Somatic Symptoms in Mexican-Origin Children:

The Role of Familism and Family Conflict in the Context of COVID-19

by

Maria Karla Wilson

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Graduate Supervisory Committee:

Rick Cruz, Chair
Marisol Perez
Leah Doane

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ABSTRACT

Mexican-origin families (MO) have been more negatively impacted by the COVID-19 pandemic compared to White European-Americans. Latinx youth also reported increased concern about somatic symptoms (i.e. bodily symptoms) during the pandemic compared to non-Latinx peers. Current research on the pandemic indicates that cohesive and supportive families fare better than families within high-conflict households. However, no research has directly examined parent-child conflict during the pandemic in relation to youth somatic symptoms. Previous studies considered cultural proxies as predictors of somatic symptoms in Latinx children, the specific influence of prominent cultural values like familism remains less explored. Familism, emphasizing family well-being, is considered protective for Latinx youth, but evidence suggests it may pose risks in high parent-child conflict households. Utilizing Qualtrics panel, I collected data from 301 MO parents reporting on a target child (Mage= 11.4 years, SD= 3.7; 50.2% female) between March and June 2022. Approximately 40% of parents completed the survey in Spanish. Parental familism dimensions (support, family as referent, and obligations) were assessed as well as youth somatic symptoms. Changes in parent-child conflict and changes in social and family contacts due to the pandemic were also measured. Logistic regression models revealed that greater increases in conflict significantly predicted the presence of youth somatic symptoms (OR = 0.52, 95% CI= [0.27, 1.00]. Unexpectedly, total familism did not significantly moderate the relation between change in parent-child conflict and the presence of somatic symptoms (RR =

1.16, 95% CI= [0.99, 1.36]. However, post hoc analyses revealed that parental familism support was the only dimension of familism that was directly associated with the count of child somatic symptoms (RR= 0.81, 95% Confidence Interval [CI]= 0.71, 0.93). Parental familism as a referent significantly moderated the relation between change in parent-child conflict and the count of somatic symptoms (RR= 1.19, 95% CI = [1.01, 1.41]), such that higher familism values strengthened the positive relationship of change in parent-child conflict and higher count of somatic symptoms. Findings emphasize the need for future longitudinal research, considering medical conditions, to understand how parental familism values, particularly support, may buffer against somatic symptoms for Latinx youth.

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CHAPTER 1

INTRODUCTION

Latinx youth are among the fastest-growing segments of the youth population in the US (Passel, 2011), and the US Census projects that Latinx youth will make up 33.5% of the total US population by 2060 (Colby & Ortman, 2015). Considering the notable growth of this demographic subgroup, research has focused on examining the mental health needs of Latinx individuals in the U.S (Alegria & Woo, 2009; Alegria et al., 2008_a) and access to utilization of care for psychiatric disorders, such as depression and eating disorders (Alegria et al., 2008_b; Alegria et al., 2007). Several empirical studies have found Latinxs to be at increased risk for depression (Organista, 2007)), anxiety (McLaughlin, Hilt, & Nolen-Hoeksema, 2007; Pina & Silverman, 2004), and posttraumatic stress symptoms (Pole et al., 2008; Schlenger et al., 1992; Perilla et al., 2002; Pole et al., 2001) compared to non-Latino Whites and African-Americans. Relative to their European American counterparts, Latinx children also tend to report higher rates of somatic symptoms (i.e., bodily symptoms; Pina & Silverman, 2004; Varela et al., 2008), which often accompany a range of mental health concerns, such as anxiety (Pina & Silverman, 2004), attention problems (Kuperman, 2022) and depression (Organista, 2007).

Persistent and chronic somatic symptoms, whether medically explained or not, tend to have short-term and long-term consequences (e.g., psychological distress,

increased healthcare utilization, increased disability days, and functional disability; Malas et al., 2017) for individuals. For instance, higher counts of somatic symptoms are

positively correlated with impaired health status (Creed et al., 2012) and somatic symptoms syndromes (e.g., irritable bowel syndrome; IBS) impair health-related quality of life due to inability to reduce intensity of painful symptoms over time (Tanaka et al., 2010). Increased severity of somatic symptoms as measured by the Patient Health Questionnaire (PHQ)-15 were positively associated with sick days, symptoms-related difficulties, and increased health-care utilization (Kroenke, Spitzer, & Williams, 2002). Long-term andhigher count of somatic symptoms are correlated with psychological distress and functional impairment (Kroenke et al.,1994; Katon et al., 1991; Kroenke et al., 1997; Simon et al., 1996).

Considering the health and psychological burden of somatic symptoms, it is important to understand the factors that underlie the disparities in somatic symptoms for Latinx youth compared to other racial and ethnic groups. The extant literature has predominantly focused on between-group disparities of somatic symptoms between Latinx and other racial and ethnic groups (e.g., European-American, African-American, and Asian-American). Emerging research on within-group differences has primarily examined cultural proxies (e.g., generation status, immigrant and acculturative stress) in relation to somatic symptoms among Latinx youth (Leathers et al., 2021; Zvolensky et al., 2020; Der Sarkissian, et al., 2022). Overall, research suggests that being born in the US and greater exposure to immigrant-related stressors are associated with increased somatic complaints for Latinx youth (Der Sarkissian, et al., 2022). However, limited

research has focused on the potential influences of cultural identity orientation, including cultural values and beliefs, that are thought to underlie the cultural exposure gradient related to youth adjustment. To advance this literature, it is important to examine cultural processes more directly (e.g., familism) among Latinx youth and their family members, which can further our understanding of within-group variability in youth somatic symptoms.

Within a cultural group, we can detect more nuances in variability that go beyond identifying with the same cultural orientation. Specifically, within-Latinx groups there is lot of variability within cultural practices and beliefs. Measuring the degree to which individuals endorse those cultural practices, beliefs, values, and ethnic identifications, offers the opportunity to examine whether those cultural domains are associated with somatic symptoms. Another strength of this study is that our sample was 100% Mexican-origin. Within-group research is advantageous when one group experiences disparate risk for a problem. We narrowed our scope to one specific cultural group and MO populations were disproportionately impacted by the COVID-19 pandemic, therefore, we were able to capture variability specifically within this one group.

The current study examined potential promotive and protective associations between family cultural features (i.e., parent familism values) and parent report of youth somatic symptoms, which can provide a greater understanding on the potential role that cultural orientation plays in the context of somatic symptoms among Latinx youth. I draw upon the resiliency framework and refer to promotive factors as factors that interrupt the process from risk to pathology whereas protective factors involve moderation of negative

effects of risks on negative outcomes (Zimmerman et al., 2013; Fergus & Zimmerman, 2005; Rutter, 1987). Parents' endorsement of cultural features (i.e., familism) on youth somatic symptoms is important because parents who endorse high levels of familism will most likely want to instill those values in their children, and children who are younger tend to share the same beliefs as their parents. Depending on the domain of familism that is highly endorsed, youth may feel pressure to fulfill family obligations and support the family and if they prioritize family harmony, they may internalize these feelings of stress which manifests into somatic symptoms (e.g., Doane et al., 2018). Alternatively, parental cultural values may be promotive against youth somatic symptoms based on the cultural development literature on youth outcomes (Causadias, 2013; Alegria et al., 2008; Causadias & Cicchetti, 2018). In general, parent cultural orientation may be a risk marker for direct mechanisms of differential risk on youth outcomes, such as somatic symptoms.

Moreover, the COVID-19 pandemic has had ripple effects on families across the world. In the U.S., data show that there have been notable COVID-19 related health disparities among families from minoritized backgrounds (e.g., increased hospitalizations, higher rates of mortality and infection), including for the Latinx community generally (Riley et al., 2021; Centers for Disease Control and Prevention, April 29) and for Latinx children specifically (Goyal et al., 2020). In the current study, I explored the influences of familism and their effects on youth somatic symptoms. I also examined the potential effects of pandemic-related changes in social and family contacts and changes in parent-child conflict on youth somatic symptoms. Additionally, the present study examined the potential moderating role of familism on the relation between

pandemic-related changes in social and family contacts and changes in parent-child conflict on youth somatic symptoms. The findings can illuminate how familial, social, and cultural factors may intersect to influence somatic symptom variation within MO youths.

COVID-19 Pandemic and Latinx Families

The COVID-19 pandemic has significantly disrupted the well-being of caregivers and child adjustment (Prime et al.,2020), with a disproportionate impact on the Latinx community. In the wake of the COVID-19 pandemic, the Latinx community have faced disproportionate physical health, economic, and psychological distress relative to other racial and ethnic groups (Riley et al., 2021; Vargas & Sanchez, 2020; Fitzpatrick et al., 2020; McGinty et al., 2020). Latinx communities have experienced higher rates of infection, hospitalizations (Acosta et al., 2021; Jacobson et al. 2021; Riley et al., 2021), and higher mortality rates compared to African-Americans and Non-Hispanic White (NHW) individuals (Luck et al., 2022). MO families in particular had a higher observed risk of contracting the virus (Jamieson et al., 2021) and experienced a higher mortality risk ratio relative to NHW (Luck et al., 2022). Among lower-income Latinx mothers, greater economic stress and concerns about potential exposure to the virus predicted higher maternal stress and were the most salient for child externalizing behaviors (i.e., disobedience and arguing; Boyer et al., 2023; Hibel et al., 2021). These findings show the increased vulnerability to COVID-19 health outcome disparities experienced by Latinx families. The comprehensive impacts of the COVID-19 pandemic on Latinx families'

health and economic conditions reveals challenges that extend beyond immediate health risks to deeper issues of familial and community well-being.

These social and family disruptions due to the pandemic are particularly relevant within Latinx families. When adversity is present within the family's social context, it often leads to negative consequences for child well-being (Repetti et al., 2002). Family and close relationships are protective against suffering and isolation, especially for immigrant families (Falicov, 2014; Sluzki, 2008), yet social distancing and lockdown measures may have negatively impacted the well-being and community cohesion for Latinxs due to decreased contacts with extended family members and close friendships outside of the household (Falicov, Niño, & D'urso, 2020). Latinx youth also reported being unable to celebrate cultural traditions and see their friends and relatives which resulted in sadness, boredom, and loneliness. These barriers created by the COVID-19 pandemic resulted in greater worry about a negative impact on the quality of these key social relationships (Cortés-García et al., 2021).

While the COVID-19 pandemic has undeniably strained social networks and family cohesion, further examination reveals its nuanced impact on family dynamics, particularly through the lens of communication and emotional support within Latinx families. Further prospective evidence points to the importance of changes in family dynamics on negative and positive aspects of youth functioning. For instance, in a longitudinal study of predominantly Latinx adolescents, their quality of life was negatively impacted by COVID-19 family conversations. Specifically, these conversations predicted greater fears related to social distancing which in turn predicted a

greater impact of COVID-19 on the quality of life and internalizing symptoms for adolescents (Trucco et al., 2022). Thus, aspects of family conversations (e.g., safety-related behaviors) were potential stressors for Latinx youth. However, Latinx families in other empirical studies reported increased bonding, closeness, and quality time with the nuclear family (Cortés-García et al., 2021). Despite the increased financial difficulties, youth reported that extended family members were an important source of support and that family functioning did not significantly change from pre-pandemic to during the pandemic.

As the dynamics of family interactions during the pandemic has had mixed impact on Latinx youth, it is imperative to consider the broader context of family conflict and its potential to exacerbate negative health outcomes among children and adolescents during the pandemic. Generally, family conflict is associated with a range of negative outcomes for children and adolescents, including chronic pain and greater physical symptomatology (Behar-Zusman et al., 2023). In addition, youth exposed to greater levels of family conflict over time report long-term consequences such as poor health status and quality of life (Borst, 2015; Chen et al., 2017; Driscoll, et al., 2015; Repetti, Taylor, & Seeman, 2002; Shonkoff et al., 2009). Due to significant disruptions on lives as a result of the pandemic, researchers have begun to examine risks factors of the family environment during COVID-19. Family conflicts between parents and their children (e.g., how to take care of their health) before the pandemic may have increased in frequency or may have more detrimental effects as a result of the pandemic (Behar-Zusman et al., 2023). Family conflict can be a source of stress, a proximal outcome of stress (e.g.,

spousal conflict that arises from economic stressors), or a distal outcome of stress (e.g., divorce). Family conflict processes may have important implications for youth somatic symptoms amidst the pandemic, especially for MO youth and their families.

Taxonomy of Somatic Symptoms and Related Processes

Somatic symptoms are bodily symptoms (e.g., shortness of breath, chest pain, stomachaches) that may have an unexplained medical origin and can be a manifestation of psychological distress (Escobar et al., 1987, 1998, 2010). Somatization does not have a single definition or consensus in the literature, but researchers have agreed that somatization occurs in the presence of somatic symptoms that are medically unexplained (De Gucht & Maes, 2006). Somatization has previously been defined as somatic expression of psychiatric disorders, somatization disorder characterized by multiple somatic symptoms, or functional somatic syndromes characterized by specific clusters of somatic symptoms (e.g., irritable bowel syndrome; De Gucht & Fischler, 2002; Nimnuan et al., 2001; Hotopf, 2004).

For the purpose of this paper, I define somatization as a somatic response to psychological distress (De Gucht & Maes, 2006). Somatic symptoms are typically measured through a count of bodily symptoms (e.g., stomachaches, fatigue, dizziness) as well as questions about the frequency and intensity of those symptoms. The majority of measures specify a time frame (e.g., 2 weeks, one month, 6 months; Children's Somatic Symptom Inventory, Brief Symptoms Inventory, Adult Self Report) while utilizing response scales that vary from yes/no scales to severity or frequency scales. Somatization covers somatic complaints, such as how bothersome, worrisome, or problematic the

symptoms were over a specific time frame (Van Driel et al., 2018). In young children, somatization is typically assessed by a count of physical symptoms, including symptoms that are often medically unexplained (e.g., dizziness, fatigue).

As conceptualized by the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM–5; American Psychiatric Association [APA], 2013) somatic symptom disorder (SSD) involves one or more somatic symptoms, that may or may not have a medical explanation, that cause significant distress and disruption of daily functioning. The symptoms have to be persistent (more than 6 months) and involve excessive preoccupation about the symptoms to meet criteria. Illness anxiety disorder differs from SSDs in that somatic symptoms are rarely present, and if so, they tend to be mild. The crux of illness anxiety involves disproportionate thoughts about having or contracting an illness and individuals with the disorder either maladaptively avoid healthcare settings or excessively utilize healthcare. See Table 1. for all of the defining terms.

Table 1.

Core Features of Somatic Symptoms and Related Processes

Construct	Core Feature
Somatic Symptoms	Bodily symptoms (*e.g., shortness of breath*)
Somatization	Psychological distress expressed via somatic symptoms with no clear medical explanation
Somatic Symptom Disorder (SSD)	One or more somatic symptoms that has been persisting for 6 months or more and severely disrupts daily functioning frequent healthcare utilization or maladaptive avoidance
Illness Anxiety Disorder	Excessive preoccupation of having a serious illness or getting one, either frequent healthcare utilization or maladaptive avoidance

Phenomenology of Somatic Symptoms and Related Problems

Due to inconclusive and oftentimes unsatisfactory results trying to address somatic symptoms in medical settings, the fields of psychology and psychiatry have attempted to characterize the experience and development of this phenomenon. Mind-body dualism dominated the study of somatization up until the last few decades, which categorized somatization without a known medical etiology as a psychological condition (Guze, 1975), and led to the diagnostic criteria of somatization disorder in the DSM-III. Lipowski (1988)'s widely cited conceptual definition of somatization, paralleled the DSM-III diagnosis of somatization disorder, and also added that a person must experience somatic distress, attribute to a physical illness, and seek medical help for it. He also emphasized that somatization should not be considered abnormal or pathological, but its association with a psychiatric condition in the DSM-III remained. Evidence for

dualism included a study with patients with recurrent abdominal pain with or without medical disease. Only patients without medical disease were associated with an increase of symptoms and intensity under the diagnostic criteria for somatization disorder in the DSM, indicating that somatic symptoms were more psychological (Ernst et al., 1984).

In the DSM-IV-TR, somatic symptoms and related disorders were categorized as somatoform disorders. The reason for the revision was that there was too much overlap across the disorders and unclear boundaries about the diagnoses. The emphasis was also exclusively on medically unexplained symptoms which reinforced the dualism of mind and body and excluded SSDs that accompanied medical disorders (APA, 2013). This duality approach has been criticized due to the unreliability of identifying symptoms as medically unexplained and its separation of medical and psychological symptoms when they often accompany each other (Rief et al., 2007; Creed et al., 2010; Dimsdale et al., 2009; Leiknes et al., 2006). Thus, recent conceptualizations of somatic symptoms have transitioned away from categorical approaches of somatic symptom related problems and somatoform disorders and are moving towards dimensional approaches (Walker, 2019).

The DSM-5 implements a biopsychosocial model which highlights the importance of psychological, social, and physiological factors in the development of somatic symptoms (Creed et al., 2012). Systems theories have approached somatic symptoms more holistically: integrating biological, social, and psychological factors as opposed to reducing somatic symptoms to solely psychological or "mind" disorders (Sturmberg et al., 2014). Family factors as well have been examined in relation to the development and maintenance of somatic symptoms within youth (Hulgaard, Dehlholm-

Lambertsen, & Rask, 2019; Stone & Wilson, 2016). As of late, systems theories have prevailed in the field of somatization and extends beyond mind-body dualism in gaining a more integrated understanding of somatic symptoms in youth.

The Hierarchical Taxonomy of Psychopathology (HiTOP) is a contemporary model that has improved our understanding of somatization by identifying how somatic symptom problems in clinical samples may be distinct from overlapping related symptom clusters in the DSM-5. For instance, a confirmatory factor analysis of the HiTOP model found evidence of internalizing (i.e., internalizing fear and internalizing distress) being distinct and on a separate spectrum from somatization (Woodling et al., 2022). Though they are correlated, modeling shows that somatic symptoms fit better as their own factor, rather than as a subfactor alongside fear and distress under the internalizing factor. Also, bodily symptom distress and illness anxiety have been found to be better accounted for under the somatic symptom spectrum compared to the internalizing spectrum (Sellbom et al., 2022). The HiTOP literature on somatic symptoms indicates that it is appropriate and important to examine this phenomenon on its own, separate from medical illness and psychiatric diagnosis.

Moreover, though somatic symptoms are included as criteria in several internalizing disorders (e.g., GAD, MDD) treatments designed to target internalizing symptoms (e.g., anxiety and depression) have differing outcomes on somatic symptoms. For instance, somatic symptoms can improve in specific psychological treatments (e.g., CBT; O'Malley et al.,1999; Creed et al., 2011; Kroenke & Swindle, 2000) without reducing anxiety and depression., such that the presence of multiple somatic symptoms in

individuals seeking treatment for depression or anxiety may be more salient than psychological symptoms (Creed et al., 2010). Alternatively, other studies have shown that somatic symptoms do not decrease in interventions designed for depression (e.g., three-phase sequential medication; Hoencamp et al., 1994). One reason for these mixed results is that somatic symptoms can be a side effect of some antidepressants that were included in this study (e.g., Monoamine oxidase inhibitors (MAO) inhibitors; nausea, headaches, dizziness). Alternatively, CBT can directly target somatic symptoms via relaxation strategies as opposed to pharmacological treatments that are designed to alter brain chemistry and promote structural brain changes.

Etiology of Somatization and Somatic Symptom Problems in Children

Medically unexplained symptoms commonly occur in approximately 25-50% of pediatric primary care visits; within the literature these are typically categorized as functional somatic symptoms (FSS) or somatization (Ravesteijn et al., 2009; Walker et al., 2009). For instance, the complexity and presentations of somatic symptoms disorders (SSDs) in youth has been further exacerbated by the COVID-19 pandemic worldwide; further compounding upon teasing apart somatic symptoms from symptoms of COVID-19. For example, in Italy, there were increased hospitalizations for SSDs despite overall decreases in pediatric hospitalizations (Turco et al., 2022). The most common presentations to the emergency department were gastrointestinal symptoms (e.g., nausea). Unfortunately, it is unknown the extent to which these symptoms were due to COVID-19 virus or better categorized as SSD.

Persistent somatization can lead to functional impairment, school refusal, disability, increase in healthcare utilization, and unnecessary diagnostic exams and treatment interventions (Malas et al., 2017). The etiology of somatic symptoms is not well understood; yet risk factors for chronic and severe somatic symptoms have been identified and include, but are not limited to, childhood neglect, sexual abuse, chaotic lifestyle (Kurlansik & Maffei, 2016), co-existing medical illness, anxiety, and depression (Creed et al., 2012). When youth and their families present to medical doctors with somatic symptoms, having no medical explanation in the face of persistent distress can lead to the evaluating physician feeling ill-equipped to resolve the patient's problem, and as a result, refer them out or rule out disease instead of managing youth's distress (Wileman, May, & Chew-Graham, 2002). With no clear prognosis or treatment, patients may feel dismissed which may exacerbate their distress. In these cases, it is up to the mental health clinician to acknowledge the client and family suffering and work on a comprehensive symptom management approach, as well as address any prior mistrust of medical doctors and cultural beliefs (Geist et al., 2008).

Furthermore, family systems dynamics (Cox & Paley, 1997) likely play a key role in the development and maintenance of somatic symptoms such that children may express somatization in order to maintain family harmony and to detract from any current familial conflict or stressors. Families may become more attuned to their child's physical symptoms and engage in seeking care for them which reinforces children's somatization (Karaca et al., 2015). Shulte & Petermann's systematic review (2011) showed that parental lifetime history of somatic symptoms (SS), anxiety, depressive disorders and

perceptions of their child's symptoms lead to parental overemphasis on somatic symptoms and reinforced attention to the symptoms in the child. In turn, parent's concern about their child's symptoms predicted increased child health-care utilization (Watson & Kemper, 1995; Janicke et al., 2001; Venepalli et al., 2006; Lindley et al., 2005; Little et al., 2001).

Individual factors, such as reluctance to express emotions, likely intersect with family factors to influence the development of somatization (Gledhill & Garralda, 2006; Gilleland et al., 2009). For instance, as children have challenges in the verbal expression of their emotions, they may exhibit physical symptoms to display worry or distress (Gledhill & Garralda, 2006). Together, these findings support the family systems theory that youth somatic symptoms are not manifesting simply by factors at the individual level, but instead are precipitated, developed, and maintained through familial and contextual factors.

Variability Across Racial/Ethnic Groups and Within Latinx Groups

Within the past few decades, somatic symptoms across the lifespan have also been examined across ethnic and cultural groups. Economic well-being (e.g., SES, economic distress) varies across these groups and poverty and research shows that higher economic distress is associated with somatic symptoms and physical health generally among children (Kline et al., 2023). Research has shown that Mexican and Mexican-American children and their parents reported more physiological and somatic symptoms compared to European-American parents and children in the context of anxiety (Varela et al., 2004), after controlling for SES. During the COVID-19 pandemic, Latinx adolescents

in particular reported elevated concerns with somatic symptoms (e.g., headaches) and maintaining their physical health compared to Black, White non-Hispanic, Asian, and multiracial peers (Scott et al., 2021). In a community sample of White, Asians, and Latinx adults, more than half of Latinx individuals reported three or more general physical symptoms (e.g., back pain, pain in arms, legs, and joints, and stomach pain) while only a quarter of White individuals and less than one-fifth of the Asian participants reported more than three symptoms (Escobar et al., 2010), after adjusting for socioeconomic factors.

Latinx adolescents reported elevated concerns related to somatic symptoms relative to Black, White non-Latinx, Asian, and multiracial groups of adolescents during the pandemic (Scott et al., 2021). Particularly, they reported more concerns with headaches and maintaining their physical health compared to non-Latinx peers (Scott et al., 2021). Generally, adolescents and young adults reported increases in panic and somatic symptoms from before the pandemic to the peak of the pandemic in Spring 2020, with rates as high as 18.2% of participants reporting clinically elevated levels of somatic symptoms (Hawes et al., 2022). Specifically, stay-at-home orders, COVID-19 life changes, basic needs concerns, school concerns, and infection concerns were correlated with panic and somatic symptoms. These findings indicate the importance of understanding their fear and concerns given the existing health disparities and longstanding underutilization and barriers to mental health care (Vega et al., 1999; Lopez et al., 2008; Rastogi, et al., 2012; Bucay-Harari et al., 2020). These fears and concerns

have potential negative consequence on utilizing and accessing mental and physical healthcare.

Although some research has focused on cultural variability of somatic symptoms *across* race/ethnic subgroups, *within-group* differences among Latinx youth and adults are poorly understood. One early study in this area focused on within-group and between-group differences of Latinx individuals of Puerto Rican and Mexican heritage, such that there were three US-based groups (Mexicans born in the US, Mexicans born in Mexico, and non-Hispanic Whites) and a group of Puerto Ricans living in Puerto Rico (Canino et al., 1992). After accounting for sociodemographic factors (e.g., sex, education, marital status), the group that reported the highest rates of functional somatic symptoms (i.e., unexplained symptoms) were the Puerto Rican sample. Though people from lower socioeconomic backgrounds tend to somaticize more than those from higher socioeconomic backgrounds, in this sample group differences by SES were not observed. In a second study, Pina & Silverman (2004) found differences emerged as a function of language use and specific ethnocultural group for Cuban-Americans, Other Hispanic/Latinx (non-Cuban), and European American (EA) clinically-anxious youths. In this study, language use was used as a proxy for acculturation across the Hispanic/Latinx groups. Among English speaking youths, the Other Hispanic/Latinx youth group reported more distress related to somatic symptoms than Cuban-American youth, who had levels comparable to European-American youths. In the Spanish-speaking group, Cuban-Americans reported more distressing somatic symptoms compared to Other Hispanic/Latinx youth. SES was not controlled for in this study, as Pina & Silverman

found no statistical difference of family income levels across groups. Both of these earlier studies highlight the differences somatization varied by ethnocultural group, highlighting the notion that the Latinx population is not a monolith when it comes to physical symptoms of distress.

Scholars have theorized that one factor influencing the higher prevalence of somatic symptoms within Latinx groups may be that somatization is a more culturally acceptable way to express emotion and distress (Escovar et al., 2018; Reichman, 1997). For instance, anxiety is commonly expressed through the cultural idiom of distress *ataque de nervios,* which literally translates to attack of the nerves. This often occurs in reaction to a stressor which leads to experiencing negative affect and somatic distress. These symptoms can resemble a panic attack, and look like trembling, difficulty breathing, or feeling out of control (Guarnaccia et al., 1989).

Since stigma of psychopathology is highly prevalent within the Latinx community, *ataque de nervios* and the associated physical symptoms may be a more widely accepted expression of distress than expressing emotional distress or talking about their emotional state (Guarnaccia et al., 2010). In turn, those who experience *ataque de nervios* tend to fear that these symptoms may worsen and lead to *locura* (craziness) which will lead to severe mental illness or death (Hinton et al., 2009). They may also worry about experiencing another *ataque,* and in fact this worry does increase their chances of having another attack and worse symptoms. This anxiety sensitivity of experiencing *nervios* has been posed as a partial explanation for higher rates of somatization for Latinx groups.

Within the Latinx group in general, cultural proxies (e.g., immigrant stress and generation status), minority experiences (e.g., discrimination), cultural beliefs (e.g., *respeto*, *simpatia*), sociodemographic factors (SES and gender), and family and individual factors (e.g., parenting and pain-related anxiety) all predict variance in somatic symptoms (Leathers et al., 2021; Zvolensky et al., 2021). Specifically, being female and third-generation predicted somatic complaints for adolescents (Der Sarkissian, Sharkey, & Cerezo, 2022). Moreover, *simpatía* was positively correlated with somatic symptoms in Mexican and Mexican-American children (Varela et al., 2004). The value of *simpatia* involves being agreeable and empathizing with others, even if it means making personal sacrifices and thus, they may somaticize their distress to maintain harmony and not worry family members. Conversely, *respeto* which involves respecting family members, as well as elders and authority figures outside of the family, and honoring Latinx traditions, customs, and cultural norms, has shown negative associations with somatic symptoms within Latinx college students (Lara, 2021). Taken together, these findings provide some indications on how specific Latinx cultural values related to broad interpersonal dynamics may play an important role in the expression of youth somatization.

Family Dynamics and Somatic Symptoms

While *simpatia* and *respeto* have been examined in relation to somatic symptoms, it is unknown whether family-oriented values (e.g., familism) have a direct impact on somatic symptoms. Familism is a constellation of family-oriented collectivistic cultural values predominant with Latinxs which prioritize family well-being over the individual (Fuligni, Tseng, & Lam, 1999). Familism has been found to be a highly relevant cultural

value dimension for many child and adolescent outcomes (Cahill et al., 2021), and is particularly salient for Mexican-American youth due to their collectivistic culture (Pina-Watson et al., 2013), signaling that cultural belief systems, such as familism, may be tied to their resiliency.

Familism was identified as one of the core cultural values for Mexican-American families from focus group participants (Knight et al., 2016). Broadly, receiving emotional support from family members (support), importance of duties and care-giving (obligations), and relying on family as an extension of the self (family as referent), especially when making decisions make up this construct. Familism has been measured and extensively studied over the past few decades, and findings have consistently indicated that it serves as a promotive and protective factor against internalizing and externalizing symptoms (e.g., substance use, risky sex, somatic, anxious, and withdrawn symptoms; Milan & Wortel, 2015; Telzer, Gonzales, & Fuligni, 2014; Cruz et al., 2017).

Although there is a great amount of evidence supporting familism as a promotive factor, there is also evidence of the disadvantageous effects on youth outcomes, depending on the context and aspect of familism that is endorsed. For example, adolescent-reports of family obligation values were promotive for Mexican-American adolescents against substance use (Telzer, Gonzales, & Fuligni, 2014), and also associated with increased positive family functioning for Latinx girls (Milan & Wortel, 2015), but these values also magnified the relationship between negative life events and PTSD and depressive symptoms. Higher endorsement of family assistance behaviors was

found to be a risk factor for lower psychosocial adjustment for adolescents in the context of chronic parental distress (Godsall et al., 2004; Goglia et al., 1992; Stein et al., 1999).

Furthermore, as familism has a role in child externalizing and internalizing symptoms, examining how family context impacts the family relationship may provide key insights into variability of somatic symptoms. For instance, children who experience high levels of parent-child conflict and hostile home environments (e.g., overprotective, strict), especially in low-resource households, may internalize their emotions and FSS. Thus, children's FSS may be maintained by family conflict (Beck, 2008; Garralda et al., 2015; Craig et al., 2002; Ayaz et al., 2012; Glazebrook et al., 2009). Schulte and Petermann's (2011) systematic review also revealed consequences of family conflict, such as functional disability and functional pain for children with somatic symptoms (i.e., headaches; Logan & Scharff, 2005; abdominal pain; Liakopoulou-Kairis et al., 2002). Overall, youth with FSS and SSDs reported higher levels of family conflict and lower levels of family togetherness (Brown, Schrag, & Trimble, 2005).

Endorsing family values consistent with family cultural context can reduce parent-child conflict and foster family connectedness (Nair, Roche, & White, 2018). For instance, for adolescent Latinas at risk for suicide, familism was associated with lower chances of an attempt and lower levels of parent-adolescent conflict, but increases in internalizing behaviors (Kuhlberg et al., 2010). For second-generation Latinx youth, familism showed promotive effects against depressive and externalizing symptoms via a positive parent-child relationship (Stein et al., 2020). In support of prior literature (Lorenzo-Blanco et al., 2016; Santisteban et al., 2012), these findings indicate that

familism may only have buffering effects on child negative outcomes in particular familial contexts associated with relationship qualities. Given the importance of family harmony and well-being among Latinx families, the experience of family dysfunction may have an even more detrimental effects on Latinx families, as family conflict can attenuate the protective effects of traditional family values such as *respeto* (Corona et al., 2005; Valdez, Abegglen, & Hauser, 2013). Moreover, for Latinx youth reporting health challenges, they experienced more family conflict compared to non-Latinx families (Valdez et al., 2013). Yet, the literature is sparse in examining direct associations between parent-child conflict and somatic symptoms overall within Latinx or MO families.

Additional Theoretical Frameworks

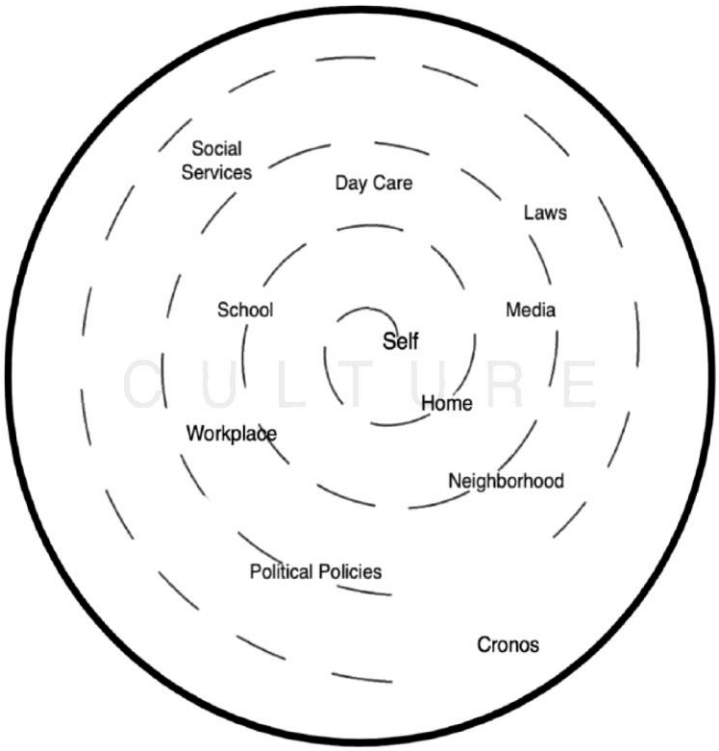
I draw upon family systems theoretical frameworks to understand how familial influences may shape the development of youth somatic symptoms. Family systems theory views the family holistically and each individual family member as interdependent and having reciprocal influence on each other. Individual members cannot be separated from their family as any changes in family dynamics will impact the family system (Bowen, 1961; Cox & Paley, 1997). In the context of parent-child relationships and family functioning, each family member within a subsystem (i.e., parent-child) must draw on each other for support and function without interference from other family members (Minuchin, 1985). Parent-child interaction patterns (e.g., conflict) can contribute to the development and maintenance of somatic symptoms for families for whom maintaining the status quo and stabilizing the family unit is of most importance

(Aro, 1987, Terre & Ghiselli, 1997; Zuckerman et al., 1987). In high-conflict households, children may somaticize their distress in order to detract parents from the conflict and instead focus on their child's well-being, which can in turn decrease stress levels of the child and protect family harmony. Thus, in these contexts, children's somatic symptoms have a functional significance (Karaca et al., 2015).

I also draw upon Velez-Agosto and colleagues' (2017) reconceptualization of Bronfenbrenner's bioecological (1974) model on human development which recognizes that culture permeates within the child's macro- and microsystems where youth developmental outcomes take place (e.g., family practices, home, school). Essentially, culture is at the forefront of children's lives and impacts all subsystems as opposed to only existing in the macrosphere (see Figure 1). Velez-Agosto and colleagues' cultural microsystem model can be utilized to provide more insight into how and why Latinx youth report higher rates of somatic symptoms compared to other racial and ethnic groups. Familism, which prioritizes family-well-being over the individual, is a prominent cultural value system found in collectivistic cultures and is generally rooted in Latinx microsystems (Fuligni & Zhang, 2004). Cultural values that have been examined in relation to somatic symptoms within-Latinxs up to this point have been *simpatía*, respect (Varela et al., 2004; Lara, 2021) in addition to cultural proxies (eg., generation status, acculturative stress; Leathers et al., 2021; Zvolensky et al., 2020), but have mostly been exclusively in either clinical samples, between-ethnic groups, or adult samples. At this point, it is unknown whether cultural values related to familism may be associated with somatic symptoms within the Latinx population.

Figure 1

Velez-Agosto and colleagues cultural microsystem model



Current Study

Guided by a cultural microsystems and family systems framework, this study aimed to understand how complex interactions between culture, family dynamics, and COVID-19 changes in social and family contacts influence the presence of somatic symptoms in MO children and adolescents. Somatic symptoms are bodily symptoms (e.g., nausea, stomachaches) accompanied by psychological distress (De Gucht & Maes, 2006). Somatization occurs when somatic symptoms are medically unexplained and become a function of psychological distress. When chronic and persistent, somatic symptoms and somatization can lead to a constellation of negative health and

psychological outcomes (e.g., disability, functional impairment, distress; De Gucht & Maes, 2006). Latinx youth, and MO youth in particular, show elevated risk for somatic symptoms. In the current environment, contextual processes during the COVID-19 pandemic have resulted in varying impacts on the family environment, especially in terms of parent-child conflict. In the literature on Latinx youth somatic symptoms, studies that have examined within-group variability have identified perceived discrimination, gender, perceived stress, and parenting styles as potential correlates of somatic symptoms. Within-group research on cultural factors have generally been limited to examining cultural proxies (e.g., generation status) and less on features associated with cultural identity, such as cultural belief systems (e.g., familism). Moreover, little is known regarding how familial and cultural factors may intersect to impact child somatic symptoms. Given the research indicating that familism values may modify the effects of contextual and familial features on child outcomes, it is also important to examine whether familism values may moderate the influences of COVID-19 stress and COVID-19 family relationship characteristics on child somatic symptoms.

Examining within-group variability in somatic symptoms is critical to identify potential intersections between general and culturally specific risk and resilience factors that may influence the degree and consequences of somatic symptoms. This research can help to identify risk groups that may benefit from intervention, and may also inform potential intervention targets and content. In this study, I addressed the following aims and hypotheses:

Aim 1a. Test whether parental familism is associated with youth somatic symptoms?

Hypothesis. Consistent with a resiliency framework shown in prior research on familism and internalizing and externalizing behaviors, I hypothesized that greater endorsement of parental familism would have a promotive effect and be associated with fewer youth somatic symptoms.

Aim 1b. Examine whether changes in parent-child conflict from pre-pandemic to during the pandemic are associated with child somatic symptoms

Hypothesis. Consistent with extant literature (Shulte & Petermann, 2011), I hypothesized that as parents report greater escalations in parent-child conflict (e.g., more change in conflict) they would also report a higher count of child somatic symptoms.

Aim 1c. Examine whether changes in social and family contacts for parent and/or their child may be associated with child somatic symptoms

Hypothesis. Consistent with the COVID-19 literature to date, Mexican heritage families may have unique risk for negative outcomes due to the important function that in-person social gatherings serve to support traditional family values. I hypothesized greater reductions in social and family contacts for parents and their child (e.g., a lot fewer) would be associated with higher count of parent-reported somatic symptoms.

Aim 2a. Do parental familism values moderate the association between change in parent-child conflict and child somatic symptoms?

Hypothesis. Based on the familism literature, I hypothesized that for parents endorsing high levels of familism, the positive relationship between change in parent-

child conflict and child somatic symptoms would be stronger relative to those parents endorsing low levels of familism.

Aim 2b. Do parental familism values moderate the relation between COVID-19 parent changes in social and family contacts and child somatic symptoms?

Hypothesis. I hypothesized that for parents endorsing high levels of familism, the negative relationship between parent changes in social and family contacts and child somatic symptoms would be stronger relative to parents endorsing low levels of familism.

Aim 2c. Do parental familism values moderate the relation between COVID-19 child changes in social and family contacts and child somatic symptoms?

Hypothesis. I hypothesized that for parents endorsing high levels of familism, the negative association between child changes in social and family contacts (with more positive scores being more contact relative to pre-pandemic) and child somatic symptoms would be stronger relative to parents endorsing low levels of familism.

Results from this study will expand the literature on youth somatic symptoms by providing a more culturally nuanced view regarding how somatic symptoms may vary within MO children. This study frames familism as a potentially important source of resilience (i.e., a cultural strength) that may protect Latinx families from some of the adverse effects of the pandemic and household conflict in relation to child somatic symptoms. The results of this study can help to inform clinical interventions to better serve Latinx youth with increased risk for somatic symptoms, especially when facing adverse circumstances.

CHAPTER 2

METHODS

Study Design and Procedures

The current study used data from a study on the impact of COVID-19 on MO families collected between March and May of 2022, two years after the onset of pandemic, utilizing a panel of participants recruited via Qualtrics. A Qualtrics panel was chosen as the preferred method of recruitment to ensure sampling quotas were met (e.g., survey being completed in both English and Spanish). The sample consisted of MO caregivers in the United States, with at least one child between the ages 5-17 years old. In addition to age requirements, participants must have reported to identify as being MO and feel comfortable completing a survey in English or Spanish. Participants were not eligible to participate (i.e., excluded) if they reported living outside of the US and/or being younger than 18. Caregivers were first asked to complete demographic and household information, and then select a target child to report on whom they perceived experienced the most difficulty during the COVID-19 pandemic. Each participant was required to answer each question in order to complete the survey. However, for each question, participants had an option to respond with "Don't know" or "Prefer not to answer." These response items were ultimately later coded as missing values.

Participants

The final sample consisted of 301 MO caregivers, averaging 38 years in age (*SD*=8.2), who completed the study survey in its entirety. Further details of the demographic characteristics of the sample are presented in Table 1. The caregiver sample

was found to be predominantly female (75.7%) and more than a third having identified as 2nd generation, or foreign-born (38.8%). The majority of the participants' highest level of education was found to be a high school degree or GED (29.2%). Further, more than a quarter of the participants in this study reported obtaining some form of a college degree (27.6%). Lastly, less than a fifth of the sample reported their highest level of education being less than high school (18.1%). Of the 301 participants included in this study, approximately 40% completed the survey in Spanish. The average annual income (range) was found to be $40,000 to $50,000. The mean age of children that parents reported on was 11.4 (*SD*= 3.7) and about half identified as female (51.8%). More than half of the caregivers in our sample were married (57.4%). The number of adults and children in one household ranged from 2 to 13 people (M= 4.26, *SD*=1.45). See Table 1 for additional information on demographic characteristics.

Measures

Family Demographic Information. Each primary caregiver completed demographic questionnaires about themselves, their children, and secondary and tertiary caregivers. Demographic characteristics including age, gender, education, family income, marital status, generation status, and number of family members in the household were collected.

Somatic Symptoms. I measured youth somatic symptoms using the parent report of the 24-item version of the Child Somatic Symptom Inventory (CSSI; Walker et al., 2009). Parents rated items on a frequency scale ranging from 0 = "Not at all" to 4= "A whole lot" on how often their child was bothered by somatic symptoms over a two-week

period. The CSSI is one of the most commonly used inventories to assess nonspecific somatic symptoms in youth and the severity to which it is bothersome for children and adolescents (Stone et al., 2019). Example physical problems include nausea, difficulty breathing, and chest pain. Total scores are computed by the sum of the full scale yielding a score range from 0-96. However, I adapted the scoring by creating a dichotomous count variable as the scores were zero-inflated, indicating a majority of children did not experience particularly bothersome somatic symptoms. Thus, I recoded "Not at all" = 0 and all other response options (a little bit, sometimes, a lot, or a whole lot) =1 to indicate the presence or absence of somatic symptoms. The measure has not yet been validated in Latinx youth. There is evidence of internal consistency and validity from a study with a sample of Polish children and adolescents (Essau et al., 2013). Alpha in the current study was 0.97.

Family COVID-19 Social and Family Changes. Participants were asked what changes in family and social contacts occurred due to the pandemic within the past three months and whether the caregiver or child experienced stress related to these changes for the parent and their target child. The questions were drawn from the Coronavirus Health Impact Survey (CRISIS; Merikangas & Stringaris, 2020). Participants filled out items from the established adult self-report and parent-report forms. The change scale contains three items for the adult self-report and three items for the parent-report on the target child. Participants indicated the degree of change in their contacts with family, friends, and people outside of their home (e.g., "Has the quality of the relationships between you and members of your family changed?"). Participants responded with their subjective

experience on a 5-point scale for each item (e.g., 1= A lot worse to 5= A lot better). I recoded the change scale so that "About the same " was centered at 0 and the range was -2 to +2. Participants were asked to provide ratings of how stressful this change was if they reported changes in the negative direction (e.g., "How stressful have these changes in family contacts been for you?"). There were fewer participants than expected who reported change in the negative direction (*n* range = 59-89), thus the stress items were not included in the current analyses. Mean scores were computed for changes for the parent and changes for the child per parent report. Cronbach's alpha for parent's report of their own changes in social contacts was 0.60 and whereas alpha for their report on their children's social contact was 0.43.

Change in Parent-Child Conflict. Changes in parent-child cohesion and conflict were assessed using the parent form of the Adolescent-Child Household Environment Scale (A-CHES; Behar-Zusman, Chavez, & Gattamorta, 2020). The scale was developed in response to the COVID-19 pandemic to measure levels of family conflict and togetherness before and during the pandemic. The full scale has 29 items; for the purpose of the current study, only the 16-item conflict subscale was included for analyses. Caregivers were asked to rate the frequency of change in conflict with their child related to issues that occurred within their home on a 5-point scale (e.g., "*House rules or consequences for breaking rules";* 0 = Much less conflict than before to 4 = Much more conflict than before). Caregivers retrospectively rated change of conflict from the before the pandemic to during the beginning of the pandemic (i.e., two years prior to data collection). The scale was recoded and centered at "the same conflict as before" = 0, thus

the new range of the scale was -2 to +2. A mean score was computed for the subscale. This measure was validated in international samples and reliable as measures of overall family functioning (Behar-Zusman, Chavez, & Gattamorta, 2020). In this sample, alpha was 0.94.

Familism. The construct of familism was assessed utilizing adult self-report form of the Mexican-American Cultural Value Scale (MACVS; Knight et al., 2010). The scale assesses cultural values related to Mexican and Mexican-American culture, traditions, and beliefs. The current study only included the 16 items that comprised three subscales that make up familism: family obligations, family support, and family as a referent (see Table 4). Participants indicated the extent to which they agree with each of the times on a 5-point scale (e.g., *"Children should always do things to make their parents happy"*; 0=Not at all to 4= Completely). I computed a mean score of the 16 familism items for a composite familism variable. I also computed a mean score of each familism subscale: familism support, familism, referent, and familism obligations. The subscales have 6 items, 5 items, and 5 items respectively. In this sample, Cronbach's alpha for the 16-item composite familism scale was 0.92. Alpha for the familism support scale was 0.86. Alpha for the familism referent was 0.77. Alpha for the familism obligations was 0.75.

Analytic Strategy

Covariates

Given the diverse demographic characteristics of MO families living in the U.S and its impact on somatic symptom outcomes, I included parent age, parent sex, child sex, and child age (Thompson et al., 2007), nativity status, education status, and marital

status (Bauer, Chen, & Alegria, 2011) economic household distress (ECHD), and survey language use (Pina & Silverman, 2004) as covariates for the current study. ECHD was used as a proxy for SES since economic distress is more predictive of outcomes than family income alone (Garcini et al., 2022; McGrath et al., 2020; Hart et al., 2012). I decided that all covariates would remain in all the models a priori regardless of significance due to improved model accuracy, by accurately estimating unique influences of my main predictors of interest. Discrepant reports among parents, especially parent sex, model potential differences between mom and dads on reporting youth symptomatology.

Data were analyzed using R (version 4.2.3) and the R studio interface (R Studio Team, 2020). I computed descriptive analyses (frequencies and proportion for categorical variables, and mean, standard deviation, range for continuous variables) for study variables. I examined missing data patterns to detect possible response biases. Next, I computed correlations between variables of interest and covariates (survey language use, nativity status, family income, primary caregiver education, marital status, child gender, child age, parent gender, parent age, and economic household distress).

Child somatic symptoms were skewed and zero-inflated. Since I created a count variable of the presence or absence of the 24 somatic symptoms, it was possible to use a count variable modeling approach (Hilbe, 2010) to test the study questions. Following best practices in count data modeling (Atkins & Gallop, 2007), I utilized a data-driven approach with covariate-only regression models to determine which count model fit the CSSI data distribution the best. Since visual inspection indicated notable zero inflation, I

ran a zero-inflated poisson (ZIP) model, negative binomial hurdle (NBH) model, and a negative binomial (NBI) model. Each of these models have a logistic portion which estimates the likelihood that a participant is a zero (i.e., has no somatic symptoms) versus a one (i.e., having any somatic symptoms) in relation to covariates. Both the ZIP model and NBI models contain a mixed count portion (i.e., zeros and ones included) while the NBH model clearly separates the zeros out of the count portion of the model. Though the NBH model is a slightly better fit based on fit criteria (see Table 5), the NBI provides a better representation of the underlying data of somatic symptoms where the count portion of the model is estimated with a mixture of the zeros in the distribution accounting for the potential that a zero may actually be a one due to measurement error, or other factors. The hurdle model makes sense for data that is exactly a 0 or a 1 (e.g., mortality status, one is either dead or alive), and does not account for the fact that it is possible that parents reporting no symptoms may have a child who has experienced symptoms. Thus, I chose the NBI model as the best empirical and theoretical fit for the data.

Zero-inflated negative binomial models are commonly used to model count data with excess zeros (Fang, 2013). These models predict the likelihood of having no somatic symptoms, interpreted within a logistic regression framework as an odds ratio *(OR)*, and the intensity in the number of somatic symptoms interpreted within a rate ratio (*RR*). In these models, the effects sizes are indicated by the *OR* and the *RR*, which are exponentiated values of the unstandardized model coefficients. In these models, there are no estimates for variance explained because it is a maximum likelihood estimation which differs from Ordinary Least Squares (OLS; McCabe et al., 2022; Halvorson et al., 2022).

My first set of primary aims was to examine the possible unique influences of familism, changes in parent-child conflict, and COVID-19 parent and child changes in social and family contacts for parent and child in relation to somatic symptoms. Before conducting these analyses, I standardized continuous covariates and the familism scales. I conducted four zero-inflated negative binomial regression analyses that contained a count portion and a zero portion, estimating the unique influence of each independent variable of interest in separate models. I also ran three interaction models (which also contained a count portion and a zero portion) among these variables with familism as the moderating variable for each interaction. I ran all two-way interactions (e.g. familism * ACHES, familism * CRISIS child, familism * CRISIS parent) in separate models. If an interaction was significant in the regression model, I probed the interaction utilizing visual inspection of simple slopes plots to interpret the pattern of associations between changes in parent-child conflict and youth somatic symptoms at low (-1SD), medium (mean), and high (+1SD) levels of familism.

CHAPTER 3

RESULTS

Descriptive Results and Correlations

Over a quarter of participants reported their child endorsing no bothersome somatic symptoms over the previous two weeks (*N*= 80, 26.5%). Fewer participants reported their child endorsing all somatic symptoms (*N*= 15, 5%). Table 3 shows all the intercorrelations of all study variables. Target child age was significantly correlated with parent age ($r = .41$, $p < 0.001$), familism ($r = .12$, $p < 0.05$), and familism support ($r = .14$, $p < 0.05$). Parent age positively correlated with total familism ($r = .16$, $p < 0.01$), familism support ($r = .20$, $p < 0.001$), familism referent ($r = .11$, $p < 0.05$), and familism obligations ($r = .11$, $p < 0.05$), indicating that older parents tended to more highly endorse traditional familism values. Parent age negatively correlated with economic household distress ($r = -.14$, $p < 0.05$) and child somatic symptom count ($r = -.14$, $p < 0.05$), such that older parents tended to experience less economic household distress and report fewer

somatic symptoms in their child. Family economic household distress was significantly positively associated with child somatic symptom count ($r = .25$, $p < 0.001$) whereas familism support was negatively correlated with child somatic symptom count ($r = -.20$, $p < 0.001$). Child somatic symptom count was significantly correlated with survey language ($r = .15$, $p < 0.05$). Changes in parent-child conflict was significantly correlated with economic household distress ($r = .18$, $p < 0.01$) and child somatic symptoms count ($r = .14$, $p < 0.05$). Changes in social and family contacts for parent was significantly correlated familism ($r = .20$, $p < 0.001$)., familism support ($r = .22$, $p < 0.001$), familism referent ($r = .13$, $p < 0.05$), and familism obligations ($r = .19$, $p < 0.01$). Changes in social and family contacts for children were significantly correlated with familism ($r = .14$, $p < 0.05$), familism support ($r = .22$, $p < 0.001$), and familism referent ($r = .13$, $p < 0.05$) and changes in social and family contacts for parent ($r = .61$, $p < 0.001$). Changes in social and family contacts for child were negatively correlated with child somatic symptom count ($r = -.12$, $p < 0.05$).

Missing Data

There were no missing values on the demographic variables except for one item of the economic household distress scale (ECHD) with only one missing value. Only 3.6% of the CRISIS social and family consequences change scales for parent and child were missing. For the stress items related to changes in family and social contacts, only participants who reported negative changes (e.g., fewer contacts with friends) saw those questions. This was missing by design with skip logic. Only a small subsample of the total sample reported changes in family and social contacts as worsened due to the

COVID-19 pandemic, thus the subset of participants who received the stress items were between 58 – 89 (meaning that 19%-29% were missing across the items). For this reason, I did not integrate the stress scale in the current analyses. For the ACHES measure, there was over 40% of missing responses for items 10, 14, and 15. These items were geared towards conflicts typically found in adolescence (e.g., getting a job, substance use) and participants who responded "Not applicable to my household" may be the same subsample of parents who have younger children. I addressed missingness by using the mean of the items. The CSSI scale contained only 3% missing values across the 24 items. There were no missing values for the familism items from the MACVS. Overall missingness was minimal, with the exception of the adolescent items on the ACHES. Due to the added effort and computational cost of multiple imputation analysis in conjunction with the use of more advanced count data modeling, I did not adjust for missingness in my analytic strategy.

Preliminary Results- selecting count model specification

Prior to conducting primary analyses, distributions were examined to meet normality assumptions and assess skewness and kurtosis of sample distribution. Table 2 includes the means, standard deviations, skewness, and kurtosis values for the unstandardized study variables. Preliminary descriptive analyses showed that the distributions of primary study variables were within acceptable ranges (skewness < |1|, kurtosis < |7|; West, Finch, & Curran, 1995), except for the CSSI. I plotted the distribution of the CSSI measure and it was clearly skewed and zero-inflated (Figure 1). I

standardized or mean-centered the primary study variables to improve interpretability of regression estimates.

In examining the fit of the various count model specifications, the zero-inflated negative binomial hurdle (NBH) model had the lowest *AIC* (2002.29) and *BIC* (2079.92) and was a slightly a better fit than the zero-inflated negative binomial (NBI) model (*AIC* = 2004.42, *BIC* = 2082.06). However, I selected the NBI model since the distribution provides a better representation of the underlying data of somatic symptoms, where the count portion of the model is estimated with a mixture of the zeros in the distribution accounting for the potential that a zero may actually be a one due to measurement error, or other factors, as opposed to the hurdle model where estimating the count portion only includes those with any somatic symptoms, and does not account for the fact that it is possible that parents reporting no symptoms may actually have a child who has experienced symptoms. Thus, I chose the NBI model as the best empirical and theoretical fit for the data.

Covariates Results

I first ran a covariate only regression model to examine which covariates emerged as uniquely predictive of CSSI count scores. For the count portion, greater economic household distress (rate ratio (*RR*) = 1.26 [95% CI = [1.09, 1.45]), and parent survey language in Spanish relative to English (*RR* = 1.38, 95% CI = [1.01, 1.87]) uniquely predicted higher count of somatic symptoms. For the logistic portion, child age (odds ratio (*OR*)= 0.64, 95% CI = [0.42, 0.99]), economic household distress (*OR* = 0.51, 95% CI = [0.35, 0.75]), not being married (*OR* = 0.27, 95% CI = [0.11, 0.66]), and survey

language in Spanish (*OR* = 0.29, 95% CI = [0.11, 0.77]) predicted lower likelihood of the child experiencing zero somatic symptoms.

Aim 1 Results

Aim 1a. I examined the potential unique associations of the total familism subscale, change in parent-child conflict, and changes in social and family contacts with child somatic symptoms. There was no significant main effect of familism on the count nor absence of child somatic symptoms (RR = 0.89, 95% CI = [0.77, 1.03]). The only covariates that were significant for the count portion of the model was economic household distress (RR = 1.26, 95% CI = [1.10, 1.46]). For the logistic portion of the model, greater child age (*OR* = 0.63, 95% CI = [0.40, 0.98]), economic household distress (*OR* = 0.50, 95% CI = [0.33, 0.75]), not currently married (*OR* = 0.27, 95% CI = [0.11, 0.67]), and completing the survey in Spanish (*OR* = 0.27, 95% CI = [0.10, 0.75]) predicted lower likelihood of child experiencing zero somatic symptoms.

Aim 1b. For change in parent-child conflict, there was a significant main effect predicting the absence of somatic symptoms such that there was a lower likelihood that child somatic symptoms were absent in the presence of greater escalations in conflict compared to before the pandemic (OR = 0.57, 95% CI = [0.36, 0.91]). Significant covariates of the count portion and zero portion from Aim 1a remained.

Aim 1c. There were no significant main effects of change in social and family contacts for the parent or child on child somatic symptoms. Only child age (*OR* = 0.63, 95% CI = [0.40, 0.98]) and economic household distress (*OR* = 0.50, 95% CI = [0.33, 0.75]) remained significant for changes in social and family contacts for the child. For the

parent, only economic household distress (*OR* = 0.47, 95% CI = [0.31, 0.71]), not currently married (*OR* = 0.25, 95% CI = [0.09, 0.69]), and completion of survey in Spanish (*OR* = 0.29, 95% CI = [0.10, 0.82]) remained significant in predicting the absence of somatic symptoms. See Table 7.

Aim 2 Results

Aim 2a. I then tested for potential interactive effects of parental familism and change in parent-child conflict in relation to the number of child somatic symptoms (count portion) and probability of having no somatic symptoms versus having any somatic symptoms (logistic portion). There was no significant interaction (*RR* = 1.16, 95% CI = [0.99, 1.36]) for the count portion nor the zero portion (*OR* = 0.71, 95% CI = [0.41, 1.23]). Marital status emerged as a significant predictor of the absence of child somatic symptoms, such that caregivers who were married, compared to those who were not presently married for any reason, had a higher likelihood of rating their child as having zero somatic symptoms (*OR* = 0.24, 95% CI = [0.08, 0.74]).

Aim 2b. I also tested the interactive effects of parental familism and change in social and family contacts for the parent. There was no significant interaction between changes in social and family contacts for the parent and familism on the number of somatic symptoms (*RR* = 1.08, 95% CI = [0.95, 1.23]). In the context of social and family changes for the parent, economic household distress emerged as a significant predictor of the number of child somatic symptoms (*RR* = 1.31, 95% CI = [1.13, 1.53]) accounting for other covariates. For the zero portion of models (i.e., logistic regression), there was no significant interaction. More economic household distress, not currently married, and

completing the survey in Spanish (*OR* = 1.31, 95% CI = [1.13, 1.53]; (*OR* = 0.24, 95% CI = [0.08, 0.74]); (*OR* = 0.27, 95% CI = [0.09, 0.82]) emerged as significant predictors of the absence of somatic symptoms, such there was a lower likelihood that there were no somatic symptoms endorsed.

Aim 2c. For the count models for changes in social and family contacts for the child, there was no significant interaction between changes in social and family contacts for the child and familism on the number of somatic symptoms (*RR* = 1.08, 95% CI = [0.94, 1.23]). In the context of social and family changes for the child, only economic household distress emerged as a significant predictor of the number of child somatic symptoms (*RR* = 1.28, 95% CI = [1.11, 1.47]).

For the logistic portion of the models, there was no significant interaction for the primary variables of interest. Economic household distress, not currently married, and completing the survey in Spanish remained as significant predictors of the presence of somatic symptoms, and child age emerged as a significant predictor in the context of changes in family and social contacts for the child (*OR* = 0.63, 95% CI = [0.40, 0.99]).

Post hoc analyses

Given evidence showing that familism dimensions may be differentially related to youth psychopathology (Telzer et al., 2014; Milan & Wortel, 2015; Cruz et al., 2017), I ran *post hoc* analyses to test whether a specific subscale (i.e., familism support, familism referent, familism obligations) was driving the variability in child somatic symptoms. *Post hoc* analyses were also conducted for potential familism subscale differences in the link between change in parent-child conflict and child somatic symptoms and pandemic

changes in social and family contacts and child somatic symptoms. In total I ran 3 main effects models, each with a count portion and a zero portion, and 9 interaction models, each with a count portion and a zero portion.

Main effects. Results showed a significant main effect of familism-support predicting the number of child somatic symptoms in the count portion of the regression model (*RR* = 0.81, 95% CI = [0.71, 0.93]). For each one standard deviation increase in familism support, the expected decrease in the rate (i.e., change in slope) of count of somatic symptoms decreased by ~0.2. Further, increases in economic household distress (*RR* = 1.26, 95% CI = [1.09, 1.45]) and completing the survey in Spanish (*RR* = 1.36, 95% CI = [1.01, 1.84]) also emerged as significant predictors of child somatic symptom count accounting for other covariates.

For the count models for changes in social and family contacts for the parent, there was a significant main effect of familism support on the number of somatic symptoms (*RR*= 0.85, 95% CI = [0.74, 0.98]. For the zero portion of the model (i.e., logistic regression), there was no significant main effect. More economic household distress, not currently married, and completing the survey in Spanish (*OR* = 1.31, 95% CI = [1.13, 1.53]; (*OR* = 0.24, 95% CI = [0.08, 0.74]); (*OR* = 0.27, 95% CI = [0.09, 0.82]) emerged as significant predictors of the absence of somatic symptoms, such there was a lower likelihood that there were no somatic symptoms endorsed.

For the count models for changes in social and family contacts for the child, there was a significant main effect of familism support on the number of somatic symptoms (*RR*= 0.84, 95% CI = [0.73, 0.96]. For the logistic portion of the model, there was no

significant main effect. Economic household distress, marital status, and completing the survey in Spanish remained as significant predictors of the absence of somatic symptoms, and child age emerged as a significant predictor in the context of changes in family and social contacts for the child (*OR* = 0.63, 95% CI = [0.40, 0.99]), across varying domains of familism.

Interaction effects. The interaction between familism referent and change in parent-child conflict was significantly associated with the number of somatic symptoms (RR =1.19, 95% CI= [1.01, 1.41]). I plotted the interaction at low and high familism values (±1 *SD* at the mean). At -1*SD* in familism-referent, greater escalation in conflict between parent and child was related to lower count of child somatic symptoms. At +1*SD* in familism-referent, greater escalation in conflict between parent and child was related to steeper increases in child somatic symptoms. Furthermore, for parents high in familism-referent, de-escalation in parent-child conflict was related to a lesser number of somatic symptoms.

There was no significant interaction between changes in social and family contacts for the parent and familism on the number of somatic symptoms (*RR* = 1.08 [95% CI: 0.95, 1.23]). In the context of social and family changes for the parent, economic household distress emerged as a significant predictor of the number of child somatic symptoms (*RR* = 1.31 [95% CI: 1.13, 1.53]) across varying domains of familism, accounting for other covariates. For the zero portion of models (i.e., logistic regression), there was no significant interaction for changes for the parent on child somatic symptoms.

There was no significant interaction between changes in social and family contacts for the child and familism on the number of somatic symptoms (*RR* = 1.07, 95% CI = [0.93, 1.22]). In the context of social and family changes for the child, only economic household distress emerged as a significant predictor of the number of child somatic symptoms (*RR* = 1.28, 95% CI = [1.11, 1.47]) across varying domains of familism. For the logistic portion of the models, there was no significant main effect or interaction for the primary variables of interest. Economic household distress, not currently married, and completing the survey in Spanish remained as significant predictors of the absence of somatic symptoms, and child age emerged as a significant predictor in the context of changes in family and social contacts for the child (*OR* = 0.63, 95% CI = [0.40, 0.99]).

Sensitivity Analyses for the CRISIS measure

Given the low reliability of the CRISIS measure for both the parent and child, I conducted correlations between the items for each scale (parent change and child change) to examine what was driving down the reliability and the first item did not correlate with the other two whereas the second and third items had a higher correlation, (Crisis parent: [0.31 (first and second); 0.24 (first and third), 0.44 (second and third) (Crisis child: [0.14 (first and second); 0.13 (first and third), 0.33 (second and third)]). Thus, I dropped the first item for each scale and follow up analyses were conducted using the same predictors and using the same data analytic plan but with the 2-item scale of the CRISIS child and parent instead of the 3 item scales. The sensitivity analysis questions remained regarding whether the selected predictor of pandemic family and social changes would be related to

child somatic symptoms. There were two count and zero main effect models and six count and zero interaction models. For the main effects models, I ran one model, a count portion and a zero portion, with the 2-item parent CRISIS scale and a second model with the 2-item child CRISIS scale, For the interactions models, I ran three interaction models (with a count and zero portion): familism-support, familism-referent and familism-obligations interacting with the 2-item parent CRISIS scale for each model. I ran three more interaction models with the same three subscales interacting with the 2-item child CRISIS scale, bringing it to a total of 6 interaction models. Findings showed (see Tables 13-15 for full models) no statistically significant associations across all models in predicting the count of child somatic symptoms.

CHAPTER 4

DISCUSSION

Extant literature indicates that Latinx individuals, including children, report higher rates of somatic symptoms compared to other racial and ethnic groups in the U.S. The overarching aim of this study was to examine unique predictors of somatic symptoms within a community sample of MO youth. The original aim was to examine variability of somatic symptoms within this population, yet the majority of the youth in this sample were either not experiencing symptoms or distress per caregiver report.

Prior research has examined similar questions among Latinx college-aged adults (Lara, 2021) and across diverse ethnocultural groups (Pina & Silverman, 2004) but most have been done in either clinically-referred youth or older populations. Relatively less research has examined correlates of children's somatic symptoms within a community sample of MO families. No study to date has examined the familism direct and moderating influence on the association between change in parent-child conflict related to the pandemic and child somatic symptoms. This study is particularly relevant in the era of COVID-19 as MO families have already experienced health and economic disparities compared to other racial and ethnic groups and somatic symptoms could be exacerbated due to pandemic stressors. At the same time, MO children may have protections in place if their nuclear family is tight-knit, in harmony, and cohesive, thus, receiving support from family members protects them from negative outcomes. Social distancing and lockdown measures uniquely shaped family and social interactions where some families reported increased bonding and quality time with their family (Cortés-García et al., 2021)

and other families reported suffering and isolation from being separated from extended family members and close friendships (Falicov, Niño, & D'urso, 2020). Yet, due to the timing of data collection, changes related to the pandemic were not as stark relative to the beginning of the pandemic. The current study was conducted shortly after the Omicron wave, two years after the beginning of the COVID-19 pandemic. Across the US, from January 2020 to July 31st 2022, mortality rates varied by state, with the national rate being 372 deaths per 100,000, and Hawaii and New Hampshire having the lowest rates (e.g., 147-215 deaths per 100,000), while Washington, D.C. and Arizona having the highest, respectively (i.e., 526-581 deaths per 100,000). Although states where a large proportion of the population identified as Hispanic were associated with cumulative death rates, overall states where individuals had access to higher quality of care, more years of education on average, and a lower poverty rate were associated with lower infection and death rates (Bollyky et al., 2023). Globally, 70% of the population has been vaccinated or infected by COVID-19 since the second half of 2021. In 2022, society transitioned to the removal of restrictive measures, and experienced reduced burden on hospitals and clinics, and reduced death rates due to COVID-19. Actual personal risk due to virus also diminished by early 2022 and declarations to public health officials have been made to end the pandemic (Ioannidis, 2022). Accessibility to vaccines, availability of treatments, and reopening the state may have contributed to less stressors related to the pandemic on MO families in the current study.

The current sample consisted of predominantly female caregivers, and the sample overall consisted of caregivers who were more educated, more than half were married,

and the majority were born in the U.S. In accordance with the literature (Boyer et al., 2023; Hibel et al., 2021), parent-report of economic household distress for these families predicted parent-report of youth somatic symptoms above and beyond all other sociodemographic factors, indicating that economic stressors are a robust predictor of somatic symptoms within the context of the COVID-19 pandemic. Significant correlates of the presence of youth somatic symptoms also included the caregiver not currently married, completing the survey in Spanish, and greater child age. These results fit with prior findings that the Spanish language is more attuned to describe physical or physiological symptoms (eg., *ataque de nervios*; Guarnaccia et al., 2010). The relationship between older children and higher count of somatic symptoms may be due to younger children not having the vocabulary to express somatic symptoms relative to older children (Ginsburg, Riddle, & Davies, 2006). Consistent with extant literature, being married was associated with less somatic symptoms (Nakao et al., 2010).

For my primary variables of interest, the current study revealed significant direct effects on youth somatic symptoms. As expected, families who experienced greatest change in parent-child conflict (i.e., from much less conflict towards much more conflict) was associated with a higher likelihood of somatic symptoms being present, even when adjusting for socio-demographic factors. This is consistent with the existing literature (Beck, 2008). Despite not directly measuring somatization in this study, the ability of change in parent-child conflict to predict the presence of somatic symptoms underscores the substantial impact of family conflict on youth. Additionally, it extends the literature by highlighting the adverse effects of family conflict, as evidenced by its capacity to

predict somatic symptoms even when somatization is not explicitly measured in the study. Yet these results must be interpreted with caution as the change scores only reflect a positive or negative direction of conflict as opposed to the actual degree and severity of conflict in between parent and their child.

However, contrary to my hypotheses, parental familism and COVID-19 social and family changes for the parent and their child did not significantly predict youth somatic symptoms. Although contrary to my hypothesis, the null results of COVID-19 family and social changes on youth somatic symptoms is partially supported by existing literature. The sample in my study reported overall more positive or no changes in family and social contacts as well as the quality of those relationships, especially for the parents. These positive changes are in line with the COVID-19 literature that some Latinx families and individuals reported benefits to the pandemic such as increased support from extended family members, or increased bonding and quality time with family (Cortés-García et al., 2021). Also, as the reliability of the measure was low, I conducted a sensitivity analysis and removed the first item of the scale to improve measurement validity. The first item was related to frequency of contacts outside of the home compared to pre-pandemic and the other two items assessed quality of change with family members and friends. These results were also not significant, indicating that given the low construct validity of the scale, it may have increased the probability of a type II error and it dampened the power to detect statistical significance. I was also unable to assess stress related to these changes due to the number of participants that reported similar or better changes. The timing was also crucial for this study in that the data was collected two years after the onset of the

pandemic where vaccines were readily available and social distancing measures were relaxed. Results may have varied if the survey were to have been administered at the peak of pandemic and if stressors were assessed.

Moreover, the familism findings in my study are supported by similar literature in that a particular dimension of familism (e.g., family obligations values and family assistance behaviors) revealed unique effects of child externalizing and internalizing problems as opposed to an average score of total familism (Telzer, Gonzales, & Fuligni, 2014; Milan & Wortel, 2015; Stein et al., 1999). Thus, the non-significant findings (according to conventional significance of $p < .05$) of total familism scores may indicate that the construct of the familism subscales are variable and that taking the mean score of the full scale resulted in lost nuance.

These null findings in combination with prior literature examining specific dimensions of familism led me to probe for potential main effects of the dimensions of parental familism (i.e., familism-support, familism-referent, familism-obligations) on youth somatic symptoms for *post hoc* analyses. Notably, findings revealed that while all facets of familism demonstrated a "positive" direction - suggesting a reduction in risk of the presence of somatic symptoms - my findings from *post hoc* analyses only found the effects of familism support to be uniquely significant. Specifically, higher levels of familism-support were associated with steeper decreases in the rate of somatic symptoms. The construct of familism-support in the MACVS measures beliefs about cohesion, warmth, and belonging with their family which is of central prominence for Latinx

families. These findings extend the literature in showing the potential promotive effects of family support against somatic symptoms.

These results align with the family systems perspective in an inverse manner, such that family conflict and stressors contribute to youth functional somatic symptoms in order to maintain family harmony (Cox & Paley, 1997), but parents with high familism-support emphasize unity and harmony therefore it might be promotive for less somatization in the first place. There is also evidence that family support is one of primary factors that promote resilience in Latinx families in the face of adversity (Cardoso & Thompson, 2010). Alternatively, it was surprising to find null effects of familism-obligations as several studies have found it to be uniquely promotive (Telzer, Gonzales, & Fuligni, 2014) and protective against a range of youth outcomes (Milan & Wortel, 2015). However, measurement of familism-obligations in previous studies targeted attitudinal and behavioral aspects of familism and encompassed support, respect, and assistance behaviors all in one (Fulgini, Tseng, & Lan, 1999). Since familism-support is measured as a separate construct in the MACVS, it is consistent with theoretical expectations that it would emerge as a significant predictor.

On that note, I also found near significant interaction effects (according to conventional significance of $p < .05$) with total parental familism modulating the relationship between change in parent-child conflict and the presence of youth somatic symptoms. High total parental familism values increased the magnitude of the relationship between change in parent-child conflict and SS, such that in the context of parents who endorsed high total familism values the positive association between change

in parent-child conflict and youth somatic symptoms was stronger. However, due to only near-significant findings, these results did not fully support my hypothesis that high total parental familism values would have statistically significant negative impact on somatic symptoms than low levels of total parental familism values.

Familism as a moderator warrants continued investigation as previous literature have only examined familism as a moderator for externalizing and internalizing outcomes (Milan & Wortel, 2015). As indicated in earlier *post hoc* findings, there is a strong argument in examining subset levels of familism to detect subtleties of effects. In fact, parental familism-referent values emerged as a significant moderator between change in parent-child conflict on the count of youth somatic symptoms. As familism-referent emphasizes how children's behavior is a reflection of the family (e.g., acting good, working hard, making their parents happy), high parental familism-referent values may impose pressures on their children to perform well and always be at their best. Experiencing these pressures in combination with a greater escalation of conflict during the pandemic compared to before the pandemic, can strengthen their impact on youth somatic symptoms (Diaz & Niño, 2019). Due to familism-referent being the only significant subdomain of familism as a moderator, this dimension may be driving the near significant interaction for total familism. There is inherent value in examining dimensions of familism, such as familism-referent, as family well-being and family relationships are most salient for the Latinx community.

Guided by a developmental and family systems perspective of examining youth somatic symptoms, (Beck, 2008), these findings align with the idea that these imposed

pressures on children to represent the family in a positive light within high-conflict households may exacerbate somatic symptoms. Their children may feel distressed and thus may express their distress somatically in order to maintain familial harmony and unity. While youth did not directly report on their somatic symptoms or their distress, these findings warrant continued research on the potential influence of parent-child conflict and parental familism values on youth somatization.

Strengths and Limitations

An important strength to highlight is that this is the first within-ethnocultural group examining correlates of youth somatic symptoms. However, as my study consisted of a community sample with parents reporting on the somatic symptoms of one target child, I did not see high endorsement of seriously distressing child somatic symptoms. In fact, the distribution of somatic symptoms scores was skewed and zero-inflated and transformations were not able to normalize the distribution. Thus, I utilized count modeling to address the zero-inflation and while I was able to obtain a count score out of the maximum 24 somatic symptoms of the CSSI, I was unable to detect the intensity of the symptoms. For instance, there were ten caregivers that reported their child experiencing all 24 symptoms, but it is unknown how many of those were severely bothersome versus mild. Moreover, somatic symptoms measured by CSSI are heavily influenced by American cultural contexts and have not been validated in Latinx youth to my knowledge. However, the strength of the CSSI is that it is a comprehensive list of somatic symptoms in childhood and worries associated with them, as opposed to only

using a subscale of somatic/physiological symptoms typically found in anxiety and depressive scales.

Another limitation is the nature of caregiver-reporting of their child's symptoms. Some parents are more attuned to their child's bodily symptoms while others may not notice the occasional headache that their child reports. On that same note, some children may present with several somatic complaints no matter how mild while others might have a higher pain tolerance and not report to their parents unless they deem it needing medical attention, for instance. Nonetheless, variety and number of somatic symptoms in general does predict negative consequences, such that having three or more concurrent somatic symptoms predicted psychopathology in a community sample of adults in previous research (Escobar et al., 2010). Also, parental perception of their cultural values and family dynamics were uniquely predictive of child somatic symptoms which lends support to how parental perception can predict significant nuances in the variations of somatic symptoms based on cultural and contextual factors.

Another important limitation was the low construct validity of change in social and family contacts for the parent and child. These made the analyses challenging to detect any meaningful effects. Moreover, data collection in this online survey was parent-report only, thus I was unable to examine parent self-report of their own somatic symptoms and youth-report of their somatic symptoms, familism values, and experiences of changes in family and social relationships during COVID-19. However, in examining parental perception of family environment, family and social changes, and their own familism values, I was able to examine how parental perspective is associated with youth

somatic symptoms. In addition, children in the current study were as young as 5 years old which makes parent-report necessary, especially with somatic symptoms and cultural identity. Another limitation is that the survey was cross-sectional which impedes the ability to examine trends over time in somatic symptoms reporting and I was unable to make causal conclusions on how the focal predictors may be associated with trajectories of child somatic symptoms. Lastly, the current study did not comprehensively assess child health and medical problems that may influence the nature of the somatic symptoms (i.e., medically explained or medically unexplained). Moreover, common symptoms related to COVID-19 (e.g., chest pain, difficulty breathing) overlap with somatic symptoms and I was unable to tease the two apart due to lack of data on current health conditions for the child.

As two out of the three predictor measures were reported in a retrospective fashion (i.e., change in parent-child conflict and changes in social and family contacts) there are potential biases to highlight. Social desirability bias and mood-congruent bias could have impacted reporting and findings in the current study. The former could impact reporting and findings as caregivers may not want to be seen in an unfavorable light when reporting conflict. Caregivers in the current study endorsed higher levels of familism, and in emphasizing family harmony and well-being, they may not want to report their family in a negative light. Also, for the latter, depending on the mood caregivers were in at the time of completing the survey, it may have influenced their view on how positive or negative their interactions or quality of relationships were for them and their child. In stressful moments, stressful memories may come to mind and

influence negative reporting. Alternatively, in relaxed moments, positive memories may come to mind and influence positive reporting. Findings must be interpreted with caution as it is not an accurate representation of how family and social dynamics were at the time they were reporting on (i.e., beginning of the pandemic) to when they were reporting (i.e., 2 years post beginning of the pandemic). Limitations notwithstanding, the current study can help to further extend our understanding on how culture and family dynamics predict the prevalence of somatic symptoms within Latinx children.

Future Directions

Future studies would benefit by purposeful sampling to ensure a wide range of variability of somatic symptoms and distress associated with them within MO youth (e.g., schools, clinics, broader communities). On that note, examining potential reinforcers by parents or other family members on child somatic symptoms is also essential. Youth self-report of somatic symptoms would be essential in capturing this information. With that said, it will be important for researchers to compare discrepancies, if any, on parent and youth report of their somatic symptoms and cultural values orientations. Furthermore, researchers can include more cultural measures to differentiate between various cultural attitudes (eg., *respeto* and *simpatia*) and cultural behaviors (e.g., assistance behaviors), as they predict different trends in somatic symptoms and other mental health outcomes (Lara, 2021). For instance, *respeto* was associated with decreases in somatic symptoms while *simpatia* had the opposite effect among Latinx college students (Lara, 2021).

Moreover, including comprehensive assessments of physical and psychological symptoms for children with SSD as well as incorporating a multidisciplinary approach

with PCPs and mental health providers will be essential. For instance, children with complex regional pain syndrome (CRPS) type I, a neuropathic syndrome that affects at least one extremity and motor function, and has no clear etiology, reported higher pain intensity and more recent onset of pain compared to children with headaches, abdominal pain, and back pain (Logan et al., 2013). They also reported more somatic symptoms and functional disability yet levels of depression and anxiety were similar to controls. As such is the case with adults with high levels of somatic symptoms (Creed et al., 2012), pediatric populations with CRPS would most benefit from being treated from a biopsychosocial framework, addressing the multifactorial aspects of the complex condition and inform treatment (Logan et al., 2013). There is notable variability in the symptoms of children who exhibit CRPS and no singular treatment approach fits all.

Finally, replicating these findings in longitudinal studies would be essential to observe if parental familism values and change in parent-child conflict over time still remain significant predictors of child somatic symptoms. In addition, my sample was exclusively composed of MO caregivers and extending these findings to different ethnic Latinx groups (e.g., Colombian, Cuban, Puerto Rican) will allow researchers to compare and examine generalizability among different Latinx groups in the U.S.

Implications

From a research perspective, these results will inform how our field develops measures for somatic symptoms for Latinx families, keeping in mind how contextual factors and family well-being influence child somatic symptoms. Specifically, examining MO families from low-resource households or communities is an important focus as

economic household distress was a robust predictor of somatic symptoms. From a clinical perspective, these findings may have important implications for healthcare for youth presenting with somatic symptoms. Engaging medical providers in developing culturally-based screeners and encouraging greater consideration of screeners for psychological services can inform integrative behavioral healthcare practices. Specifically, approaching interventions for youth with somatic symptoms holistically can provide a clearer picture on underlying factors for their somatic symptoms and help target them. Since physical and psychological symptoms often overlap, it will be important for caregivers and primary care providers to identify concurrent mental health symptoms with comprehensive screenings to capture overall well-being. As change in parent-child conflict during the pandemic revealed unique risks on youth somatic symptoms, conflict can be an important target for culturally-adapted, family-based psychological and behavioral health interventions.

Conclusions

Results indicate the importance of adopting a strengths-based approach and resilience framework focusing on enhancing promotive factors (i.e., familism-support) rather than reducing exposure to risk or deficits in Latinx youth. This is especially relevant in examining within-group variability of somatic symptoms for MO youth. Familism and change in parent-child conflict as significant predictors of the variability of somatic symptoms within MO youth. These results are noteworthy within the context of COVID-19, as MO families have been disproportionately impacted by the pandemic, including exacerbation of somatic symptoms. The current study indicates that prominent cultural

values and emphasis on family relationships are a strength for MO families, thereby increasing our knowledge of unique risk and protective, and promotive factors on MO youth somatic symptoms.

CHAPTER 5

REFERENCES

Acosta, A. M., Garg, S., Pham, H., Whitaker, M., Anglin, O., O'Halloran, A., ... & Havers, F. P. (2021). Racial and ethnic disparities in rates of COVID-19–associated hospitalization, intensive care unit admission, and in-hospital death in the United States from March 2020 to February 2021. *JAMA network open*, *4*(10), e2130479-e2130479.

Alegría, M., Canino, G., Shrout, P. E., Woo, M., Duan, N., Vila, D., Torres, M., Chen, C., & Meng, X.-L. (2008$_a$). Prevalence of Mental Illness in Immigrant and Non-Immigrant U.S. Latino Groups. *American Journal of Psychiatry*, *165*(3), 359–369. https://doi.org/10.1176/appi.ajp.2007.07040704

Alegría, M., Chatterji, P., Wells, K., Cao, Z., Chen, C., Takeuchi, D., Jackson, J., & Meng, X.-L. (2008$_b$). Disparity in Depression Treatment Among Racial and Ethnic Minority Populations in the United States. *Psychiatric Services*, *59*(11), 1264–1272. https://doi.org/10.1176/ps.2008.59.11.1264

Alegría, M., Sribney, W., Woo, M., Torres, M., & Guarnaccia, P. (2007). Looking Beyond Nativity: The Relation of Age of Immigration, Length of Residence, and Birth Cohorts to the Risk of Onset of Psychiatric Disorders for Latinos. *Research in Human Development*, *4*(1–2), 19–47. https://doi.org/10.1080/15427600701480980

Alegría, M., & Woo, M. (2009). Conceptual issues in Latino mental health. In *Handbook of U.S. Latino psychology: Developmental and community-based perspectives.* (pp. 15–30). Sage Publications, Inc.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596

Aro, H. (1987). Life stress and psychosomatic symptoms among 14 to 16-year old Finnish adolescents. *Psychological Medicine*, *17*(1), 191-201.

Atkins, D. C., & Gallop, R. J. (2007). Rethinking how family researchers model infrequent outcomes: a tutorial on count regression and zero-inflated models. *Journal of family psychology*, *21*(4), 726.

Bauer, A. M., Chen, C. N., & Alegría, M. (2012). Associations of physical symptoms with perceived need for and use of mental health services among Latino and Asian Americans. *Social Science & Medicine*, *75*(6), 1128-1133.

Beck, J. E. (2008). A Developmental Perspective on Functional Somatic Symptoms. *Journal of Pediatric Psychology*, *33*(5), 547–562. https://doi.org/10.1093/jpepsy/jsm113

Behar-Zusman, V., Chavez, J. V., & Gattamorta, K. (2020). Developing a measure of the impact of COVID-19 social distancing on household conflict and cohesion. *Family process*, 59(3), 1045-1059.

Bollyky, T. J., Castro, E., Aravkin, A. Y., Bhangdia, K., Dalos, J., Hulland, E. N., ... & Dieleman, J. L. (2023). Assessing COVID-19 pandemic policies and behaviours and their economic and educational trade-offs across US states from Jan 1, 2020, to July 31, 2022: an observational analysis. *The Lancet*, *401*(10385), 1341-1360.

Borst, J. B. (2015). A systematic review of the effects of family conflict: Focusing on divorce, infidelity, and attachment style.

Bowen, M. (1961). The family as the unit of study and treatment: Workshop, 1959: 1. Family psychotherapy. *American Journal of Orthopsychiatry*, *31*(1), 40.

Boyer, C. J., Ugarte, E., Buhler-Wassmann, A. C., & Hibel, L. C. (2023). Latina mothers navigating COVID -19: Within- and between-family stress processes over time. *Family Relations*, *72*(1), 23–39. https://doi.org/10.1111/fare.12748

Bronfenbrenner, U., & Morris, P. A. (2006). The Bioecological Model of Human Development. In R. M. Lerner & W. Damon (Eds.), Handbook of child psychology: Theoretical models of human development (pp. 793–828). John Wiley & Sons, Inc.

Brown, R. J., Schrag, A., & Trimble, M. R. (2005). Dissociation, childhood interpersonal trauma, and family functioning in patients with somatization disorder. *American Journal of Psychiatry*, *162*(5), 899-905.Bucay-Harari, L., Page, K. R., Krawczyk, N., Robles, Y. P., & Castillo-Salgado, C. (2020). Mental health needs of an emerging Latino community. *The journal of behavioral health services & research*, *47*, 388-398.

Cahill, K. M., Updegraff, K. A., Causadias, J. M., & Korous, K. M. (2021). Familism values and adjustment among Hispanic/Latino individuals: A systematic review and meta-analysis. *Psychological Bulletin*, *147*(9), 947–985. https://doi.org/10.1037/bul0000336

Canino, I. A., Rubio-Stipec, M., Canino, G., & Escobar, J. I. (1992). Functional somatic symptoms: A cross-ethnic comparison. *American Journal of Orthopsychiatry*, 62(4), 605-612.

Cardoso, J. B., & Thompson, S. J. (2010). Common themes of resilience among Latino immigrant families: A systematic review of the literature. Families in Society, 91(3), 257–265. https://doi.org/10.1606/1044-3894.4003

Causadias, J. M. (2013). A roadmap for the integration of culture into developmental psychopathology. *Development and Psychopathology*, *25*(4pt2), 1375-1398.

Causadias, J. M., & Cicchetti, D. (2018). Cultural development and psychopathology. *Development and Psychopathology*, *30*(5), 1549-1555.

Centers for Disease Control and Prevention. (April 29). *COVID Data Tracker*. https://covid.cdc.gov/covid-data-tracker

Chen, E., Brody, G. H., & Miller, G. E. (2017). Childhood close family relationships and health. *American Psychologist*, 72, 555–566.

Colby, S. L., & Ortman, J. M. (2015). Projections of the Size and Composition of the US Population: 2014 to 2060. Population Estimates and Projections. Current Population Reports. P25-1143. *US Census Bureau*.

Corona, R., Lefkowitz, E. S., Sigman, M., & Romo, L. F. (2005). Latino adolescents' adjustment, maternal depressive symptoms, and the mother-adolescent relationship. *Family Relations*, *54*(3), 386-399.

Cortés-García, L., Hernandez Ortiz, J., Asim, N., Sales, M., Villareal, R., Penner, F., & Sharp, C. (2021, September). COVID-19 conversations: A qualitative study of majority Hispanic/Latinx youth experiences during early stages of the pandemic. *In Child & Youth Care Forum* (pp. 1-25). Springer US.

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual review of psychology*, 48(1), 243-267.

Creed, F. H., Davies, I., Jackson, J., Littlewood, A., Chew-Graham, C., Tomenson, B., Macfarlane, G., Barsky, A., Katon, W., & McBeth, J. (2012). The epidemiology of multiple somatic symptoms. *Journal of Psychosomatic Research*, *72*(4), 311–317. https://doi.org/10.1016/j.jpsychores.2012.01.009

Creed, F., Guthrie, E., Fink, P., Henningsen, P., Rief, W., Sharpe, M., & White, P. (2010). Is there a better term than "medically unexplained symptoms"?. *Journal of psychosomatic research*, *68*(1), 5-8.

De Gucht, V., & Fischler, B. (2002). Somatization: a critical review of conceptual and methodological issues. *Psychosomatics*, 43(1), 1-9.

De Gucht, V., & Maes, S. (2006). Explaining medically unexplained symptoms: toward a multidimensional, theory-based approach to somatization. *Journal of psychosomatic research*, *60*(4), 349-352.

Der Sarkissian, A., Sharkey, J. D., & Cerezo, A. (2022). Mental health stigma, community support, and somatic complaints among Latinx youth. *Children and*

Youth Services Review, *143*, 106699. https://doi.org/10.1016/j.childyouth.2022.106699

Diaz, C. J., & Niño, M. (2019). Familism and the Hispanic health advantage: The role of immigrant status. *Journal of Health and Social Behavior*, *60*(3), 274-290.

Dimsdale, J., Creed, F., & DSM-V Workgroup on Somatic Symptom Disorders. (2009). The proposed diagnosis of somatic symptom disorders in DSM-V to replace somatoform disorders in DSM-IV—a preliminary report. *Journal of psychosomatic research*, *66*(6), 473-476.

Doane, L. D., Sladek, M. R., Breitenstein, R. S., Park, H., Castro, S. A., & Kennedy, J. L. (2018). Cultural neurobiology and the family: Evidence from the daily lives of Latino adolescents. *Development and Psychopathology*, *30*(5), 1779-1796.

Driscoll, M. A., Higgins, D. M., Seng, E. K., Buta, E., Goulet, J. L., Heapy, A. A. et al. (2015). Trauma, social support, family conflict, and chronic pain in recent service veterans: does gender matter? *Pain Medicine*, 16, 1101–1111.

Ernst, A. R., Routh, D. K., & Harper, D. C. (1984). Abdominal pain in children and symptoms of somatization disorder. Journal of Pediatric Psychology, 9, 77–86.

Escobar, J. I., Cook, B., Chen, C.-N., Gara, M. A., Alegría, M., Interian, A., & Diaz, E. (2010). Whether medically unexplained or not, three or more concurrent somatic symptoms predict psychopathology and service use in community populations. *Journal of Psychosomatic Research*, *69*(1), 1–8. https://doi.org/10.1016/j.jpsychores.2010.01.001

Escobar, J. I., Golding, J. M., Hough, R. L., Karno, M., Burnam, M. A., & Wells, K. B. (1987). Somatization in the community: relationship to disability and use of services. *American Journal of Public Health*, *77*(7), 837-840.

Escobar, J. I., Waitzkin, H., Silver, R. C., Gara, M., & Holman, A. (1998). Abridged somatization: a study in primary care. *Psychosomatic medicine*, *60*(4), 466-472.

Escovar, E. L., Craske, M., Roy-Byrne, P., Stein, M. B., Sullivan, G., Sherbourne, C. D., Bystritsky, A., & Chavira, D. A. (2018). Cultural influences on mental health symptoms in a primary care sample of Latinx patients. *Journal of Anxiety Disorders*, *55*, 39–47. https://doi.org/10.1016/j.janxdis.2018.03.005

Falicov, C. J. (2014). *Latino families in therapy* (2nd ed.). New York: Guilford Press.

Falicov, C., Niño, A., & D'Urso, S. (2020). Expanding possibilities: Flexibility and solidarity with under-resourced immigrant families during the COVID-19 pandemic. *Family process*, *59*(3), 865-882.

Fang, R. (2013). *Zero-inflated negative binomial (ZINB) regression model for over-dispersed count data with excess zeros and repeated measures, an application to human microbiota sequence data* (Doctoral dissertation, University of Colorado).

Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A frame-work for understanding healthy development in the face of risk. *Annual Review of Public Health*,26,399–419.

Fitzpatrick, K. M., Harris, C., & Drawve, G. (2020). Fear of COVID-19 and the mental health consequences in America. Psychological Trauma: Theory, Research, Practice, and Policy, 12(S1), S17–S21. https:// doi.org/10.1037/tra0000924

Fuligni, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents with Asian, Latin American, and European backgrounds. *Child development*, *70*(4), 1030-1044.

Fuligni, A. J., & Zhang, W. (2004). Attitudes toward family obligation among adolescents in contemporary urban and rural China. *Child development*, *75*(1), 180-192.

Garcini, L. M., Rosenfeld, J., Kneese, G., Bondurant, R. G., & Kanzler, K. E. (2022). Dealing with distress from the COVID-19 pandemic: Mental health stressors and coping strategies in vulnerable latinx communities. *Health & Social Care in the Community*, *30*(1), 284–294. https://doi.org/10.1111/hsc.13402

Garralda, M. E., & Rask, C. U. (2015). Somatoform and related disorders. In A. Thapar, D. S. Pine, J. F. Leckman, S. Scott, M. J. Snowling, & E. Taylor (Eds.), *Rutter's Child and Adolescent Psychiatry* (pp. 1035–1054). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118381953.ch72

Geist, R., Weinstein, M., Walker, L., & Campo, J. V. (2008). Medically unexplained symptoms in young people: the doctor's dilemma. *Paediatrics & Child Health*, *13*(6), 487-491.

Gilleland, J., Suveg, C., Jacob, M. L., & Thomassin, K. (2009). Understanding the medically unexplained: emotional and familial influences on children's somatic functioning. *Child: care, health and development*, 35(3), 383-390.

Ginsburg, G. S., Riddle, M. A., & Davies, M. (2006). Somatic symptoms in children and adolescents with anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *45*(10), 1179-1187.

Gledhill, J., & Elena Garralda, M. (2006). Functional symptoms and somatoform disorders in children and adolescents: the role of standardised measures in assessment. *Child and Adolescent Mental Health*, 11(4), 208-214.

Gonzales, N. A., Knight, G. P., Gunn, H. J., Tein, J. Y., Tanaka, R., & White, R. M. (2018). Intergenerational gaps in Mexican American values trajectories: Associations with parent–adolescent conflict and adolescent psychopathology. *Development and Psychopathology*, *30*(5), 1611-1627.

Goyal, P., Choi, J. J., Pinheiro, L. C., Schenck, E. J., Chen, R., Jabri, A., ... & Safford, M. M. (2020). Clinical characteristics of Covid-19 in New York city. *New England Journal of Medicine*, 382(24), 2372-2374.

Guarnaccia, P. J., DeLaCancela, V., & Carrillo, E. (1989). The multiple meanings of ataques de nervios in the Latino community. *Medical Anthropology*, 11(1), 47-62.

Guarnaccia, P. J., Lewis-Fernandez, R., Martinez Pincay, I., Shrout, P., Guo, J., Torres, M., Canino, G., & Alegria, M. (2010). Ataque de nervios as a marker of social and psychiatric vulnerability: results from the NLAAS. *International journal of social psychiatry*, *56*(3), 298-309.

Guo, M., Li, S., Liu, J., & Sun, F. (2015). Family Relations, Social Connections, and Mental Health Among Latino and Asian Older Adults. *Research on Aging*, *37*(2), 123–147. https://doi.org/10.1177/0164027514523298

Guze, S. B. (1975). The validity and significance of the clinical diagnosis of hysteria (Briquet's Syndrome). American Journal of Psychiatry, 137, 138–141.

Halvorson, M. A., McCabe, C. J., Kim, D. S., Cao, X., & King, K. M. (2022). Making sense of some odd ratios: A tutorial and improvements to present practices in reporting and visualizing quantities of interest for binary and count outcome models. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors*, *36*(3), 284–295. https://doi.org/10.1037/adb0000669

Hawes, M. T., Szenczy, A. K., Klein, D. N., Hajcak, G., & Nelson, B. D. (2022). Increases in depression and anxiety symptoms in adolescents and young adults during the COVID-19 pandemic. *Psychological Medicine*, *52*(14), 3222–3230. https://doi.org/10.1017/S0033291720005358

He, M., Cabrera, N., Renteria, J., Chen, Y., Alonso, A., McDorman, S. A., Kerlow, M. A., & Reich, S. M. (2021). Family Functioning in the Time of COVID-19 Among Economically Vulnerable Families: Risks and Protective Factors. *Frontiers in Psychology*, *12*, 730447. https://doi.org/10.3389/fpsyg.2021.730447

Hibel, L. C., Boyer, C. J., Buhler-Wassmann, A. C., & Shaw, B. J. (2021). The psychological and economic toll of the COVID-19 pandemic on Latina mothers in primarily low-income essential worker families. *Traumatology*, *27*(1), 40–47. https://doi.org/10.1037/trm0000293

Hilbe, J. M. (2010). Creating synthetic discrete-response regression models. *The stata journal*, *10*(1), 104-124.

Hinton, D. E., Lewis-Fernández, R., & Pollack, M. H. (2009). A model of the generation of ataque de nervios: The role of fear of negative affect and fear of arousal symptoms. *CNS Neuroscience & Therapeutics*, *15*(3), 264-275.

Hoencamp, E., Haffmans, P. M. J., Duivenvoorden, H., Knegtering, H., & Dijken, W. A. (1994). Predictors of (non-) response in depressed outpatients treated with a three-phase sequential medication strategy. *Journal of Affective Disorders*, *31*(4), 235–246. https://doi.org/10.1016/0165-0327(94)90099-X

Houtveen, J. H., & van Doornen, L. J. P. (2007). Medically unexplained symptoms and between-group differences in 24-h ambulatory recording of stress physiology. *Biological Psychology*, *76*(3), 239–249. https://doi.org/10.1016/j.biopsycho.2007.08.005

Hotopf, M. (2004). Preventing somatization. *Psychological Medicine*, 34(2), 195-198.

Howard, J. Eng (2022) Arizona and COVID-19: Lessons Learned After 30 Months. *Medical & Clinical Research 7 (8): 01*, *5*.

Hu, T., Zhang, D., Wang, J., Mistry, R., Ran, G., & Wang, X. (2014). Relation between Emotion Regulation and Mental Health: A Meta-Analysis Review. *Psychological Reports*, *114*(2), 341–362. https://doi.org/10.2466/03.20.PR0.114k22w4

Hulgaard, D., Dehlholm-Lambertsen, G., & Rask, C. U. (2019). Family-based interventions for children and adolescents with functional somatic symptoms: A systematic review. Journal of Family Therapy, 41, 4–28.

Ioannidis, J.P. (2022). The end of the COVID-19 pandemic." *European journal of clinical investigation*, 52(6), e13782.

Jacobson, M., Chang, T. Y., Shah, M., Pramanik, R., & Shah, S. B. (2021). Racial and ethnic disparities in SARS-CoV-2 testing and COVID-19 outcomes in a Medicaid managed care cohort. *American Journal of Preventive Medicine*, *61*(5), 644-651.

Jamieson, T., Caldwell, D., Gomez-Aguinaga, B., & Doña-Reveco, C. (2021). Race, ethnicity, nativity and perceptions of health risk during the COVID-19 pandemic in the US. *International journal of environmental research and public health*, *18*(21), 11113.

Janicke, D. M., Finney, J. W., & Riley, A. W. (2001). Children's health care use a prospective investigation of factors related to care-seeking. *Medical care*, 990-1001.

Karaca, S. E. M. R. A., Celebi, G., Bilen, Z., Ozvatan, M., Timur, I., Unsal, G., ... & Oz, Y. (2015). Somatic Symptoms in Secondary School Students and Parental Attitudes. *Journal of Psychiatric Nursing*, *6*(3).

Katon, W., Lin, E., Von Korff, M., Russo, J., Lipscomb, P., & Bush, T. (1991). Somatization: a spectrum of severity. *The American journal of psychiatry*, *148*(1), 34-40.

Kline, C. L., Shamshair, S., Kullgren, K. A., Leber, S. M., & Malas, N. (2023). A review of the impact of sociodemographic factors on the assessment and management of pediatric somatic symptom and related disorders. *Journal of the Academy of Consultation-Liaison Psychiatry*, *64*(1), 58-64.

Knight, G. P., Carlo, G., Mahrer, N. E., & Davis, A. N. (2016). The Socialization of Culturally Related Values and Prosocial Tendencies Among Mexican-American Adolescents. *Child Development*, *87*(6), 1758–1771. https://doi.org/10.1111/cdev.12634

Knight, G. P., Gonzales, N. A., Saenz, D. S., Bonds, D. D., Germán, M., Deardorff, J., Roosav, M. W., & Updegraff, K. A. (2010). The Mexican American Cultural Values Scale for Adolescents and Adults. *The Journal of Early Adolescence*, *30*(3), 444–481. https://doi.org/10.1177/0272431609338178

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2002). The PHQ-15: validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic medicine*, 64(2), 258-266.

Kroenke, K., Spitzer, R. L., DeGruy, F. V., Hahn, S. R., Linzer, M., Williams, J. B., ... & Davies, M. (1997). Multisomatoform disorder: an alternative to undifferentiated somatoform disorder for the somatizing patient in primary care. *Archives of General Psychiatry*, *54*(4), 352-358.

Kroenke, K., Spitzer, R. L., Williams, J. B., Linzer, M., Hahn, S. R., FV 3rd, D., & Brody, D. (1994). Physical symptoms in primary care. Predictors of psychiatric disorders and functional impairment. *Archives of family medicine*, *3*(9), 774-779.

Kroenke K, Swindle R. Cognitive–behavioral therapy for somatization and symptom syndromes: a critical review of controlled clinical trials. [Review] [57 refs] Psychother Psychosom July 2000;69:205–15.

Kuhlberg, J. A., Peña, J. B., & Zayas, L. H. (2010). Familism, parent-adolescent conflict, self-esteem, internalizing behaviors and suicide attempts among adolescent Latinas. *Child Psychiatry & Human Development*, *41*, 425-440.

Kuperman, V. (2022). A cross-linguistic study of spatial parameters of eye-movement control during reading. *Journal of Experimental Psychology: Human Perception and Performance*, 48(11), 1213.

Kurlansik, S. L., & Maffei, M. S. (2016). *Somatic Symptom Disorder*. *93*(1).

Lamis, D. A., & Jahn, D. R. (2013). Parent–Child Conflict and Suicide Rumination in College Students: The Mediating Roles of Depressive Symptoms and Anxiety Sensitivity. *Journal of American College Health*, *61*(2), 106–113. https://doi.org/10.1080/07448481.2012.754758

Lara, J. (2021). *The Effects of Ethnic Identity and Family Obligations on Somatic Symptoms Among Latinx Emerging Adults* (Order No. 28412408). Available from ProQuest Dissertations & Theses Global. (2512360074). http://login.ezproxy1.lib.asu.edu/login?url=https://www.proquest.com/dissertations-theses/effects-ethnic-identity-family-obligations-on/docview/2512360074/se-2

Leathers, C., Kroenke, K., Flanagan, M., Diaz, S., Gruber, R., Tran, G., & Driver, D. (2021). Somatic, anxiety, and depressive (SAD) symptoms in young adult Latinx immigrants: Prevalence and predictors. *Journal of Immigrant and Minority Health*, *23*(5), 956-964.

Leiknes, K. A., Finset, A., Moum, T., & Sandanger, I. (2006). Methodological issues concerning lifetime medically unexplained and medically explained symptoms of the Composite International Diagnostic Interview: a prospective 11-year follow-up study. *Journal of psychosomatic research*, *61*(2), 169-179.

Lindley, K. J., Glaser, D., & Milla, P. J. (2005). Consumerism in healthcare can be detrimental to child health: lessons from children with functional abdominal pain. *Archives of disease in childhood*, 90(4), 335-337.

Little, P., Somerville, J., Williamson, I., Warner, G., Moore, M., Wiles, R., George, S., Smith, A., & Peveler, R. (2001). Family influences in a cross-sectional survey of higher child attendance. *British Journal of General Practice*, *51*(473), 977-984.

Logan, D. E., Williams, S. E., Carullo, V. P., Claar, R. L., Bruehl, S., & Berde, C. B. (2013). Children and Adolescents with Complex Regional Pain Syndrome: More Psychologically Distressed than Other Children in Pain? *Pain Research and Management*, *18*(2), 87–93. https://doi.org/10.1155/2013/964352

López, S. R., Barrio, C., Kopelowicz, A., & Vega, W. A. (2012). From documenting to eliminating disparities in mental health care for Latinos. *American Psychologist*, *67*(7), 511–523. https://doi.org/10.1037/a0029737

Lopez, C., Bergren, M. D., & Painter, S. G. (2008). Latino disparities in child mental health services. *Journal of Child and Adolescent Psychiatric Nursing*, *21*(3), 137-145.

Lorenzo-Blanco, E. I., Meca, A., Unger, J. B., Romero, A., Gonzales-Backen, M., Piña-Watson, B., ... & Schwartz, S. J. (2016). Latino parent acculturation stress: Longitudinal effects on family functioning and youth emotional and behavioral health. *Journal of Family Psychology*, *30*(8), 966.

Luck, Anneliese N., et al. "The unequal burden of the Covid-19 pandemic: Capturing racial/ethnic disparities in US cause-specific mortality." *SSM-Population Health 17* (2022): 101012.

Malas, N., Ortiz-Aguayo, R., Giles, L., & Ibeziako, P. (2017). Pediatric Somatic Symptom Disorders. *Current Psychiatry Reports*, *19*(2), 11. https://doi.org/10.1007/s11920-017-0760-3

McCabe, C. J., Halvorson, M. A., King, K. M., Cao, X., & Kim, D. S. (2022). Interpreting Interaction Effects in Generalized Linear Models of Nonlinear Probabilities and Counts. *Multivariate behavioral research*, *57*(2-3), 243–263. https://doi.org/10.1080/00273171.2020.1868966

McGinty, E. E., Presskreischer, R., Han, H., & Barry, C. L. (2020). Psychological Distress and Loneliness Reported by US Adults in 2018 and April 2020. JAMA, 324(1), 93–94. https://doi.org/10.1001/ jama.2020.9740

McLaughlin, K. A., Hilt, L. M., & Nolen-Hoeksema, S. (2007). Racial/Ethnic Differences in Internalizing and Externalizing Symptoms in Adolescents. *Journal of Abnormal Child Psychology*, *35*(5), 801–816. https://doi.org/10.1007/s10802-007-9128-1

Milan, S., & Wortel, S. (2015). Family obligation values as a protective and vulnerability factor among low-income adolescent girls. *Journal of youth and adolescence*, *44*, 1183-1193.

Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child development*, 289-302.

Nair, R. L., Roche, K. M., & White, R. M. (2018). Acculturation gap distress among Latino youth: Prospective links to family processes and youth depressive symptoms, alcohol use, and academic performance. *Journal of youth and adolescence*, *47*, 105-120.

Nakao, M., Fricchione, G., Zuttermeister, P. C., Myers, P., Barsky, A. J., & Benson, H. (2001). Effects of Gender and Marital Status on Somatic Symptoms of Patients Attending a Mind/Body Medicine Clinic. *Behavioral Medicine*, *26*(4), 159–168. https://doi.org/10.1080/08964280109595763

Nimnuan, C., Rabe-Hesketh, S., Wessely, S., & Hotopf, M. (2001). How many functional somatic syndromes?. *Journal of psychosomatic research*, 51(4), 549-557.

O'Malley, P. G., Jackson, J. L., Santoro, J., Tomkins, G., Balden, E., & Kroenke, K. (1999). Antidepressant therapy for unexplained symptoms and symptom syndromes. Database of Abstracts of Reviews of Effects (DARE): Quality-assessed Reviews [Internet].

Organista, K. C. (2007). Solving Latino psychosocial and health problems: Theory, practice, and populations. John Wiley & Sons.

Passel, J. S. (2011). Demography of Immigrant Youth: Past, Present, and Future. *The Future of Children*, *21*(1), 19–41. https://doi.org/10.1353/foc.2011.0001

Perilla, J. L., Norris, F. H., & Lavizzo, E. A. (2002). Ethnicity, culture, and disaster response: Identifying and explaining ethnic differences in PTSD six months after Hurricane Andrew. Journal of social and clinical psychology, 21(1), 20-45.

Pina, A. A., & Silverman, W. K. (2004). Clinical Phenomenology, Somatic Symptoms, and Distress in Hispanic/Latino and European American Youths With Anxiety Disorders. *Journal of Clinical Child & Adolescent Psychology*, *33*(2), 227–236. https://doi.org/10.1207/s15374424jccp3302_3

Piña-Watson, B., Ojeda, L., Castellon, N. E., & Dornhecker, M. (2013). Familismo, ethnic identity, and bicultural stress as predictors of Mexican American adolescents' positive psychological functioning. *Journal of Latina/o Psychology*, *1*(4), 204.

Pole, N., Gone, J. P., & Kulkarni, M. (2008). Posttraumatic stress disorder among ethnoracial minorities in the United States. *Clinical Psychology: Science and Practice*, 15(1), 35.

Pole, N., Best, S. R., Weiss, D. S., Metzler, T., Liberman, A. M., Fagan, J., & Marmar, C. R. (2001). Effects of gender and ethnicity on duty-related posttraumatic stress symptoms among urban police officers. *The Journal of nervous and mental disease*, 189(7), 442-448.

Prime, H., Wade, M., & Browne, D. T. (2020). Risk and resilience in family well-being during the COVID-19 pandemic. *American Psychologist*, *75*(5), 631–643. https://doi.org/10.1037/amp0000660

Rastogi, M., Massey-Hastings, N., & Wieling, E. (2012). Barriers to seeking mental health services in the Latino/a community: A qualitative analysis. *Journal of Systemic Therapies*, *31*(4), 1-17.

Reichman, J. S. (1997). Language-specific response patterns and subjective assessment of health: A sociolinguistic analysis. Hispanic Journal of Behavioral Sciences, 19, 353–368.

Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: family social environments and the mental and physical health of offspring. Psychological bulletin, 128(2), 330.

Rief, W., & Rojas, G. (2007). Stability of somatoform symptoms—implications for classification. *Psychosomatic Medicine*, *69*(9), 864-869.

Riley, A. R., Chen, Y. H., Matthay, E. C., Glymour, M. M., Torres, J. M., Fernandez, A., & Bibbins-Domingo, K. (2021). Excess mortality among latino people in California during the COVID-19 pandemic. SSMPopulation Health, 100860. https://doi.org/10.1016/j.ssmph.2021.100860

Rutter, M. (1987). Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry*, 57, 316–331.

Schulte, I. E., & Petermann, F. (2011). Familial Risk Factors for the Development of Somatoform Symptoms and Disorders in Children and Adolescents: A Systematic Review. *Child Psychiatry & Human Development*, *42*(5), 569–583. https://doi.org/10.1007/s10578-011-0233-6

Scott, S. R., Rivera, K. M., Rushing, E., Manczak, E. M., Rozek, C. S., & Doom, J. R. (2021). "I Hate This": A Qualitative Analysis of Adolescents' Self-Reported Challenges During the COVID-19 Pandemic. *Journal of Adolescent Health*, *68*(2), 262–269. https://doi.org/10.1016/j.jadohealth.2020.11.010

Senger, K., Heider, J., Kleinstäuber, M., Sehlbrede, M., Witthöft, M., & Schröder, A. (2022). Network Analysis of Persistent Somatic Symptoms in Two Clinical Patient Samples. *Psychosomatic Medicine*, *84*(1), 74–85. https://doi.org/10.1097/PSY.0000000000000999

Sellbom, M., Forbush, K. T., Gould, S. R., Markon, K. E., Watson, D., & Witthöft, M. (2022). HiTOP Assessment of the Somatoform Spectrum and Eating Disorders. *Assessment*, *29*(1), 62–74. https://doi.org/10.1177/10731911211020825

Shonkoff, J. P., Boyce, W. T., & McEwen, B. S. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities building a new framework for health promotion and disease prevention. *Journal of the American Medical Association*, 301, 2252.

Simon, G., Gater, R., Kisely, S., & Piccinelli, M. (1996). Somatic Symptoms of Distress: An International Primary Care Study. *Psychosomatic Medicine*, *58*(5), 481–488. https://doi.org/10.1097/00006842-199609000-00010

Sluzki, C. E. (2008). Migration and the disruption of the social network. In M. McGoldrick & K. V. Hardy (Eds.), *Re-visioning family therapy: Race, culture, and gender in clinical practice* (2nd ed., pp. 39–47). New York: Guilford Press.

Stein, G. L., Mejia, Y., Gonzalez, L. M., Kiang, L., & Supple, A. J. (2020). Familism in action in an emerging immigrant community: An examination of indirect effects in early adolescence. *Developmental Psychology*, *56*(8), 1475–1483. https://doi.org/10.1037/dev0000791

Stone, A. L., & Wilson, A. C. (2016). Transmission of risk from parents with chronic pain to offspring: An integrative conceptual model. Pain, 157, 2628–2639.

Sturmberg, J. P., Martin, C. M., & Katerndahl, D. A. (2014). Systems and complexity thinking in the general practice literature: An integrative, historical narrative review. Annals of Family Medicine, 12, 66–74

Tanaka, A., Raishevich, N., & Scarpa, A. (2010). Family Conflict and Childhood Aggression: The Role of Child Anxiety. *Journal of Interpersonal Violence*, *25*(11), 2127–2143. https://doi.org/10.1177/0886260509354516

Telzer, E. H., Gonzales, N., & Fuligni, A. J. (2014). Family Obligation Values and Family Assistance Behaviors: Protective and Risk Factors for Mexican–American Adolescents' Substance Use. *Journal of Youth and Adolescence*, *43*(2), 270–283. https://doi.org/10.1007/s10964-013-9941-5

Terre, L., & Ghiselli, W. (1997). A developmental perspective on family risk factors in somatization. *Journal of Psychosomatic Research*, *42*(2), 197-208.

Thompson, B. L., Waltz, J., Croyle, K., & Pepper, A. C. (2007). Trait meta-mood and affect as predictors of somatic symptoms and life satisfaction. *Personality and individual Differences*, *43*(7), 1786-1795.

Trucco, E. M., Fallah-Sohy, N., Hartmann, S. A., Cristello, J. V., Comer, J. S., & Sutherland, M. T. (2022). The impact of COVID-19 experiences on adolescent internalizing problems and substance use among a predominantly Latinx sample. *Journal of Youth and Adolescence*, 51(5), 821-831.

Turco, R., Russo, M., Lenta, S., Apicella, A., Gagliardo, T., Savoia, F., Corona, A. M., De Fazio, F., Bernardo, P., & Tipo, V. (2022). Pediatric emergency care admissions for somatic symptom disorders during the COVID-19 pandemic. *European Journal of Pediatrics*, *182*(2), 957–964. https://doi.org/10.1007/s00431-022-04687-2

Valdez, C. R., Abegglen, J., & Hauser, C. T. (2013). Fortalezas Familiares Program: Building sociocultural and family strengths in Latina women with depression and their families. *Family process*, *52*(3), 378-393.

Van Driel, T. J. W., Hilderink, P. H., Hanssen, D. J. C., De Boer, P., Rosmalen, J. G. M., & Oude Voshaar, R. C. (2018). Assessment of somatization and medically unexplained symptoms in later life. *Assessment*, 25(3), 374-393.

Varela, R. E., Weems, C. F., Berman, S. L., Hensley, L., & de Bernal, M. C. R. (2007). Internalizing Symptoms in Latinos: The Role of Anxiety Sensitivity. *Journal of Youth and Adolescence*, *36*(4), 429–440. https://doi.org/10.1007/s10964-007-9168-4

Varela, R. E., Vernberg, E. M., Sanchez-Sosa, J. J., Riveros, A., Mitchell, M., & Mashunkashey, J. (2004). Anxiety reporting and culturally associated interpretation biases and cognitive schemas: A comparison of Mexican, Mexican American, and European American families. *Journal of Clinical Child and Adolescent Psychology*, 33(2), 237-247.

Vargas, E. D., & Sanchez, G. R. (2020). COVID-19 Is Having a Devastating Impact on the Economic Well-being of Latino Families. Journal of Economics, Race, and Policy, 3(4), 262–269. https://doi. org/10.1007/s41996-020-00071-0

Vega, W. A., Kolody, B., Aguilar-Gaxiola, S., & Catalano, R. (1999). Gaps in service utilization by Mexican Americans with mental health problems. *American Journal of Psychiatry*, *156*(6), 928-934.

Venepalli, N. K., Van Tilburg, M. A., & Whitehead, W. E. (2006). Recurrent abdominal pain: what determines medical consulting behavior?. *Digestive diseases and sciences*, 51, 192-201.

Walker, L. S., Beck, J. E., Garber, J., & Lambert, W. (2009). Children's Somatization Inventory: psychometric properties of the revised form (CSI-24). *Journal of pediatric psychology*, *34*(4), 430-440.

Walker, L. S. (2019). Commentary: Understanding somatic symptoms: From dualism to systems, diagnosis to dimensions, clinical judgement to clinical science. *Journal of Pediatric Psychology*, *44*(7), 862-867.

Watson, J. M., & Kemper, K. J. (1995). Maternal factors and child's health care use. *Social science & medicine*, 40(5), 623-628.

Wei, C., & Kendall, P. C. (2014). Parental Involvement: Contribution to Childhood Anxiety and Its Treatment. *Clinical Child and Family Psychology Review*, *17*(4), 319–339. https://doi.org/10.1007/s10567-014-0170-6

Wileman, L., May, C., & Chew-Graham, C. A. (2002). Medically unexplained symptoms and the problem of power in the primary care consultation: a qualitative study. *Family practice*, *19*(2), 178-182.

Wollburg, E., Voigt, K., Braukhaus, C., Herzog, A., & Löwe, B. (2013). Construct validity and descriptive validity of somatoform disorders in light of proposed changes for the DSM-5. *Journal of Psychosomatic Research*, *74*(1), 18–24. https://doi.org/10.1016/j.jpsychores.2012.09.015

Woodling, C., Wygant, D. B., Umlauf, R. L., & Marek, R. J. (2022). Somatoform's placement and validity in the hierarchical taxonomy of psychopathology (HiTOP). *Psychiatry Research*, *313*, 114593. https://doi.org/10.1016/j.psychres.2022.114593

Zimmerman, M. A., Stoddard, S. A., Eisman, A. B., Caldwell, C. H., Aiyer, S. M., & Miller, A. (2013). Adolescent resilience: Promotive factors that inform prevention. *Child development perspectives*, *7*(4), 215-220.

Zuckerman, B., Stevenson, J., & Bailey, V. (1987). Stomachaches and headaches in a community sample of preschool children. *Pediatrics*, *79*(5), 677-682.

Zvolensky, M. J., Kauffman, B. Y., Shepherd, J. M., Bogiaizian, D., Bakhshaie, J., Viana, A. G., Peraza, N., & Nizio, P. (2021). Pain intensity, pain-related anxiety, and somatic and mental health symptoms: A test among latinx young adults. *Psychology, Health & Medicine*, *26*(3), 289–297. https://doi.org/10.1080/13548506.2020.1764598

Zvolensky, M. J., Kauffman, B. Y., Shepherd, J. M., Viana, A. G., Bogiaizian, D., Rogers, A. H., Bakhshaie, J., & Peraza, N. (2020). Pain-Related Anxiety Among Latinx College Students: Relations to Body Vigilance, Worry, Anxious Arousal, and General Depression. *Journal of Racial and Ethnic Health Disparities*, *7*(3), 498–507. https://doi.org/10.1007/s40615-019-00678-6

CHAPTER 6

TABLES

Table 1.

Frequencies of Demographic Variables

	N	%	*M*	*SD*
Parent Sex (Female)	228	75.70%		
Parent Age			38	8.2
Child Age			11.4	3.4
Child Sex (Female)	156	51.80%		
Survey language				
English	179	59.50%		
Spanish	122	40.50%		
Nativity Status				
Born in the US	184	61.10%		
Born in Mexico	116	38.50%		
Other	1	0.40%		
Married	173	57.40%		
Education				
Less than high school	55	18.10%		
High school or GED	88	29.20%		
Some college	51	16.90%		
College degree	83	27.60%		
Graduate or professional degree	23	7.7%		
Family income			$45,000	4.4

Note. Parent Sex (1 = Female, 2 = Male). Child Sex (1 = Male, 2 = Female). Parent Nativity Status (1 = Male, 2 = Female). Marital status (1 = other, 2= Married). Survey language (English =1, Spanish =2).

Table 2.

Descriptives of Study Variables

Measure	Min	Max	Mean	SD	Skew	Kurtosis
ECHD	0	4	2.66	0.83	-0.34	-0.77
Household composition	2	13	4.28	1.45	1.50	5.34
Familism total	0	4	2.33	0.82	-0.17	-0.36
Familism support	0	4	2.59	0.92	-0.35	-0.51
Familism referent	0	4	2.16	0.91	-0.10	-0.47
Familism obligations	0	4	2.18	0.84	0.05	-0.49
CRISIS parent	-2	2	-0.14	0.79	-0.09	0.48
CRISIS child	-2	2	0.04	0.7	0.20	0.56
ACHES	-2	2	0.07	0.85	-0.32	-0.04
CSSI count	0	24	7.05	7.83	0.93	-0.56

Note. Parent Sex (1 = Female, 2 = Male). Child Sex (1 = Male, 2 = Female). Parent Nativity Status (1 = Male, 2 = Female). Marital status (1 = other, 2= Married). Survey language (English =1, Spanish =2). ECHD = Economic Household Distress

Table 3. *Zero-order correlations*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Parent age															
2. Target child age	0.41***														
3. ECHD	-0.14*	-0.04													
4. Familism-total	0.16**	0.12*	0.06												
5. Familism-support	0.20***	0.14*	0.01	0.91***											
6. Familism-referent	0.11*	0.11	0.07	0.91***	0.72***										
7. Familism-obligations	0.11*	0.08	0.09	0.92***	0.75***	0.80***									
8. CSSI	-0.14*	-0.05	0.25***	-0.10	-0.20***	-0.01	-0.05								
9. ACHES	-0.04	0.02	0.18**	-0.08	-0.10	-0.08	-0.04	0.14*							
10. CRISIS parent	0.07	0.06	-0.04	0.20***	0.22***	0.13*	0.19**	-0.10	-0.03						
11. CRISIS child	0.02	0.03	-0.04	0.14*	0.15*	0.12*	0.09	-0.12*	-0.03	0.61***					
12. Target child sex	-0.01	0.08	-0.02	0.08	0.10	0.08	0.03	-0.01	-0.13*	0.00	-0.05				
13. Parent sex	0.09	0.07	-0.07	-0.04	-0.08	-0.02	0.02	0.08	0.04	-0.10	-0.09	-0.15			
14. Parent nativity status	-0.02	-0.05	-0.05	0.00	0.08	-0.03	-0.07	-0.01	-0.10	0.11	0.14*	0.07	-0.04		
15. Marital status	-0.02	-0.10	-0.10	0.03	0.05	0.01	0.03	0.00	0.05	0.14*	0.19**	-0.05	0.11*	0.23***	
16. Survey language	-0.04	-0.04	-0.07	-0.05	-0.01	-0.05	-0.10	0.15*	-0.14*	0.08	0.09	0.05	-0.03	0.55***	-0.17**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Parent Sex (1 = Female, 2 = Male); child sex (1 = Male, 2 = Female); CSSI = Children's Somatic symptoms Inventory; ACHES= Adolescent-Child Household Environment Scale; CRISIS_p= changes in social and family contacts for parents; CRISIS_c= changes in social and family contacts for child.

Table 4.

Familism- MACVS items

1	How much do you agree that parents should teach their children that the family always comes first?	Support
2	Children should be taught that it is their duty to care for their parents when their parents get old.	Obligations
3	Children should always do things to make their parents happy.	Referent
4	Family provides a sense of security because they will always be there for you.	Support
5	If a relative is having a hard time financially, one should help him or her out if possible.	Obligations
6	When it comes to important decisions, the family should ask for advice from close relatives.	Referent
7	It is always important to be united as a family.	Support
8	How much do you believe that a person should share his or her home with relatives if they need a place to stay?	Obligations
9	It is important to have close relationships with aunts, uncles, grandparents and cousins.	Support
10	Older kids should take care of and be role models for their younger brothers and sisters.	Obligations
11	How much do you agree that children should be taught to always be good because they represent the family?	Referent
12	Holidays and celebrations are important because the whole family comes together.	Support
13	Parents should be willing to make great sacrifices to make sure their children have a better life.	Obligations
14	A person should always think about his/her family when making important decisions.	Referent
15	It is important for family members to show their love and affection to one another.	Support
16	It is important to work hard and do one's best because this work reflects on the family.	Referent

Table 5.

Fit Statistics for Count Modeling of CSSI

Model	*AIC*	*BIC*
NBH	2002.29	2079.92
NBI	2004.42	2082.06
ZIP	5107.96	5181.90

Note. AIC = Akaike Information Criterion. *BIC* = Bayesian Information Criterion. NBH = negative binomial hurdle. NBI = negative binomial. ZIP = zero-inflated Poisson.

Table 6.

Covariates only model predicting degree and likelihood of somatic symptoms.

	Model Components	*Rate Ratio* [95% *CI*]
Count Portion	(Intercept)	8.79*** [6.45, 11.97]
	Target child age	0.95 [0.83, 1.09]
	Target child sex (male = 1)	0.95 [0.72, 1.25]
	Education Status	0.96 [0.85, 1.09]
	ECHD	**1.26** [1.09, 1.45]**
	Parent age	0.90 [0.78, 1.04]
	Parent sex (female = 1)	1.21 [0.89, 1.63]
	Nativity status (US-born = 1)	0.85 [0.63, 1.16]
	Marital Status (Married = 1)	***0.78+ [0.59, 1.03]***
	Survey language (Spanish = 2)	**1.38* [1.01, 1.87]**
		Odds Ratio [95% *CI*]
Zero Portion	(Intercept)	0.75 [0.38, 1.46]
	Target child age	**0.64* [0.42, 0.99]**
	Target child sex (male = 1)	0.67 [0.31, 1.43]
	Education Status	0.89 [0.60, 1.34]
	ECHD	**0.51*** [0.35, 0.75]**
	Parent age	1.29 [0.88, 1.88]
	Parent sex (female = 1)	0.78 [0.31, 2.00]
	Nativity status (US-born = 1)	1.64 [0.66, 4.08]
	Marital Status (Married = 1)	**0.27** [0.11, 0.66]**
	Survey language (Spanish = 2)	**0.29* [0.11, 0.77]**

Note. Parent Sex (1 = Female, 2 = Male). Child Sex (1 = Male, 2 = Female). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (1 = Male, 2 = Female). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2)

Table 7. *Aim 1 results- main effect models*

		Familism-Total *RR* [95% *CI*]	ACHES *RR [95% CI]*	CRISIS-Parent *RR [95% CI]*	CRISIS-Child *RR [95% CI]*
Count portion	(Intercept)	8.73*** [6.42, 11.87]	8.76*** [6.42, 11.95]	8.77*** [6.35, 12.11]	8.87*** [6.55, 12.01]
	Family dimension main effect	0.89 [0.77, 1.03]	1.10 [0.93, 1.29]	0.89 [0.77, 1.04]	0.92 [0.78, 1.08]
	Target child age	0.95 [0.83, 1.10]	0.94 [0.82, 1.08]	0.94 [0.82, 1.09]	0.96 [0.83, 1.10]
	Target child sex (male = 1)	0.95 [0.72, 1.26]	0.96 [0.73, 1.27]	0.89 [0.66, 1.21]	0.90 [0.68, 1.18]
	Parent age	0.92 [0.79, 1.06]	0.91 [0.78, 1.05]	0.90 [0.78, 1.05]	0.90 [0.78, 1.04]
	Parent sex (female = 1)	1.17 [0.87, 1.59]	1.19 [0.88, 1.60]	1.20 [0.87, 1.65]	1.23 [0.91, 1.65]
	Education status	0.96 [0.85, 1.09]	0.95 [0.84, 1.08]	0.99 [0.87, 1.13]	0.97 [0.86, 1.10]
	Economic household distress	**1.26** [1.10, 1.46]**	**1.21** [1.05, 1.41]**	**1.28** [1.11, 1.49]**	**1.27*** [1.10, 1.46]**
	Nativity status (US Born = 1)	0.84 [0.61, 1.14]	0.84 [0.62, 1.14]	0.89 [0.64, 1.22]	0.87 [0.64, 1.18]
	Marital status (married = 1)	0.81 [0.61, 1.08]	0.77+ [0.58, 1.02]	0.78 [0.58, 1.05]	0.80 [0.60, 1.06]
	Survey language (Spanish = 1)	***1.33+ [0.97, 1.81]***	**1.39* [1.02, 1.90]**	***1.38+ [1.00, 1.90]***	**1.41* [1.04, 1.91]**
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.76 [0.38, 1.50]	0.73 [0.36, 1.49]	0.71 [0.35, 1.46]	0.65 [0.33, 1.29]
	Family dimension main effect	0.91 [0.60, 1.37]	**0.57* [0.36, 0.91]**	0.88 [0.53, 1.46]	1.18 [0.69, 2.04]
	Target child age	**0.63* [0.40, 0.98]**	***0.65+ [0.41, 1.01]***	0.71 [0.44, 1.15]	**0.63* [0.40, 0.99]**
	Target child sex (male = 1)	0.66 [0.30, 1.42]	0.60 [0.27, 1.35]	0.59 [0.25, 1.43]	0.69 [0.32, 1.51]
	Parent age	1.32 [0.88, 1.97]	1.22 [0.82, 1.82]	1.23 [0.80, 1.88]	1.30 [0.88, 1.91]
	Parent sex (female = 1)	0.76 [0.29, 1.98]	0.79 [0.28, 2.19]	0.70 [0.24, 2.09]	0.93 [0.36, 2.37]
	Education status	0.89 [0.59, 1.33]	0.98 [0.62, 1.55]	0.99 [0.59, 1.66]	0.95 [0.61, 1.49]
	Economic household distress	**0.50*** [0.33, 0.75]**	**0.52** [0.35, 0.78]**	**0.47*** [0.31, 0.71]**	**0.53** [0.36, 0.79]**
	Nativity status (US Born = 1)	1.58 [0.62, 4.02]	1.69 [0.65, 4.37]	1.82 [0.67, 4.95]	1.65 [0.64, 4.22]
	Marital status (married = 1)	**0.27** [0.11, 0.67]**	**0.28** [0.11, 0.72]**	**0.25** [0.09, 0.69]**	**0.27** [0.11, 0.67]**
	Survey language (Spanish = 1)	**0.27* [0.10, 0.75]**	**0.25* [0.09, 0.72]**	**0.29* [0.10, 0.82]**	**0.31* [0.11, 0.83]**

*Note***.** Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2).

Table 8. *Aim 1 post hoc results- familism subscales main effect models*

		Familism-Support *RR* [95% *CI*]	Familism-Referent *RR [95% CI]*	Familism-Obligations *RR [95% CI]*
Count portion	(Intercept)	8.28*** [6.12, 11.20]	9.66*** [7.07, 13.21]	8.80*** [6.46, 11.99]
	Family dimension main effect	**0.82** [0.72, 0.94]**	0.99 [0.85, 1.14]	0.95 [0.82, 1.10]
	Target child age	0.97 [0.84, 1.11]	0.95 [0.83, 1.10]	0.95 [0.82, 1.09]
	Target child sex (male = 1)	0.97 [0.73, 1.28]	0.88 [0.66, 1.16]	0.95 [0.72, 1.26]
	Parent age	0.92 [0.80, 1.07]	0.90 [0.78, 1.04]	0.91 [0.78, 1.05]
	Parent sex (female = 1)	1.14 [0.85, 1.53]	1.20 [0.89, 1.62]	1.20 [0.89, 1.62]
	Education status	0.97 [0.86, 1.09]	0.95 [0.84, 1.08]	0.96 [0.85, 1.09]
	Economic household distress	**1.26** [1.10, 1.45]**	**1.24** [1.08, 1.44]**	**1.26** [1.09, 1.45]**
	Nativity status (US Born = 1)	0.88 [0.65, 1.19]	0.92 [0.68, 1.26]	0.84 [0.61, 1.15]
	Marital status (married = 1)	0.84 [0.64, 1.12]	**0.74* [0.56, 0.98]**	0.79 [0.59, 1.06]
	Survey language (Spanish = 1)	***1.33+ [0.98, 1.80]***	1.29 [0.95, 1.76]	***1.35+ [0.99, 1.84]***
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.74 [0.38, 1.45]	0.81 [0.42, 1.53]	0.76 [0.38, 1.49]
	Family dimension main effect	1.00 [0.69, 1.46]	0.89 [0.62, 1.28]	0.91 [0.59, 1.41]
	Target child age	**0.64* [0.42, 0.98]**	***0.68+ [0.46, 1.01]***	**0.63* [0.40, 0.99]**
	Target child sex (male = 1)	0.67 [0.32, 1.42]	0.68 [0.33, 1.38]	0.67 [0.31, 1.44]
	Parent age	1.28 [0.87, 1.88]	1.27 [0.89, 1.83]	1.32 [0.88, 1.97]
	Parent sex (female = 1)	0.79 [0.31, 2.00]	0.83 [0.35, 1.94]	0.77 [0.30, 2.00]
	Education status	0.89 [0.60, 1.33]	0.90 [0.62, 1.30]	0.89 [0.60, 1.34]
	Economic household distress	**0.51*** [0.34, 0.75]**	**0.52*** [0.36, 0.74]**	**0.51*** [0.34, 0.76]**
	Nativity status (US Born = 1)	1.63 [0.66, 4.03]	1.49 [0.63, 3.50]	1.56 [0.61, 4.03]
	Marital status (married = 1)	**0.28** [0.12, 0.66]**	**0.30** [0.14, 0.65]**	**0.27** [0.11, 0.66]**
	Survey language (Spanish = 1)	**0.29* [0.11, 0.76]**	**0.33* [0.14, 0.81]**	**0.27* [0.10, 0.76]**

*Note***.** Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2)

Table 9. *Aim 2 familism composite interactions*

		ACHES	CRISIS-Parent	CRISIS-Child
		RR [95% CI]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.44*** [6.15, 11.58]	9.23*** [6.74, 12.65]	8.73*** [6.47, 11.79]
	Familism main effect	**0.86* [0.74, 0.99]**	0.92 [0.80, 1.06]	0.91 [0.79, 1.05]
	Family dimension main effect	1.11 [0.94, 1.32]	0.88 [0.75, 1.03]	0.92 [0.78, 1.08]
	Target child age	0.93 [0.81, 1.08]	0.97 [0.84, 1.12]	0.97 [0.85, 1.12]
	Target child sex (male = 1)	0.95 [0.72, 1.26]	0.87 [0.65, 1.17]	0.90 [0.69, 1.19]
	Parent age	0.93 [0.80, 1.08]	0.91 [0.78, 1.05]	0.91 [0.79, 1.05]
	Parent sex (female = 1)	1.17 [0.86, 1.58]	1.15 [0.84, 1.58]	1.22 [0.90, 1.63]
	Education status	0.96 [0.85, 1.09]	0.99 [0.87, 1.12]	0.96 [0.85, 1.09]
	Economic household distress	**1.24** [1.07, 1.44]**	**1.31*** [1.13, 1.52]**	**1.28*** [1.11, 1.47]**
	Nativity status (US born = 1)	0.84 [0.61, 1.16]	0.91 [0.67, 1.25]	0.86 [0.63, 1.18]
	Marital status (married = 1)	0.82 [0.61, 1.09]	0.79 [0.59, 1.06]	0.82 [0.62, 1.09]
	Survey language (Spanish)	***1.36+ [0.99, 1.86]***	1.28 [0.94, 1.75]	**1.36* [1.00, 1.85]**
	Familism * family dimension	***1.16+ [0.99, 1.36]***	1.09 [0.96, 1.24]	1.08 [0.94, 1.23]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.76 [0.35, 1.64]	0.73 [0.37, 1.43]	0.65 [0.32, 1.29]
	Familism main effect	0.73 [0.39, 1.39]	1.09 [0.74, 1.61]	1.10 [0.73, 1.67]
	Family dimension main effect	**0.52* [0.27, 1.00]**	0.87 [0.55, 1.37]	1.21 [0.69, 2.10]
	Target child age	**0.61+ [0.36, 1.04]**	0.77 [0.51, 1.18]	**0.63* [0.40, 0.99]**
	Target child sex (male = 1)	0.53 [0.21, 1.33]	0.66 [0.31, 1.41]	0.71 [0.32, 1.54]
	Parent age	1.33 [0.83, 2.14]	1.20 [0.82, 1.77]	1.26 [0.85, 1.87]
	Parent sex (female = 1)	0.62 [0.17, 2.21]	0.70 [0.27, 1.83]	0.95 [0.37, 2.42]
	Education status	0.96 [0.60, 1.53]	0.96 [0.63, 1.46]	0.96 [0.61, 1.51]
	Economic household distress	**0.44** [0.24, 0.82]**	**0.51*** [0.36, 0.74]**	**0.53** [0.36, 0.79]**
	Nativity status (US born = 1)	1.49 [0.51, 4.33]	1.92 [0.78, 4.72]	1.63 [0.63, 4.19]
	Marital status (married = 1)	**0.24* [0.08, 0.74]**	**0.32** [0.14, 0.74]**	**0.28** [0.11, 0.67]**
	Survey language (Spanish)	**0.21* [0.05, 0.78]**	**0.26** [0.10, 0.69]**	**0.32* [0.12, 0.88]**
	Familism * family dimension	0.71 [0.41, 1.23]	1.13 [0.78, 1.62]	0.84 [0.52, 1.35]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2).

Table 10. *Aim 2 post hoc familism subscale x ACHES interactions*

		Familism-Support	Familism-Referent	Familism-Obligations
		RR [95% CI]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.12*** [6.01, 10.97]	8.58*** [6.17, 11.91]	8.49*** [6.06, 11.89]
	Familism main effect	**0.81** [0.71, 0.93]**	0.91 [0.78, 1.06]	0.92 [0.79, 1.06]
	ACHES main effect	1.11 [0.94, 1.31]	1.12 [0.94, 1.34]	1.10 [0.92, 1.31]
	Target child age	0.94 [0.82, 1.08]	0.94 [0.81, 1.08]	0.94 [0.81, 1.09]
	Target child sex (male = 1)	0.96 [0.74, 1.27]	0.93 [0.70, 1.24]	0.96 [0.71, 1.28]
	Parent age	0.93 [0.81, 1.08]	0.92 [0.79, 1.08]	0.92 [0.79, 1.07]
	Parent sex (female = 1)	1.17 [0.87, 1.57]	1.17 [0.86, 1.59]	1.15 [0.84, 1.57]
	Education status	0.97 [0.86, 1.09]	0.96 [0.84, 1.09]	0.95 [0.84, 1.09]
	Economic household distress	**1.26** [1.09, 1.45]**	**1.24** [1.06, 1.44]**	**1.23** [1.05, 1.43]**
	Nativity status (US born = 1)	0.89 [0.66, 1.21]	0.83 [0.59, 1.16]	0.79 [0.57, 1.10]
	Marital status (married = 1)	0.83 [0.63, 1.10]	0.78+ [0.58, 1.04]	0.80 [0.59, 1.09]
	Survey language (Spanish)	**1.36* [1.01, 1.84]**	**1.39* [1.00, 1.92]**	***1.37+ [0.98, 1.91]***
	Familism * ACHES	***1.16+ [0.99, 1.36]***	**1.19* [1.01, 1.41]**	1.06 [0.90, 1.25]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.74 [0.37, 1.48]	0.82 [0.35, 1.91]	0.79 [0.32, 1.98]
	Familism main effect	0.96 [0.64, 1.46]	0.54 [0.24, 1.23]	0.57 [0.24, 1.32]
	ACHES main effect	**0.60* [0.37, 0.97]**	**0.44* [0.20, 0.94]**	**0.41* [0.18, 0.94]**
	Target child age	***0.65+ [0.42, 1.02]***	***0.57+ [0.32, 1.04]***	***0.55+ [0.29, 1.02]***
	Target child sex (male = 1)	0.58 [0.26, 1.29]	0.43 [0.13, 1.35]	0.48 [0.15, 1.49]
	Parent age	1.21 [0.81, 1.81]	1.42 [0.83, 2.42]	1.49 [0.85, 2.61]
	Parent sex (female = 1)	0.79 [0.28, 2.18]	0.52 [0.13, 2.03]	0.49 [0.10, 2.38]
	Education status	0.96 [0.63, 1.48]	0.92 [0.54, 1.56]	0.94 [0.55, 1.62]
	Economic household distress	**0.52** [0.33, 0.80]**	**0.37** [0.17, 0.78]**	**0.38** [0.18, 0.77]**
	Nativity status (US born = 1)	1.69 [0.66, 4.32]	1.30 [0.36, 4.74]	1.15 [0.31, 4.34]
	Marital status (married = 1)	**0.30** [0.12, 0.72]**	**0.17* [0.04, 0.76]**	**0.17* [0.04, 0.79]**
	Survey language (Spanish)	**0.25** [0.09, 0.71]**	**0.15* [0.03, 0.84]**	**0.14* [0.03, 0.74]**
	Familism * ACHES	0.90 [0.57, 1.42]	***0.58+ [0.30, 1.10]***	0.54 [0.26, 1.15]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2).

Table 11. *Aim 2 post hoc familism subscale x CRISIS parent interactions*

		Familism-Support	Familism-Referent	Familism-Obligations
		RR [95% CI]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.42*** [6.15, 11.52]	8.60*** [6.24, 11.87]	9.09*** [6.60, 12.52]
	Familism main effect	**0.85* [0.74, 0.98]**	1.00 [0.86, 1.16]	0.98 [0.85, 1.13]
	CRISIS parent main effect	0.91 [0.78, 1.07]	0.87 [0.74, 1.03]	***0.87+ [0.74, 1.03]***
	Target child age	0.97 [0.84, 1.12]	0.95 [0.82, 1.10]	0.95 [0.82, 1.10]
	Target child sex (male = 1)	0.91 [0.67, 1.22]	0.90 [0.67, 1.21]	0.89 [0.66, 1.19]
	Parent age	0.92 [0.80, 1.07]	0.90 [0.77, 1.04]	0.91 [0.78, 1.05]
	Parent sex (female = 1)	1.15 [0.83, 1.57]	1.21 [0.88, 1.66]	1.18 [0.86, 1.61]
	Education status	0.99 [0.87, 1.13]	1.00 [0.88, 1.15]	1.00 [0.87, 1.14]
	Economic household distress	**1.31*** [1.13, 1.52]**	**1.33*** [1.14, 1.54]**	**1.29*** [1.11, 1.50]**
	Nativity status (US born = 1)	0.92 [0.67, 1.26]	0.87 [0.63, 1.21]	0.90 [0.66, 1.25]
	Marital status (married = 1)	0.80 [0.59, 1.08]	0.79 [0.58, 1.06]	**0.76+ [0.56, 1.03]**
	Survey language (Spanish)	***1.34+ [0.98, 1.84]***	**1.41* [1.03, 1.94]**	***1.35+ [0.98, 1.86]***
	Familism * CRISIS parent	1.11 [0.97, 1.26]	1.06 [0.93, 1.22]	1.08 [0.95, 1.22]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.70 [0.34, 1.44]	0.71 [0.35, 1.43]	0.65 [0.32, 1.29]
	Familism main effect	1.18 [0.76, 1.83]	0.91 [0.60, 1.38]	1.09 [0.73, 1.63]
	CRISIS parent main effect	0.84 [0.51, 1.38]	0.90 [0.56, 1.44]	0.86 [0.54, 1.37]
	Target child age	0.70 [0.43, 1.13]	0.77 [0.50, 1.19]	0.76 [0.49, 1.16]
	Target child sex (male = 1)	0.59 [0.24, 1.43]	0.66 [0.30, 1.48]	0.69 [0.31, 1.50]
	Parent age	1.21 [0.79, 1.86]	1.22 [0.82, 1.82]	1.18 [0.80, 1.74]
	Parent sex (female = 1)	0.72 [0.24, 2.22]	0.68 [0.25, 1.87]	0.75 [0.29, 1.99]
	Education status	0.98 [0.59, 1.61]	1.04 [0.65, 1.65]	1.05 [0.66, 1.66]
	Economic household distress	**0.48*** [0.32, 0.73]**	**0.49*** [0.33, 0.73]**	**0.51*** [0.35, 0.74]**
	Nativity status (US born = 1)	1.84 [0.67, 5.03]	1.74 [0.68, 4.45]	1.77 [0.71, 4.41]
	Marital status (married = 1)	**0.24** [0.09, 0.68]**	**0.31** [0.13, 0.73]**	**0.29** [0.12, 0.69]**
	Survey language (Spanish)	**0.29* [0.10, 0.83]**	**0.28* [0.10, 0.77]**	**0.38* [0.15, 0.98]**
	Familism * CRISIS parent	1.17 [0.77, 1.79]	1.06 [0.70, 1.59]	1.10 [0.76, 1.57]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2).

Table 12. *Aim 2 post hoc familism subscale x CRISIS child interactions*

		Familism-Support	Familism-Referent	Familism-Obligations
		RR [95% CI]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.32*** [6.19, 11.18]	8.84*** [6.51, 12.01]	8.79*** [6.51, 11.89]
	Familism main effect	**0.84** [0.73, 0.96]**	0.99 [0.85, 1.15]	0.97 [0.85, 1.12]
	CRISIS child main effect	0.94 [0.80, 1.10]	0.91 [0.77, 1.08]	0.90 [0.77, 1.07]
	Target child age	0.98 [0.86, 1.13]	0.96 [0.83, 1.11]	0.97 [0.84, 1.12]
	Target child sex (male = 1)	0.92 [0.70, 1.21]	0.90 [0.68, 1.18]	0.90 [0.68, 1.18]
	Parent age	0.92 [0.80, 1.06]	0.90 [0.78, 1.04]	0.90 [0.78, 1.04]
	Parent sex (female = 1)	1.19 [0.89, 1.60]	1.23 [0.91, 1.65]	1.23 [0.92, 1.66]
	Education status	0.96 [0.85, 1.09]	0.97 [0.85, 1.10]	0.97 [0.85, 1.10]
	Economic household distress	**1.28*** [1.12, 1.47]**	**1.27** [1.10, 1.46]**	**1.27*** [1.10, 1.46]**
	Nativity status (US born = 1)	0.89 [0.66, 1.20]	0.87 [0.64, 1.19]	0.88 [0.64, 1.20]
	Marital status (married = 1)	0.85 [0.65, 1.12]	0.80 [0.60, 1.06]	0.81 [0.61, 1.07]
	Survey language (Spanish)	**1.35* [1.00, 1.82]**	**1.41* [1.03, 1.92]**	**1.39* [1.02, 1.89]**
	Familism * CRISIS child	1.11 [0.96, 1.28]	1.01 [0.87, 1.18]	1.07 [0.93, 1.22]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.63 [0.32, 1.26]	0.66 [0.33, 1.32]	0.64 [0.32, 1.28]
	Familism main effect	1.19 [0.81, 1.76]	0.98 [0.64, 1.51]	1.09 [0.72, 1.64]
	CRISIS child main effect	1.21 [0.70, 2.11]	1.21 [0.69, 2.11]	1.18 [0.68, 2.04]
	Target child age	**0.63* [0.40, 0.98]**	**0.63* [0.40, 1.00]**	**0.64* [0.41, 1.00]**
	Target child sex (male = 1)	0.73 [0.34, 1.60]	0.70 [0.32, 1.53]	0.69 [0.32, 1.50]
	Parent age	1.24 [0.84, 1.84]	1.28 [0.86, 1.92]	1.27 [0.86, 1.88]
	Parent sex (female = 1)	0.97 [0.38, 2.47]	0.93 [0.36, 2.40]	0.95 [0.38, 2.39]
	Education status	0.97 [0.61, 1.51]	0.96 [0.61, 1.51]	0.95 [0.61, 1.49]
	Economic household distress	**0.53** [0.36, 0.79]**	**0.53** [0.36, 0.79]**	**0.54** [0.36, 0.79]**
	Nativity status (US born = 1)	1.64 [0.65, 4.14]	1.62 [0.62, 4.20]	1.68 [0.65, 4.31]
	Marital status (married = 1)	**0.28** [0.11, 0.66]**	**0.27** [0.11, 0.68]**	**0.28** [0.11, 0.67]**
	Survey language (Spanish)	**0.33* [0.12, 0.88]**	**0.31* [0.11, 0.86]**	**0.32* [0.11, 0.87]**
	Familism * CRISIS child	0.77 [0.47, 1.25]	0.86 [0.52, 1.42]	0.98 [0.63, 1.52]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2).

Table 13. *Aim 2 sensitivity analyses familism composite x CRISIS 2- items interactions*

		Parent CRISIS (2 item)	Child CRISIS (2 item)
		RR [95% CI]	*RR [95% CI]*
Count portion	(Intercept)	9.51*** [6.95, 13.01]	8.63*** [6.35, 11.71]
	Familism main effect	0.89 [0.77, 1.03]	0.90 [0.78, 1.04]
	CRISIS 2 item main effect	0.92 [0.79, 1.07]	0.92 [0.79, 1.07]
	Target child age	0.97 [0.84, 1.12]	0.97 [0.84, 1.12]
	Target child sex (male = 1)	0.85 [0.64, 1.14]	0.93 [0.70, 1.22]
	Parent age	0.92 [0.79, 1.06]	0.92 [0.79, 1.06]
	Parent sex (female = 1)	1.13 [0.82, 1.55]	1.16 [0.86, 1.57]
	Education status	1.00 [0.87, 1.14]	0.96 [0.84, 1.09]
	Economic household distress	**1.33*** [1.14, 1.54]**	**1.27*** [1.10, 1.47]**
	Nativity status (US born = 1)	0.92 [0.67, 1.26]	0.83 [0.61, 1.14]
	Marital status (married = 1)	***0.74+ [0.55, 1.00]***	0.84 [0.63, 1.12]
	Survey language (Spanish)	***1.33** + [1.00, 1.82]*	**1.37* [1.00, 1.87]**
	Familism * CRISIS 2 item	1.06 [0.94, 1.20]	1.04 [0.92, 1.19]
		OR [95% CI]	*OR [95% CI]*
Zero portion	(Intercept)	0.70 [0.35, 1.40]	0.70 [0.35, 1.40]
	Familism main effect	1.10 [0.72, 1.68]	1.02 [0.66, 1.56]
	CRISIS 2 item main effect	***0.65+ [0.41, 1.04]***	1.53 [0.92, 2.56]
	Target child age	0.69 [0.44, 1.09]	**0.60* [0.38, 0.97]**
	Target child sex (male = 1)	0.69 [0.31, 1.57]	0.73 [0.33, 1.63]
	Parent age	1.23 [0.81, 1.86]	1.22 [0.81, 1.85]
	Parent sex (female = 1)	0.61 [0.21, 1.77]	0.83 [0.31, 2.22]
	Education status	1.01 [0.63, 1.62]	0.94 [0.61, 1.46]
	Economic household distress	**0.49*** [0.33, 0.73]**	**0.53** [0.35, 0.79]**
	Nativity status (US born = 1)	2.10 [0.79, 5.58]	1.56 [0.60, 4.05]
	Marital status (married = 1)	**0.27** [0.10, 0.68]**	**0.24** [0.09, 0.62]**
	Survey language (Spanish)	**0.21** [0.07, 0.63]**	**0.31* [0.11, 0.85]**
	Familism * CRISIS 2 item	1.17 [0.81, 1.70]	0.75 [0.48, 1.16]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =2)

Table 14. *Aim 2 sensitivity analyses familism subscale x CRISIS parent 2- items interactions*

		Familism-Support	Familism-Referent	Familism-Obligations
		RR [95% *CI*]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.56*** [6.27, 11.68]	8.85*** [6.47, 12.11]	9.29*** [6.76, 12.76]
	Family dimension main effect	0.82** [0.72, 0.95]	1.01 [0.87, 1.17]	0.98 [0.85, 1.13]
	CRISIS parent 2 item	0.95 [0.82, 1.10]	0.93 [0.80, 1.08]	0.91 [0.77, 1.06]
	Target child age	0.97 [0.84, 1.12]	0.96 [0.83, 1.10]	0.95 [0.82, 1.10]
	Target child sex (male = 1)	0.91 [0.68, 1.21]	0.94 [0.71, 1.24]	0.89 [0.66, 1.19]
	Parent age	0.93 [0.80, 1.08]	0.89 [0.77, 1.03]	0.90 [0.77, 1.04]
	Parent sex (female = 1)	1.11 [0.80, 1.52]	1.23 [0.90, 1.68]	1.19 [0.87, 1.64]
	Education status	1.00 [0.87, 1.14]	0.99 [0.87, 1.13]	1.00 [0.87, 1.15]
	Economic household distress	**1.31*** [1.13, 1.53]**	**1.31*** [1.12, 1.51]**	**1.30*** [1.12, 1.52]**
	Nativity status (US Born = 1)	0.91 [0.66, 1.25]	0.92 [0.67, 1.25]	0.93 [0.67, 1.28]
	Marital status (married = 1)	0.78 [0.58, 1.05]	**0.74* [0.55, 0.99]**	**0.72* [0.53, 0.97]**
	Survey language (Spanish = 1)	**1.38* [1.00, 1.91]**	**1.41* [1.03, 1.92]**	**1.39* [1.01, 1.91]**
	Familism * CRISIS parent 2 item	1.08 [0.95, 1.23]	1.05 [0.92, 1.19]	1.04 [0.92, 1.18]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.74 [0.36, 1.51]	0.68 [0.35, 1.30]	0.69 [0.35, 1.38]
	Family dimension main effect	1.13 [0.72, 1.77]	1.00 [0.69, 1.45]	1.09 [0.70, 1.71]
	CRISIS parent 2 item	0.66 [0.39, 1.09]	0.76 [0.50, 1.16]	***0.64+ [0.39, 1.04]***
	Target child age	***0.64+ [0.38, 1.08]***	0.73 [0.49, 1.10]	***0.67+ [0.43, 1.06]***
	Target child sex (male = 1)	0.59 [0.23, 1.49]	0.77 [0.37, 1.59]	0.67 [0.29, 1.55]
	Parent age	1.30 [0.82, 2.08]	1.24 [0.85, 1.80]	1.34 [0.88, 2.04]
	Parent sex (female = 1)	0.58 [0.17, 1.99]	0.72 [0.29, 1.78]	0.61 [0.21, 1.77]
	Education status	1.00 [0.60, 1.68]	0.99 [0.66, 1.49]	1.04 [0.63, 1.72]
	Economic household distress	**0.47*** [0.31, 0.73]**	**0.55** [0.39, 0.79]**	**0.48*** [0.33, 0.72]**
	Nativity status (US Born = 1)	1.90 [0.65, 5.53]	1.98 [0.83, 4.73]	2.26 [0.84, 6.13]
	Marital status (married = 1)	**0.21* [0.07, 0.70]**	**0.33** [0.15, 0.72]**	**0.26** [0.10, 0.66]**
	Survey language (Spanish = 1)	**0.24* [0.08, 0.74]**	**0.27** [0.10, 0.69]**	**0.24** [0.08, 0.69]**
	Familism * CRISIS parent 2 item	1.14 [0.75, 1.75]	1.12 [0.77, 1.63]	1.10 [0.76, 1.59]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish.

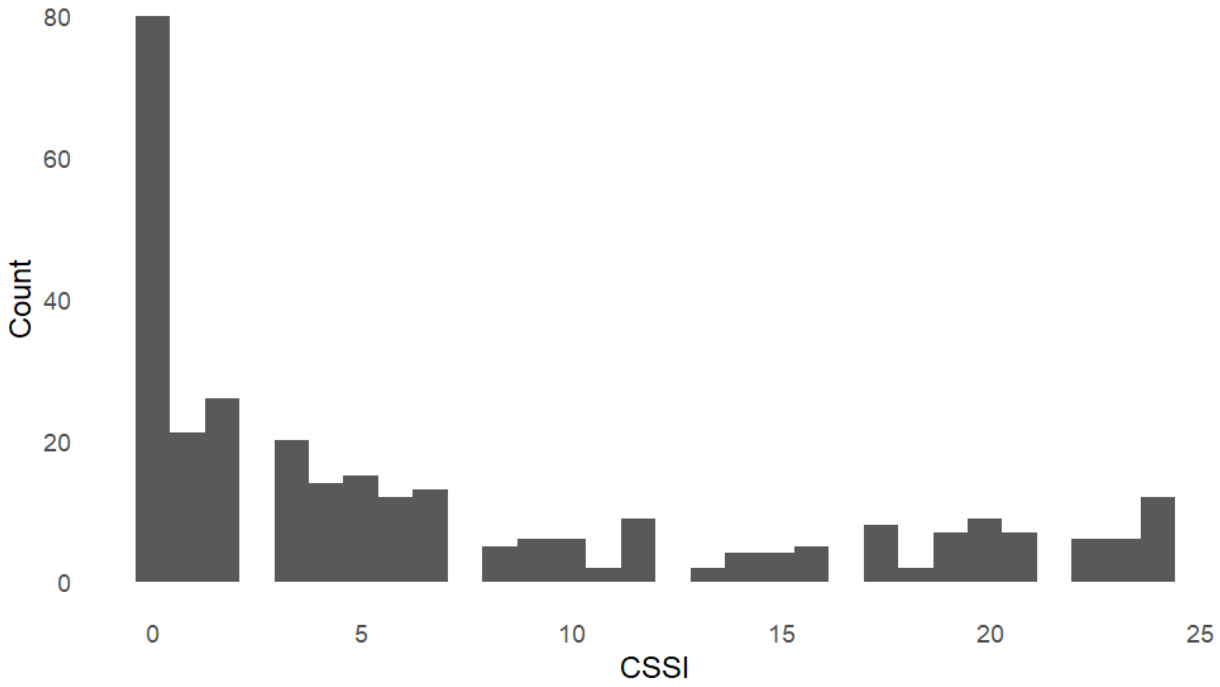
Table 15. *Aim 2 sensitivity analyses familism subscale x CRISIS child 2- items interactions*

		Familism-Support	Familism-Referent	Familism-Obligations
		RR [95% *CI*]	*RR [95% CI]*	*RR [95% CI]*
Count portion	(Intercept)	8.17*** [6.05, 11.03]	8.82*** [6.46, 12.03]	8.70*** [6.39, 11.84]
	Family dimension main effect	**0.83** [0.72, 0.95]**	0.99 [0.85, 1.16]	0.96 [0.83, 1.11]
	CRISIS child 2 item	0.94 [0.81, 1.09]	0.91 [0.78, 1.06]	0.91 [0.78, 1.06]
	Target child age	0.98 [0.85, 1.13]	0.96 [0.83, 1.11]	0.96 [0.83, 1.11]
	Target child sex (male = 1)	0.94 [0.71, 1.23]	0.91 [0.69, 1.21]	0.92 [0.70, 1.22]
	Parent age	0.93 [0.80, 1.07]	0.91 [0.79, 1.06]	0.91 [0.79, 1.06]
	Parent sex (female = 1)	1.15 [0.86, 1.55]	1.17 [0.86, 1.57]	1.18 [0.87, 1.59]
	Education status	0.95 [0.84, 1.08]	0.97 [0.86, 1.11]	0.96 [0.85, 1.10]
	Economic household distress	**1.28*** [1.11, 1.47]**	**1.26** [1.09, 1.45]**	**1.27** [1.10, 1.46]**
	Nativity status (US Born = 1)	0.86 [0.64, 1.17]	0.84 [0.62, 1.15]	0.83 [0.61, 1.14]
	Marital status (married = 1)	0.87 [0.66, 1.15]	0.81 [0.61, 1.08]	0.82 [0.62, 1.10]
	Survey language (Spanish = 1)	**1.35+ [1.00, 1.84]**	**1.43* [1.04, 1.96]**	**1.40* [1.02, 1.93]**
	Familism * CRISIS child 2 item	1.10 [0.96, 1.26]	0.97 [0.84, 1.11]	1.02 [0.90, 1.15]
		OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*
Zero portion	(Intercept)	0.68 [0.34, 1.36]	0.71 [0.36, 1.43]	0.69 [0.35, 1.39]
	Family dimension main effect	1.10 [0.74, 1.62]	0.95 [0.60, 1.48]	0.98 [0.63, 1.53]
	CRISIS child 2 item	**1.56+ [0.94, 2.59]**	1.50 [0.89, 2.51]	1.52 [0.92, 2.51]
	Target child age	***0.61* [0.38, 0.96]***	***0.62* [0.39, 0.99]***	***0.60* [0.37, 0.98]***
	Target child sex (male = 1)	0.77 [0.35, 1.71]	0.70 [0.32, 1.56]	0.71 [0.32, 1.59]
	Parent age	1.21 [0.81, 1.81]	1.23 [0.82, 1.86]	1.24 [0.82, 1.88]
	Parent sex (female = 1)	0.85 [0.32, 2.22]	0.82 [0.30, 2.19]	0.83 [0.31, 2.22]
	Education status	0.93 [0.61, 1.43]	0.95 [0.61, 1.47]	0.94 [0.60, 1.47]
	Economic household distress	**0.53** [0.36, 0.79]**	**0.53** [0.35, 0.80]**	**0.53** [0.35, 0.80]**
	Nativity status (US Born = 1)	1.60 [0.63, 4.06]	1.58 [0.61, 4.10]	1.54 [0.58, 4.08]
	Marital status (married = 1)	**0.24** [0.10, 0.60]**	**0.24** [0.09, 0.63]**	**0.24** [0.09, 0.62]**
	Survey language (Spanish = 1)	**0.31* [0.12, 0.83]**	**0.31* [0.11, 0.85]**	**0.31* [0.11, 0.85]**
	Familism * CRISIS child 2 item	0.71 [0.46, 1.10]	0.75 [0.47, 1.19]	0.86 [0.57, 1.29]

Note. Parent Sex (Female=1, Male=2). Child Sex (Male = 1, Female = 2). Parent Nativity Status (US-born=1, Mexico_other =2). Target child sex (Male = 1, Female = 2). Marital status (1 = Married, 2= Other). Survey language (English =1, Spanish =

Figure 1.

CSSI Distribution



Note. Histogram of CSSI count of child somatic symptoms demonstrates zero-inflation.

Figure 2.

Plot of Aim 2 Results: Estimated count of somatic symptoms in relation to changes in parent-child conflict at low (-1SD), medium (mean), and high (+1SD) levels of familism (total score) endorsement

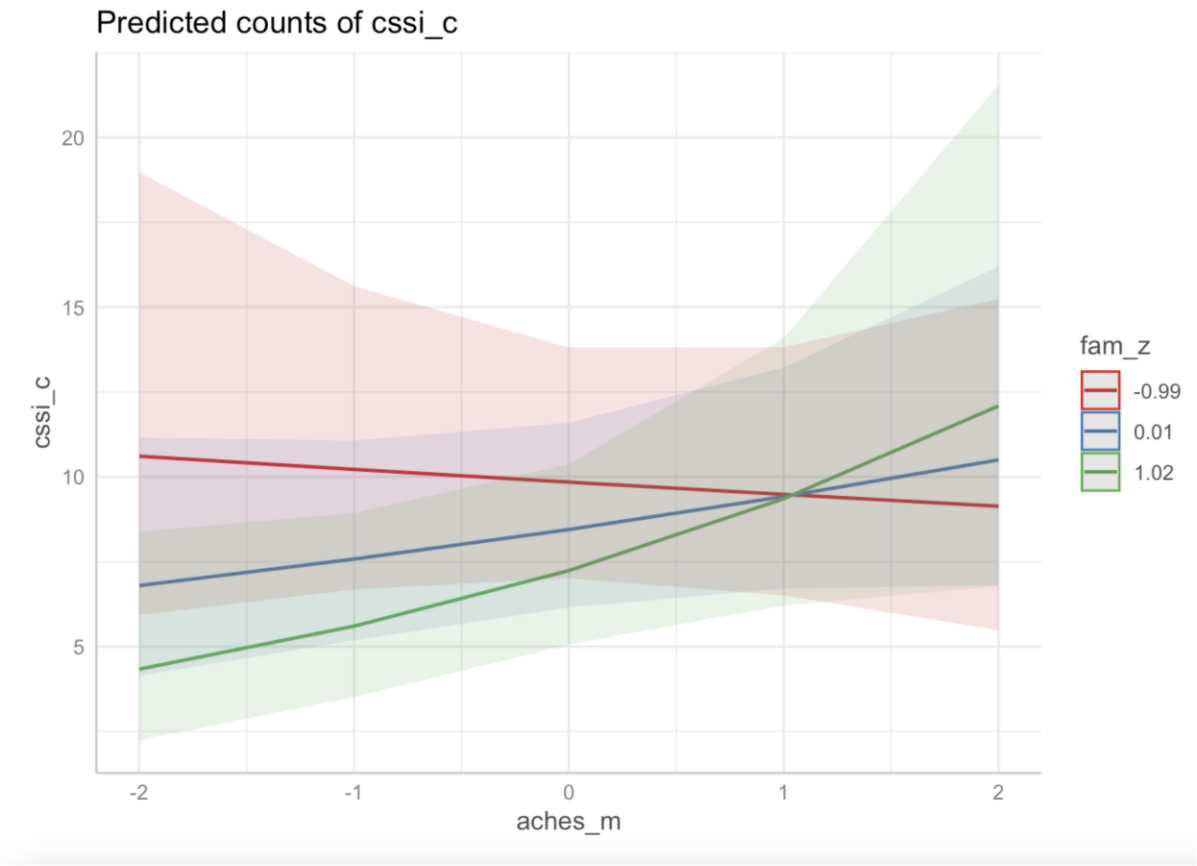
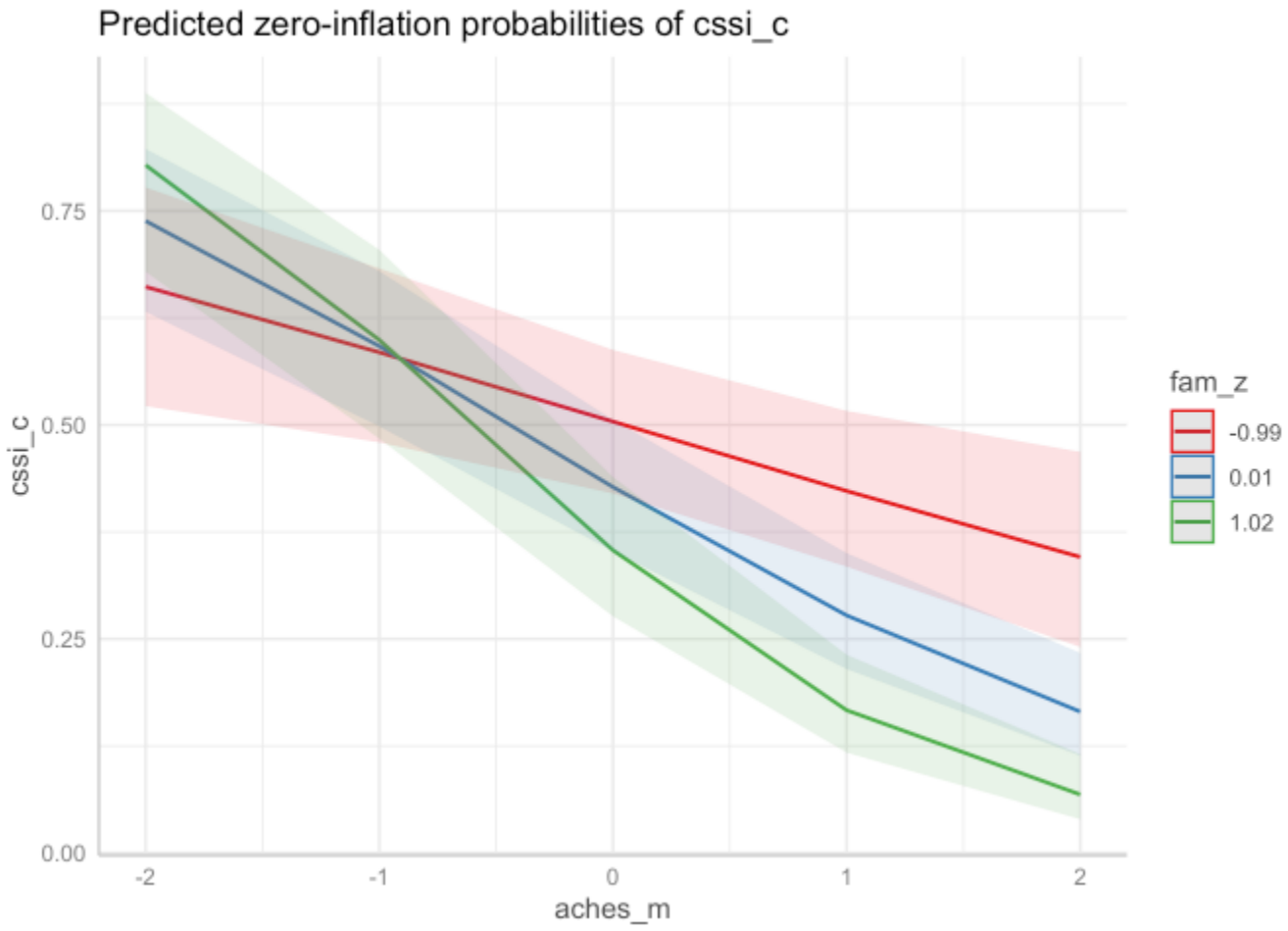


Figure 3.

Plot of Aim 2a results: Estimated likelihood of the absence of somatic symptoms in relation to changes in parent-child conflict at low (-1SD), medium (mean), and high (+1SD) levels of familism (total score) endorsement



APPENDIX
RESEARCH PROPOSAL

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Rick Cruz
CLAS-NS: Psychology
-
Rick.Cruz@asu.edu

Dear Rick Cruz:

On 5/2/2022 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Covid-19 challenges and resilience among Mexican heritage families
Investigator:	Rick Cruz
IRB ID:	STUDY00015735
Funding:	Name: CLAS-NS: Psychology
Grant Title:	
Grant ID:	
Documents Reviewed:	• Covid19 research proposal_4.29.22.pdf, Category: IRB Protocol; • LOI_Spanish, Category: Consent Form; • Qualtrics Survey_English, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Qualtrics survey_Spanish translation, Category: Translations; • Translation certification form, Category: Translations;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/30/2022.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

If any changes are made to the study, the IRB must be notified at research.integrity@asu.edu to determine if additional reviews/approvals are required. Changes may include but not limited to revisions to data collection, survey and/or interview questions, and vulnerable populations, etc.

REMINDER - - Effective January 12, 2022, in-person interactions with human subjects require adherence to all current policies for ASU faculty, staff, students and visitors. Up-to-date information regarding ASU's COVID-19 Management Strategy can be found here. IRB approval is related to the research activity involving human subjects, all other protocols related to COVID19 management including face coverings, health checks, facility access, etc. are governed by current ASU policy.

Sincerely,

IRB Administrator

cc:

Maria Wilson
Byron Garcia
Cristal Vargas Cesario
Aaron Hartman
Madison Jones
Natalee Sanchez
Makayla Roma
Ulysses Altamirano
Meghna Chowdhury