional settings (Flores et al., 2010). Given that teachers and helping professionals are often significantly underpaid and under-resourced, it is also critical for policy makers to advocate for policy-level changes and increased funding for interventions designed to protect Latinx immigrant youth and other traditionally marginalized groups against the negative effects of racial/ethnic discrimination on health, academic, and psychological outcomes (Sibley & Brabeck, 2017; Torres, Santiago, Walts, & Richards, 2018).

Directions for Future Research

Results from the present study highlight important directions for future research. First, given the novel finding evidencing the mediating role of somatic symptoms in partially explaining the indirect relationship between perceived discrimination and attention problems in a group of Latinx immigrant youth, future research should examine and identify any specific types of somatic complaints (e.g., headaches, stomach aches, back pain) that may demonstrate particularly strong associations with discrimination and related attention problems. This research could provide further insight in the specific mechanisms underlying these relationships and could help to inform targets of prevention and intervention programs.

Regarding the moderating role of social support, the contradictory null finding in the present study indicates that the role of social support as a protective factor may be complex and multifaceted. Therefore, future research should examine contextual factors,

including the settings, situations, and social contexts in which discrimination most commonly occurs for Latinx immigrant youth in order to gain a more holistic understanding of youths' experiences. For instance, discrimination by peers at school could increase feelings of rejection, diminish a sense of belonging, and threaten feelings of safety within the school environment for these youth, all of which can have serious implications on youths' adjustment (Benner & Graham, 2013; Bennett, Roche, Huebner, & Lambert, 2020; Tummala-Narra & Claudius, 2013). Further, future studies should assess the quality of youths' interpersonal relationships to gain more qualitative data about which aspects of social support may be most protective for youth. Given that this degree of qualitative information was not captured in the data used in the present study, additional contextual information could help to determine effective targets of prevention and intervention efforts aimed at mitigating the deleterious consequences of discrimination on youth outcomes. Last, while the present study represents an important step in this direction, substantial research is still needed to inform the development, implementation, and assessment of evidence-based interventions designed to reduce racial/ethnic discrimination and/or enhance coping in response to discrimination-related stress among youth in underserved communities (Williams & Cooper, 2019).

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