ASSOCIATIONS AMONG MATERNAL DISTRESS, PARENTING BEHAVIORS, AND

CHILD SELF-REGULATION IN LATINA MOTHER-CHILD DYADS: EXPLORING THE

ROLE OF CULTURAL FACTORS

by

ANTONELLA ONOFRIETTI MAGRASSI

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Student: Antonella Onofrietti Magrassi

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This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Special Education and Clinical Sciences Department by:

Nicole Giuliani, PhD.   Chairperson and Advisor
Geovanna Rodríguez, PhD.   Core Member
Lauren Cycyk, PhD.   Core Member
Wendy Hadley, PhD.   Institutional Representative

and

Krista Chronister   Vice Provost for Graduate Studies

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

Degree awarded June 2023

DISSERTATION ABSTRACT

Antonella Onofrietti Magrassi

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Title: Associations Among Maternal Distress, Parenting Behaviors, And Child Self-Regulation
In Latina Mother-Child Dyads: Exploring The Role Of Cultural Factors

There is extensive evidence on the negative effects of maternal depression and parenting stress on child development. Specifically, there is a robust body of literature suggesting that depression and stress decrease maternal responsiveness which affects the mother-child interactions and relationship. This disruption in the dyad may hinder appropriate child self-regulation development which has been extensively linked to important outcomes (e.g., school readiness, academic achievement, social-emotional competence). However, most of this research work has focused on White European families which considerably differ from the rapidly growing Latino population in the United States.

The present cross-sectional study sought to examine the associations among maternal distress (maternal depression and parenting stress), parenting behaviors, and child self-regulation while considering racial stress (stress of immigration and perceived racism) in a community sample of 150 Latina mother-child dyads across the country. This study also explored the moderating effects of cultural factors such as acculturation, ethnic identity, and social support on these associations. Latina mothers of preschool aged children participated remotely by completing a demographic questionnaire via phone call and filling out several self-report, standardized surveys assessing aspects of maternal distress, parenting, and child behavior.

Several regression analyses were conducted. Findings from this study indicate that in a low-risk sample of Latina mother-child dyads higher levels of maternal distress were negatively associated with child self-regulation even when controlling for child sex. Results also showed that this relation may be partially mediated by negative parenting. Although in this sample racial stress was not significantly correlated with child self-regulation, it was positively correlated with maternal distress suggesting that culture specific stressors significantly contribute to reductions in maternal psychological well-being.

CURRICULUM VITAE

NAME OF AUTHOR: Antonella Onofrietti Magrassi

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, Oregon
Universidad del Valle de México- Campus Lomas Verdes, Estado de México

DEGREES AWARDED:

Doctor of Philosophy, School Psychology, 2022, University of Oregon
Bachelor of Science, Psychology, 2012, Universidad del Valle de México
     Campus Lomas Verdes.

AREAS OF SPECIAL INTEREST:

School-Based Mental and Behavioral Health Services
Prevention and Early Intervention
Child Development
Emotion and Self-Regulation Development
Comprehensive Assessment
Family-school-community collaboration
Supports for Latinx families of children with academic, behavioral, or socioemotional
needs.

PROFESSIONAL EXPERIENCE:

Graduate Employee Teaching Assignment, Child and Family Center, University of
     Oregon, 2020-2022

Child and Family Center, Bilingual Practicum Therapist, 2019-2021

HEDCO Comprehensive Assessment and Diagnostic Center, Extern, 2020-2021

Graduate Employee Administrative Assignment, Global Education Oregon, University
     of Oregon, 2019- 2021

Bilingual Research Assistant, Early Dual Language Development (EDLD) Lab,
     University of Oregon, 2018-2020

Springfield Public Schools, Practicum Student at Guy Lee Elementary, 2018-2019

GRANTS, AWARDS, AND HONORS:

     Kenneth W. Merrell Legacy Scholarship, University of Oregon 2021

     Kaplan Scholarship for Early Intervention, University of Oregon 2021

     Selected Nominee for the APA's Elizabeth Munsterberg Koppitz Child Psychology
Graduate Student Fellowship, University of Oregon, 2020

     Clare Wilkins Chamberlin Award, University of Oregon, 2019

     Louis and Sarah G. Kaplan Scholarship Fund, University of Oregon, 2018

     OIA Global Corners International Award University of Oregon, 2017 & 2018

     Helena DeGnath Wessela Memorial Scholarship, University of Oregon, 2017

PUBLICATIONS:

Walden, E., Onofrietti A., Mauricci, M., Perez., G., & Giuliani, N. (in preparation) Impact of early maternal trauma on preschool children's executive functioning.

Walden, E., Hamilton, J., Harrington, E., Lopez, S., Onofrietti, A., Mauricci, M., Trevino, S., & Giuliani, N. (2021). Intergenerational trauma: assessment in biological mothers and preschool children. *Journal of Child & Adolescent Trauma.*

DEDICATION

Para Matías y Alonso, gracias a ambos por convertirme en una mamá Latina y ser mi inspiración y mayor motor. ¡Los amo siempre!

For all the Latina moms who participated in this study, I hope this research can continue elevating your voices. You are seen, you are heard, and you are appreciated.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Mental health problems have been on the rise for the past decade in the United States, with one in five adults living with a mental health illness in the year 2020 (Substance Abuse and mental health Service Administration [SAMHSA], 2020). In particular, the prevalence of conditions such as depression and anxiety have been rising in the past two years with the COVID-19 pandemic (Vahratian et al., 2021). It is well known that certain social determinants, including poverty, race/ethnicity, unemployment, relationship stress, and having young children, put some populations at a higher risk for mental health problems (Cameron et al., 2020; Wang et al., 2011). Thus, is not surprising that a recent study looking at psychological distress in the United States general population during 2020 found that some of the social factors associated with elevated anxiety and depression symptoms included identifying as Hispanic/Latino, reporting low income, and being a caregiver (with mothers at an increased risk; (Guerrini et al., 2021). Other findings are consistent with this information and indicate that females of reproductive age are at particularly high risk for any mental health illness (SAMHSA, 2020).

In the United States about 10.5% of women have reported experiencing an episode of major depression (Centers for Disease Control and Prevention [CDC], 2022) and 23.4% of females in the country present with an anxiety disorder in their lifespan, which is double than the rate for males (Kessler et al., 2004). However, these rates are considerably elevated for mothers, with approximately 43% mothers of children between the ages of 18 months and 4 years old presenting with clinical depression while 32% present with symptoms of anxiety (Kessler et al., 2004).

Considering the social and contextual risk factors previously mentioned, Latina/Hispanic mothers of young children are at increased risk for presenting symptoms of depression and anxiety (Substance Abuse and Mental Health Services Administration [SAMHSA], 2018), and ultimately experiencing poor mental health and less access to appropriate care (Sampson et al., 2018). Some of the contextual factors known to significantly contribute both positively and negatively to poor maternal mental health (i.e., depression and anxiety) include: 1) parenting stress, defined as stress resulting from the challenges and demands experienced during parenthood (Deater-Deckard, 2004); 2) stress of immigration, which can be conceptualized as stressors related to immigration status, language barriers, family separation, employment uncertainties, poverty, discrimination and xenophobia stemming from anti-immigrant sentiments (Sternberg et al., 2016); 3) perceived racial discrimination, which refers to the individual appraisal of experiences of racism and racial discrimination (Victoria, 2014); and 4) social support, which indicates the perceived number of people available in one's social network for assistance in times of difficulty (Blake & McKay, 1986).

Maternal Distress

There is growing evidence indicating that higher levels of maternal parenting stress and maternal depression can negatively impact the mother-child relationship and quality of their dyadic interactions. This might be explained in part because maternal parenting stress and maternal depression—together referred to here as maternal distress—are known to interfere with the mothers' ability to respond warmly and sensitively to their child's needs (Harris & Santos, 2020; Huang et al., 2014). These disrupted caregiving responses decrease maternal utilization of effective regulatory strategies during parent-child interactions and reduce the frequency and quality of engagement in activities that cognitively stimulate the child (Albright & Tamis-

LeMonda, 2002). While substantial literature has linked components of maternal distress with adverse developmental outcomes, in particular with diminished child self-regulation, most of these studies have used White European, middle class, English-speaking samples (Leyva et al., 2014); as such, the present dissertation seeks to better understand these associations in English- and Spanish-speaking Latino families in the United States, as well as the unique risk and resilience factors present in this growing population.

Maternal Depression

Maternal depression refers to depression that occurs during motherhood and is classified in three categories: mild, moderate, and severe (Children's Defense Fund [CDF-MN], 2011). In the United States, between 10% and 20% of mothers (with children ages 0-18) experience symptoms of maternal depression (Ertel et al., 2011; Ko et al., 2012), with more of these events present during the child's first several years (Cameron et al., 2020). The most prevalent symptoms of depression in mothers of young children (2-5 years old) include fatigue, lack of interest in most activities, difficulties in concentration, sleeping problems, and feelings of worthlessness, which can significantly interfere with parenting (Albright & Tamis-LeMonda, 2002; Dolan et al., 2011.)

There is extensive research describing how maternal depression interferes with mothers' emotional sensitivity, responsiveness, and efficacy (Petterson & Albers, 2001). Maternal depression is linked to impairment of caretaking abilities which may cause mothers to be less attuned to their children's developmental, emotional, and physical needs, leading to adverse psychological, developmental, and health outcomes (Wang et al., 2011). Additionally, children of depressed mothers may be exposed to higher levels of stress hormones (e.g., cortisol) as early as age six, which can lead to changes in their physiological response to stress and increase their

own risk for developing mood disorders later in life (Lupien et al., 2000). Preschool-aged children of depressed mothers are at risk for myriad negative outcomes in several areas of functioning (e.g., social-emotional, behavioral, and cognitive; Johnson & Flake, 2007). Evidence suggests that, during this sensitive period in development, children of depressed mothers are at risk of developing poor regulatory skills, internalizing and externalizing problems, difficulties in social interactions, and cognitive and linguistic delays (Albright & Tamis-LeMonda, 2002; Ciciolla et al., 2014; Tamis-LeMonda et al., 2014).

The prevalence of depressive symptoms (mild to severe) in Latina mothers range from 12% to 59%, with increased rates in the perinatal period (Harris & Santos, 2020). Latina mothers experience greater risk of postpartum depression when compared to non-Latina mothers, which may be related to the unique socioeconomic and environmental factors faced by Latina mothers in the United States (Lara-Cinisomo et al., 2016). These include acculturative stress, lower socioeconomic status, immigration status, geographic isolation, lack of social support and lack of access to mental health services and resources (Sampson et al., 2018). It is important to consider this, since postpartum depression is one of the main risk factors associated both with later maternal depression and child poor behavioral outcomes (Philipps & O'Hara, 1991; Woolhouse et al., 2016).

Parenting Stress

Parenting stress is defined as a persistent and complex set of challenges unique to parenting and the roles and demands of parenthood (Deater-Deckard, 2004). A national survey found that in 13% of households there is at least one parent reporting high levels of parenting stress; although some stress associated with parenting is expected, high levels of parenting stress

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have been previously associated with increased risk for poor maternal mental health and more negative parenting behaviors (McCloskey & Pei, 2019).

Higher levels of parenting stress have been repeatedly associated with both maternal depression and less responsive parenting (Crnic et al., 1996; Lim & Shim, 2021; McCloskey & Pei, 2019). While there are mixed research findings suggesting both unidirectional and bidirectional models explaining the association between parenting stress and maternal depression, this association continues to be significant and strong (Fredriksen et al., 2019). Similarly, researchers have frequently found that both parenting stress and maternal depression are significantly and negatively associated with developmental outcomes in early childhood (Thomason et al., 2014).

Latina mothers are particularly vulnerable to the link between the demands and stressors of motherhood, and psychological well-being. Latina mothers are at increased risk of motherhood-related mental health problems due to cultural expectations and traditional gender roles that reinforce females as primary or exclusive caregivers in the family (Galvan et al., 2021). Considering that maternal depression and parenting stress are the two most common indicators of psychological distress in mothers, with strong evidence suggesting negative impact on child development, the proposed dissertation study will combine these two concepts to assess overall maternal distress.

Association Between Maternal Distress and Parenting Behaviors

There is a large amount of research documenting the negative impact of maternal distress on child development, especially with regard to maternal depression and parenting stress during a child's preschool years (Hoffman et al., 2006; Lim & Shim, 2021; Liu et al., 2017). In White European populations, maternal distress has been shown to negatively impact parenting skills,

specifically maternal sensitivity, which refers to a dynamic process involving abilities,

reciprocity and quality of maternal behaviors, and responsiveness defined as the promptness and

frequency of maternal response to child's signals (Conners-Burrow et al., 2014; Shin et al.,

2008). The disruption of parenting skills due to maternal psychological distress impacts child

outcomes in the form of higher frequency and severity of behavior problems, poor self-

regulation, social skills, language development, cognitive functioning, and low academic success

and adjustment (Conners-Burrow et al., 2014; Ispa et al., 2017; Tamis-LeMonda et al., 2014).

Preschool-aged children are not emotionally self-reliant and depend heavily on caregivers

to meet their emotional needs. Maternal distress is known to disrupt the parenting practices

mothers use when caring for their children, making them prone to use negative parenting

practices (e.g., harshness), which in turn impacts the quality of the parent-child relationship and

the co-regulation (i.e., shared control) of emotional states in the dyad (Deater-Deckard, 2004).

While positive parenting behaviors (e.g., support) have been shown to positively predict growth

in child literacy, math, language development, and emotion knowledge (Wade et al., 2018),

negative parenting behaviors have been associated with lower levels of child executive

functioning as well as behavioral, emotional, and academic outcomes (Crossley & Buckner,

2012).

Child Self-Regulation

Self-regulation has been defined in multiple ways and using different terminology across

many different fields. However, self-regulation is generally defined as the ability to regulate

one's own cognition, emotion and behavior, (Mcclelland et al., 2010), being self-regulation the

basis of purposeful action (Bandura, 1991). Self-regulation involves both cognitive and affective

processes that support goal-oriented behaviors and regulation of actions, emotions, and

cognitions (Frick et al., 2018). Research in the field of self-regulation has produced a large amount of evidence supporting a strong correlation between symptoms of maternal distress and poorer child self-regulation. These children, in turn, are at greater risk of lower academic achievement, less social competence, and more behavior problems (Blair & Razza, 2007; Espy et al., 2011; Lengua et al., 2007). Although evidence suggests that children's self-regulation processes are influenced by parents' cultural values and socialization practices (Jaramillo et al., 2017) there continues to be a lack of studies on the role of cultural factors in non-White preschool-age child self-regulation, and even fewer studies focusing on Latino preschoolers (Li-Grining, 2012).

There are several conceptualizations of self-regulation, which impacts its characterization and measurement. One way to describe the development of self-regulation in early childhood is to consider both the cognitive and emotional aspects of self-regulation and how these are integrated (Blair & Razza, 2007). Specifically, the cognitive (i.e., executive function) aspects of self-regulation are linked to both maternal distress and parenting behaviors.

Executive Function

Executive function (EF) is defined as a set of higher order cognitive processes crucial in the development of behavioral self-regulation (Blair, 2002). EF consists of several skills (e.g., attention, inhibitory control, cognitive shifting, working memory) that support goal-directed behaviors necessary for social and cognitive competence (Deater-Deckard et al., 2016). There is substantial evidence pointing at three main EF skills; 1) *inhibition,* which refers to the ability to control impulsive (automatic) responses, supporting important tasks such as planning and setting goals; 2) *cognitive shifting,* defined as the ability to sustain or shift attention depending on environmental demands, supporting adaption to the tasks and demands of the environment; and

3) *working memory*, which is the ability to retain and manipulate information, helping one retrieving information relevant to tasks on hand (Daucourt et al., 2018). These three skills have been identified as important facilitators in the pursual of an individual's self-regulatory goals, indicating that a decrease in EF skills may be at the center of self-regulation deficits (Hofmann et al., 2012).

Numerous researchers have investigated the integration of EF skills into the regulation of behavior to assess behavioral regulation (Sektnan et al., 2010). Consequently, understanding EF development in early childhood is of particular interest due to its direct association with self-regulation, psychopathology, and its ability to predict differences in school readiness and academic success (Harmeyer et al., 2016; Hodgdon et al., 2018). Recent theoretical perspectives maintain that a complex combination of biological and contextual processes is at the root of child EF development (Zelazo et al., 2013). Research investigating such contextual factors suggests that maternal distress, particularly depressive symptoms, adversely affects EF development and skills in children ages 2 to 6 (Hughes et al., 2013). Furthermore, there's substantial evidence supporting the key role of parenting in the development of child EF, particularly during early childhood (Blair et al., 2014), and indicating that parenting behaviors such as scaffolding, stimulation, sensitivity/responsiveness and control are associated with individual differences in EF (Fay-Stammbach et al., 2014).

Underrepresentation of Latinos in Research

Despite the rapid growth of the Latino population in the United States, little is known about how maternal distress impacts parenting behaviors and child self-regulation in Latino families (Li-Grining, 2012). There are approximately 60 million Latinos living in the United States, and at least 20% of students entering kindergarten classrooms in public schools across the

country come from Latino families (U.S. Census Bureau, 2019). The Latino population is growing exponentially in the United States, yet almost no extant research addresses the associations among maternal distress, parenting, and child self-regulation in these families, as well as the role that unique cultural factors may play in these associations. As such, it may not be appropriate to extrapolate findings on the effects of maternal distress on child development from White European families to this growing population given the different social contexts in which these two populations develop.

A recent study conducted by Palacios & Bohlmann (2020) looked at the mediating role of self-regulation in the association between family demographics (e.g., home language and parental foreign-born status) and early reading and mathematics trajectories. Findings from this study highlight the importance of early self-regulatory skills (working memory and inhibition) for Latino children's academic development. It is important for practitioners, clinicians, and researchers to understand how cultural and linguistic differences may shape these relations, and how to support Latino children in the development of self-regulatory abilities and academic achievement from a strength-based approach recognizing the unique cultural profiles of Latino families. This understanding is crucial, since it remains unclear as to where to most effectively target interventions aimed at improving family and child outcomes in the large population of Latino children living in the United States.

Risk and Protective Factors Associated with Maternal Distress in Latina Mothers

Ecological systems theory (Bronfenbrenner, 1979) suggests that, to explain the associations between maternal distress and parenting accurately and comprehensively, it is necessary to include in our models the potential influences beyond the individuals involved. Mothers, including Latina mothers, experiencing psychological distress exist in systems that

have the power to improve or disrupt their responsiveness to their children. Latina mothers experience unique contextual and sociocultural stressors such as poverty, immigration stress, acculturation, discrimination, and limited English proficiency (Palermo et al., 2019). These contextual factors have been found to negatively impact their overall mental health, and more specifically parenting behaviors which can compromise preschoolers' socio-emotional functioning (Li-Grining, 2012). Children from Latino families are at an increased risk of being disproportionately overrepresented in special education, primarily under the categories of Specific Learning Disability and Communication Disorders (Skiba et al., 2008). Overall, when compared to White European Americans, Latino families face unique cultural stressors within several environmental contexts and systems.

Immigration Stress

Immigration stress refers to psychological distress responses related to immigration challenges that are experienced by individuals as they engage in cross-cultural interactions and adapt to their lives in a new country (Tomás-Sábado et al., 2007). Recent studies have incorporated the minority stress framework proposed by Meyer (2003) to better understand Latino mental health. This framework sees stress as a function of social systems that perpetuate stigma and discrimination of minority population (Meyer, 2007). Latinos, in particular undocumented immigrants face heightened stress and adverse mental health outcomes because their unique minority identity in an anti-immigrant social environment (Valentín-Cortés et al., 2020).

Latina immigrants are at increased risk of presenting with high levels of immigration stress due to the unique nature of immigration experiences such as family separation (e.g., separation from their children), sexual and interpersonal violence, traditional gender roles and

expectations (Sternberg et al., 2016). However, immigration stress is not experienced exclusively by people who have immigrated themselves, but also by individuals with undocumented family members who could face deportation, loss of protected status, and overall uncertainty when it comes to their legal status in the country (Ubri & Artiga, 2017). Similarly, some studies have suggested that second and third generation Latinos can face immigration-related stress through perceived discrimination and concerns regarding family immigration (Cervantes et al., 2013; Umaña-Taylor & Updegraff, 2007). Several studies have found that Latina women report higher symptoms of depression, anxiety, and stress than Latino males as a consequence of personal and familial suffering caused by immigration policies and laws particularly associated with fear of detention and deportation (Becerra et al., 2020). Hovey & Magaña (2002) suggest that Latina women, especially those from Mexican origin who have elevated levels of immigration stress, experience higher symptoms of mood disorders (i.e., depression and anxiety) resulting primarily from factors such as isolation, poverty, cultural conflict, and gender conflict during acculturation among other stressors.

Perceived Discrimination

Discrimination refers to the differential treatment based on race and/or ethnic group that disadvantages a particular group over another (National Research Council, 2004). Currently, Latinos are the largest minority group in the United States, and there is evidence suggesting that one in three Latinos report discrimination based on their ethnicity (Gee et al., 2006; Health, 2017). The prevalence of perceived discrimination has been reported as high as 38% (Torres et al., 2012), indicating that Latinos are at an increased risk of experiencing mental health problems due to the additional worry of dealing with discrimination in several contexts (work, school, medical settings, general settings). Latino immigrants experience not only direct discrimination

but are also exposed to violence per immigration raids and deportation which are unique to this group and may lead to social isolation exacerbating mental health problems (Valentín-Cortés et al., 2020).

Among Latinos, discriminatory experiences have been associated with decreased self-esteem, social isolation, and increased symptoms of anxiety and depression (Ayón, 2017). It has been well-established by research that discrimination has long-lasting negative, and damaging effects on the psychological (e.g., depression) and physical health of individuals (Torres & Ong, 2010). One example of the pervasive and long-lasting effects of discrimination can be appreciated in a recent study that shows an association between discrimination exposure and epigenetic changes (Santos et al., 2018). In sample of pregnant Latina mothers, changes were observed in the deoxyribonucleic acid (DNA) structures involved in the etiology of stress-related disorders (i.e., depression, anxiety, and posttraumatic stress disorders). This finding is particularly relevant given the elevated prevalence of maternal depression in Latinas and the disproportionate impact of stress-related disorders affecting Latino communities in the United States (Gentile, 2017).

Acculturation

Acculturation is defined as a set of cultural and psychological changes that stem from first-hand and prolonged contact of individuals from one culture with a second culture (Sam & Berry, 2010). As a psychological process, acculturation is the adaptation to a host culture and can be viewed as a group or individual process (Dana, 1998a). Acculturation is considered to play a crucial role in the mental health of immigrants, as high levels of psychological distress can be produced when individuals are unable to effectively deal with the demands placed on them by the dominant culture (Balidemaj & Small, 2019).

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These demands and challenges are known to produce psychological conflict as the result of intercultural contact or the cultural adaptation process, which can lead to stress reactions, including higher levels of depression and anxiety—particularly in women (Berry, 2006; Torres et al., 2012). This set of reactions is referred to as acculturative stress, and may be the result of two different acculturation routes: a) low levels of acculturation and the inadequacy of social networks and unawareness of the cultural dynamics; or b) high acculturation levels causing mental health problems due to internalization of racist cultural norms and existing stereotypes reinforced by the mainstream culture (Gamst et al., 2002).

Measurement of acculturation varies with regards of dimensionality. There are three types of acculturation measurements typically used: a) unidimensional, which measures the cultural losses and gains conceptualizing acculturation in a linear continuum; b) bidimensional, measuring acculturative change in both cultures using separate scales; and c) multidimensional, which try to capture multiple dimensions such as values, attitudes, behaviors and interactions (Schumann et al., 2020). Acculturation is often measured through proxy measures which serve as indicators of acculturation; these include language, immigration status, and length of residency (Thomson & Hoffman-Goetz, 2009).

Culture-Specific Protective Factors

In contrast, Latino families also benefit from cultural values and beliefs that are often incorporated into Latino parenting practices and have shown to act as protective factors for family stress and conflict, and both mental and physical health (Arredondo et al., 2015). These include, a) *cariño* (caring, responsiveness and warmth); b) *respeto* (respect) defined as multidimensional concept that embodies obedience, deference/decorum and public behavior (Calzada et al., 2010); c) *familismo* which describes the importance of family relationships,

family obligations and family structure (Arredondo et al., 2015); and d) paternal monitoring (e.g., supervision; Calzada et al., 2010; Cauce & Domenech Rodríguez, 2002; Harris & Santos, 2020). In addition to the Latino parenting values and beliefs mentioned above, there are several contextual factors that have been identified as protective factors withing the Latino culture but their role in the relations among maternal distress, parenting and child self-regulation have been less explored in previous research.

Ethnic Identity

Ethnic identity is a multidimensional and dynamic concept, part of an individual's social identity. It describes awareness, self-labeling, attitude, and behavior resulting from identification and attachment with a particular group (Balidemaj & Small, 2019). From a developmental standpoint ethnic identity has five components: 1) self-identification as a member of a group; 2) sense of belonging and commitment to the group; 3) firm attitudes towards the group; 4) shared beliefs; and 5) traditions and practices (Phinney & Ong, 2007). Having a positive sense of ethnic identity has been shown to moderate the negative effects of acculturative stress and perceived discrimination on an individual's overall psychological well-being (Balidemaj & Small, 2019; Iturbide et al., 2009). The protective effects of ethnic identity on academic outcomes and mental health outcomes (e.g., fewer symptoms of depression and anxiety) have been well established with adolescents (Umaña-Taylor & Updegraff, 2007). However, in recent years researchers have investigated the protective nature of ethnic identity for Latina females and younger children.

One study found that Latina females with higher levels of ethnic identity reported fewer symptoms of depression, which may be partially explained by the fact that Latina women are more intensely socialized to their ethnic group (Iturbide et al., 2009). Similarly, a recent study investigated the importance of the early stages of ethnic identity in Latino children ages 2 to 4.

The main findings suggest that early stages of ethnic identity (i.e., consistency and knowledge) are associated with better child functioning and adaptive behavior both at home and school (Serrano-Villar et al., 2017). The social identity developmental literature suggests that, around the second year of life, children become aware of social categories such as gender, race, and ethnicity (Kohlberg, 1966 as cited in Serrano-Villar et al., 2017). Although research looking at the development of ethnic identity in early childhood is scant, evidence suggests that positive ethnic identity may be a protective factor not only for Latina mothers, but for their young children too.

Social Support

Social support is a multidimensional construct that can be divided into two categories: a) the structural component which refers to relationships; and b) the functional component which assesses the degree to which these relationships serve a function and provide resources (Kocalevent et al., 2018). Social support can be understood in terms of the size of one's social network (how many members are part of the network), the amount or frequency of the support, and types of supports (emotional, instrumental) provided by such networks (Serrano-Villar et al., 2017). While social support may be a protective factor among all parents, studies show that Latina mothers, particularly those that have young children, report extensive reliance on social support from extended family (explained in part by the cultural value of *familismo*) and friends (Barnett et al., 2012). Current evidence suggests that social support is not only positively associated with parental warmth and monitoring in Latina mothers but that it also indirectly benefits child's functioning promoting children's social competence and less behavioral problems (Serrano-Villar et al., 2017; Taylor et al., 2015). These protective factors are known to buffer children from the negative effects of distress and might support child self-regulation. A

recent study showed that, although Latino children face risk factors related to early achievement, they also demonstrate a wide range of strengths related to self-regulation skills, which support positive developmental trajectories (Palacios & Bohlmann, 2020).

While researchers in the field of self-regulation have continuously highlighted the importance of sociocultural contexts in the development of children self-regulatory skills (Li-Grining, 2012; Ren et al., 2019), almost no studies have investigated the role of unique cultural factors in the development of self-regulation in Latino children. Studies that have investigated these associations have taken a deficit approach focusing on the negative relations between family factors and self-regulation of Latino children (Díaz & McClelland, 2017). To this day, the relations between Latino parenting practices and child development are not well understood, and research studies continue to ignore the critical role and influence of cultural context on parenting (Livas-Dlott et al., 2010).

Goals of the Present Study

The present study investigated how the combination of maternal distress (depression and parenting stress) and sociocultural stressors (stress of immigration and perceived discrimination) – referred to here as maternal global psychosocial stress (GPS) – associates with parenting, and child self-regulation (SR) in a national sample of 150 Latina mothers and their preschool-aged children. One of the study's main goals was to understand the cultural and contextual risk and resilience factors that are implicated in these relations and are unique to this population. To achieve this, the present study employed an ecological theory lens and strength-based approach to explore how ethnic identity, acculturation, and maternal social support both control and moderate these relationships. Findings from this study will help educators, researchers, and

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clinicians understand how cultural, contextual, and linguistic differences impact the association between maternal distress and child-self regulatory skills in Latino families.

Mothers of 3-5-year-old children participated in a remote research session in which mothers completed a demographic interview over phone or Zoom and answered self-reported standardized surveys assessing all variables of interest in this study. This procedure allowed for families to feel comfortable participating in the study regarding COVID-19 safety, as well as increasing the geographical representation of participants.

Research Questions

The current study examined the following research questions:

1. Is maternal global psychosocial stress associated with child self-regulation in Latino families?

   Hypothesis 1: Higher levels of reported maternal global psychosocial stress will be negatively associated with poorer overall child self-regulation in Latina mother-child dyads (Figure 1).

2. To what degree does parenting affect the association between maternal global psychosocial stress and child self-regulation in Latino families?

   Hypothesis 2: Parenting will meaningfully affect the association between maternal global psychosocial stress and child self-regulation with either an interaction effect (moderator; Figure 2) or indirect effect (mediator; Figure 3) in this relationship.

3. Do cultural factors unique to this population (i.e., acculturation, ethnic identity, social support) moderate the relationship between maternal global psychosocial stress and child self-regulation?

Hypothesis 3: All cultural factors will moderate the relationship between maternal psychosocial stress and child self-regulation (Figures 4, 5 & 6).

Figure 1

Conceptual Model

Covariates	Independent Variable	Dependent Variable
Child Demographics -Child's sex -Child's age **Maternal Demographics** -Maternal education	**Maternal Global Psychosocial Stress (GPS)** (CESD-R) (PSI-SF) (SOIS) (PRSL)	**Child Self-Regulation** (BRIEF-P)
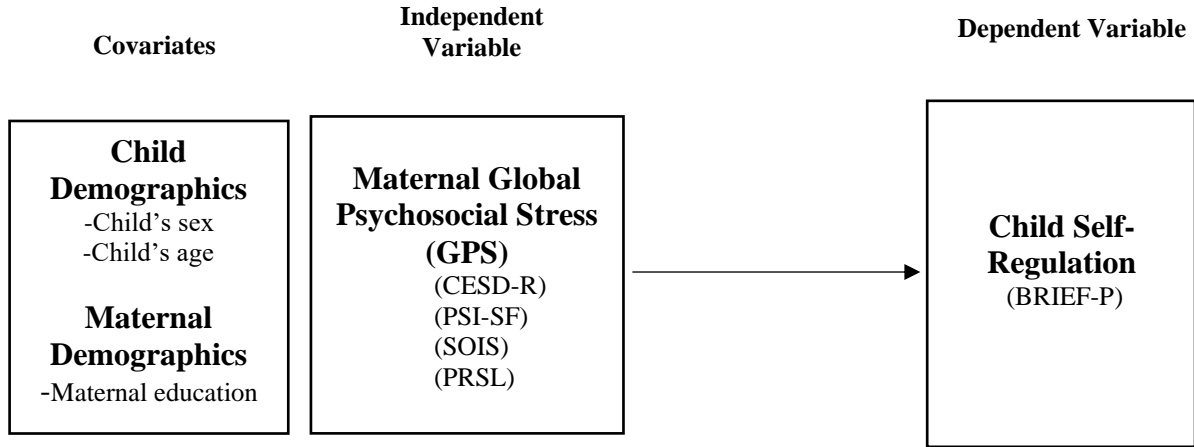
Figure 2

Hypothesized Model of Parenting as Moderator in the Association Between Maternal GPS and child SR.

Covariates	Independent Variable		Dependent Variable
Child Demographics -Child's sex -Child's age **Maternal Demographics** -Maternal education	**Maternal Global Psychosocial Stress (GPS)** (CESD-R) (PSI-SF) (SOIS) (PRSL)	**Parenting** (MAPS)	**Child Self-Regulation** (BRIEF-P)
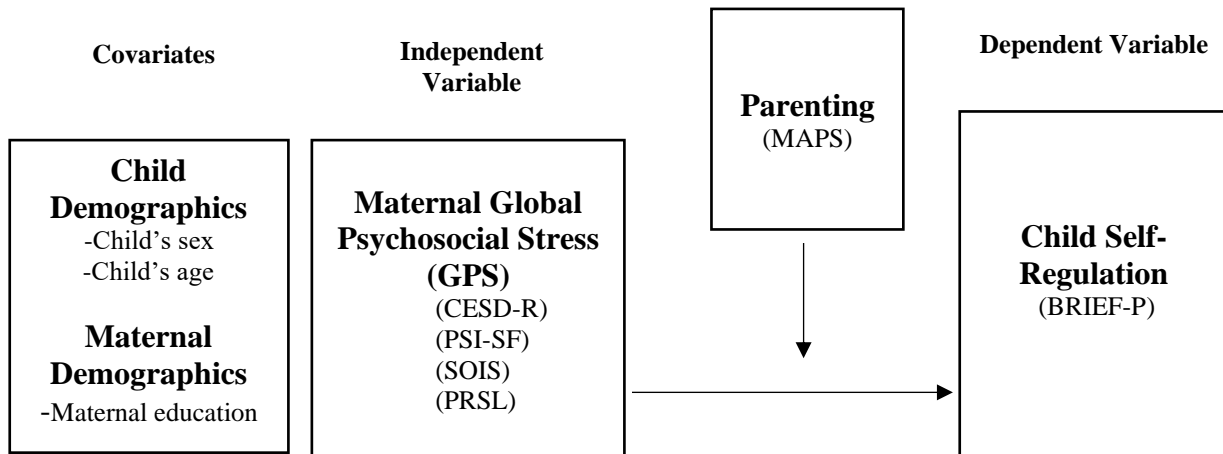
Figure 3

Hypothesized Model of Parenting as Mediator in the Association Between Maternal GPS and child SR

Covariates	Independent Variable		Dependent Variable

Child Demographics
-Child's sex
-Child's age

Maternal Demographics
-Maternal education

Maternal Global Psychosocial Stress (GPS)
(CESD-R)
(PSI-SF)
(SOIS)
(PRSL)

Parenting
(MAPS)

Child Self-Regulation
(BRIEF-P)
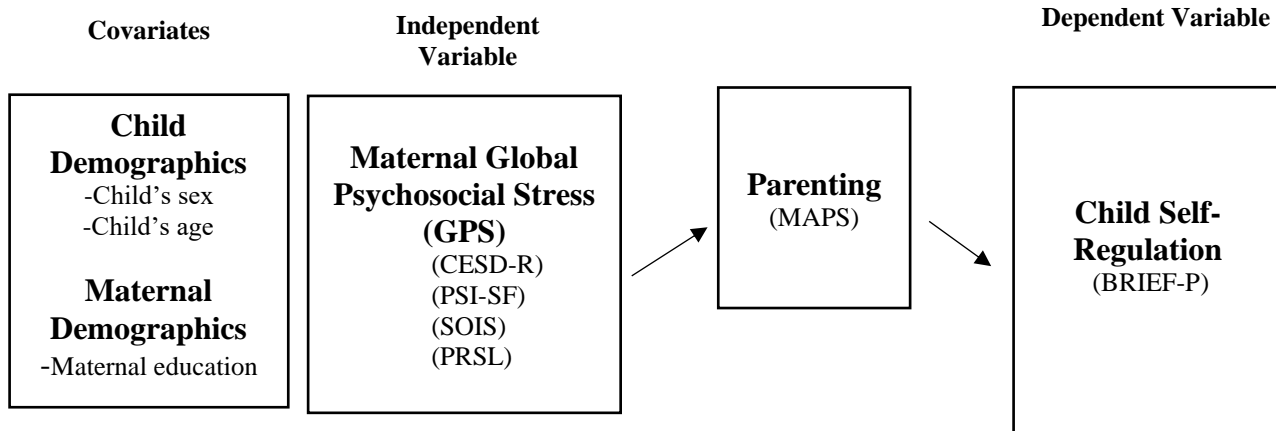
Figure 4

Hypothesized Path Diagram of Maternal GPS by Acculturation Moderating Effect in the Association Between Maternal GPS and child SR

Independent Variables/Predictors

Dependent Variable

Maternal GPS

Moderator

Acculturation
(CECER-DLL)

Child SR
- (BRIEF-P)

Interaction Term

Maternal GPS X Acculturation
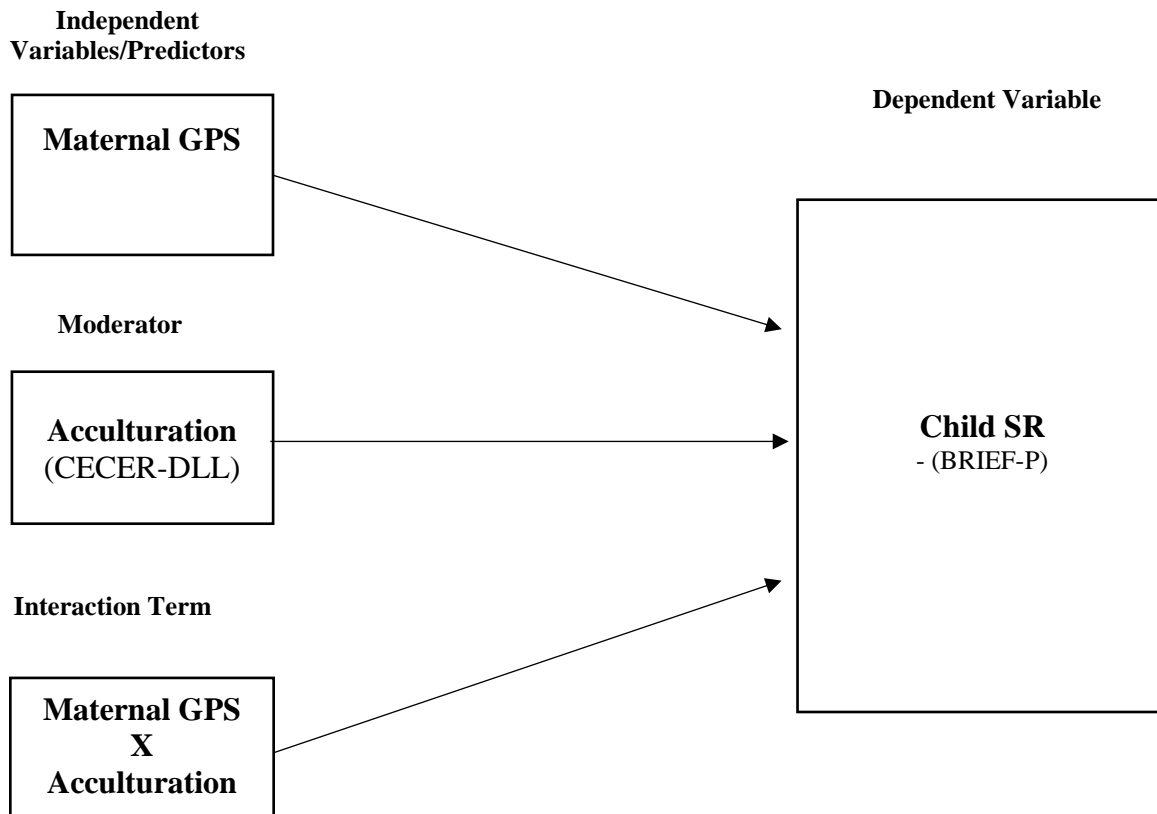
Figure 5

Hypothesized Path Diagram of Maternal GPS by Ethnic Identity Moderating Effect in the Association Between Maternal GPS and child SR

Independent Variables/Predictors

Dependent Variables/Outcome Measure

Maternal GPS

Moderator

Ethnic Identity (MEIM-R)

Child SR - (BRIEF-P)

Interaction Term

Maternal GPS X Ethnic Identity
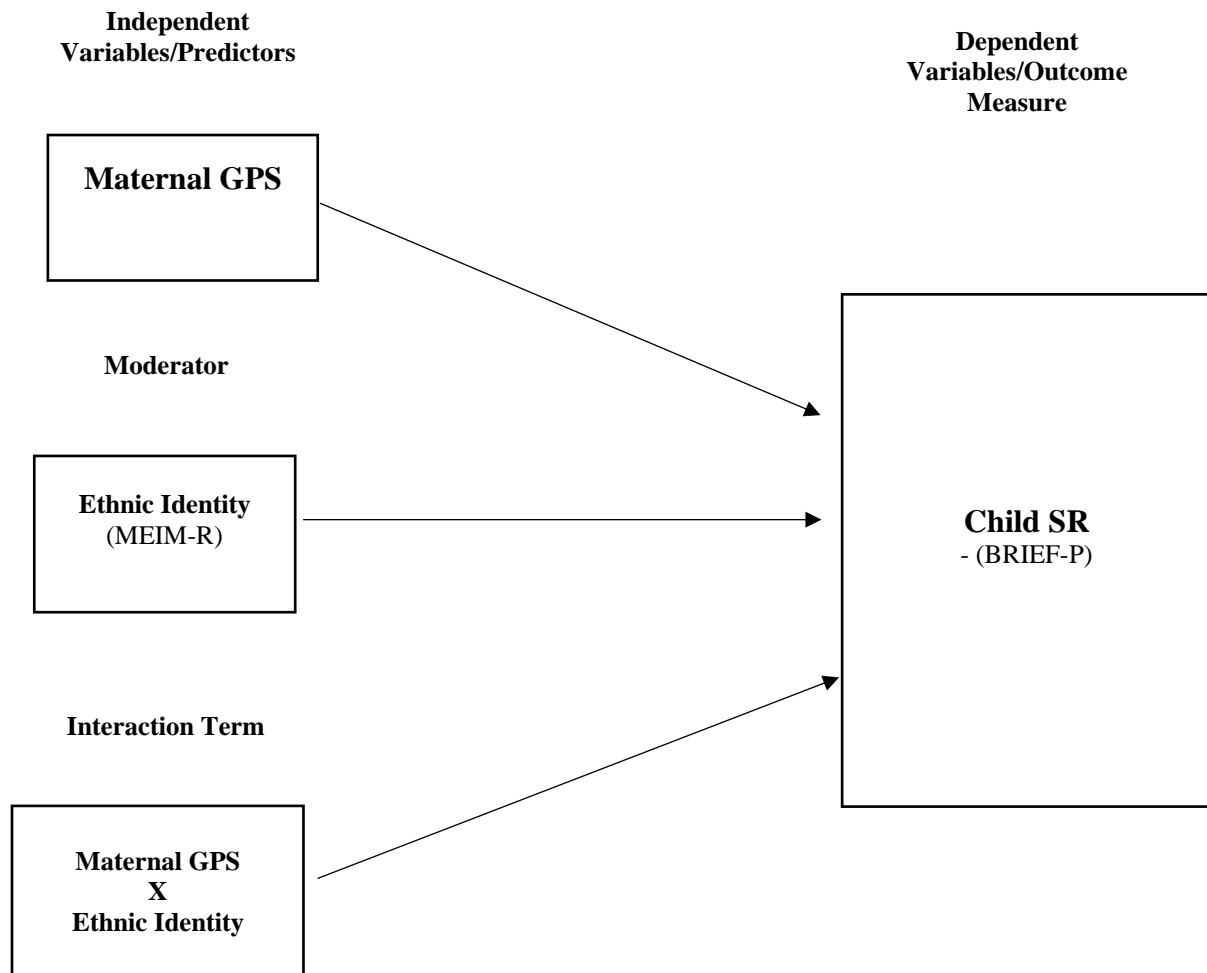
Figure 6

Hypothesized Path Diagram of Maternal GPS by Social Support Moderating Effect in the Association Between Maternal GPS and child SR
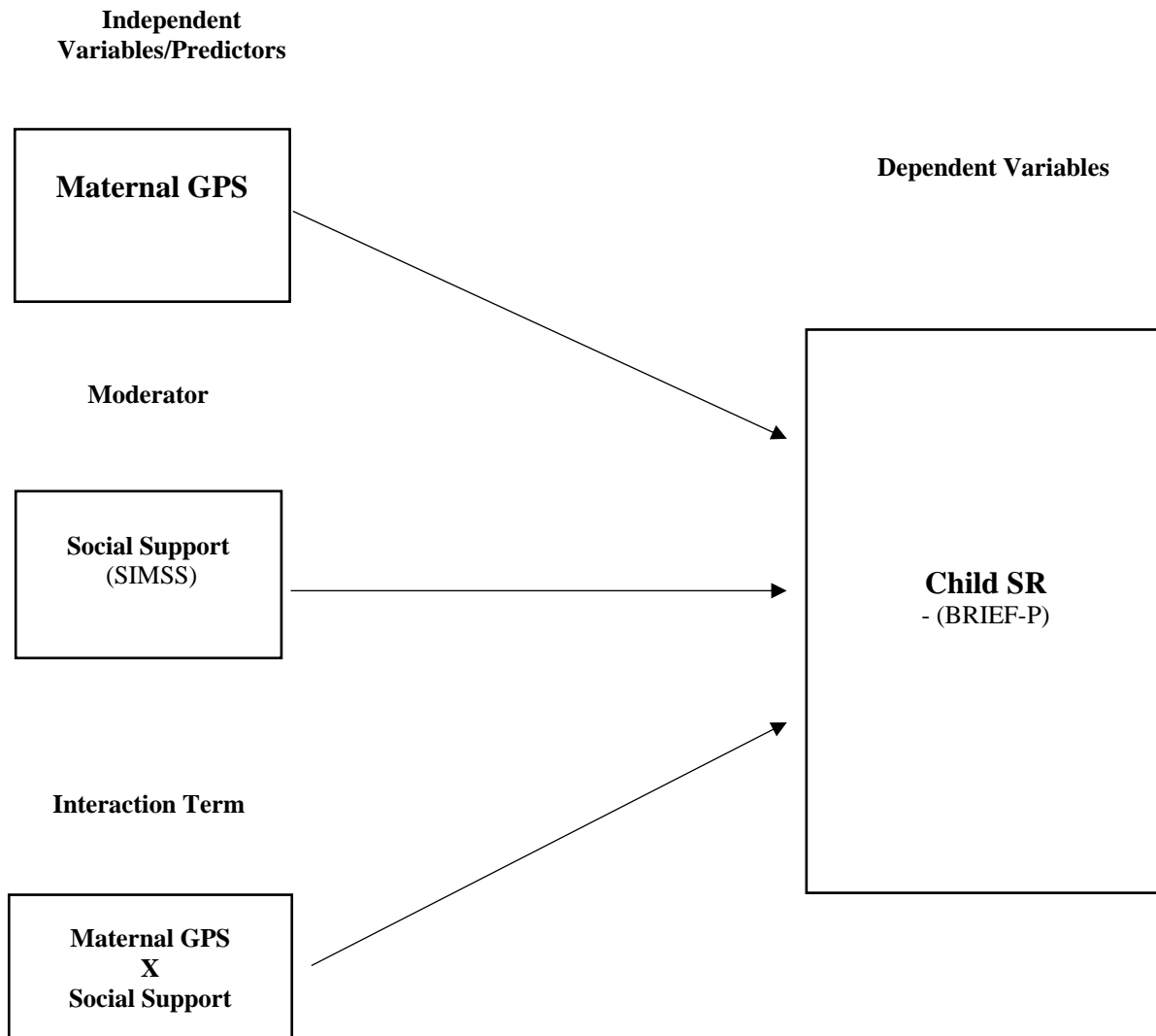
CHAPTER II

METHODOLOGY

Participants

Participants were 150 mothers of children ages 3 to 5 years who self-identified as Latina/Hispanic. We recruited families from 23 states across the United States. An a priori power analysis (Faul et al., 2009) revealed that this sample size will provide sufficient power ($1\text{-}\beta$ = 0.80) to test for medium effect sizes (f^2 = .15) for the analyses addressing all three research questions. We excluded adults who have not had primary custody of the child in the dyad for at least a year or were unable or unwilling to participate in the study. We also excluded mothers whose child in the age range had a diagnosed developmental delay or sensory impairment since these may explain variation in self-regulation development. Of the 150 participants recruited, 5 failed to complete the questions included in the surveys (less than 50% of responses) and one had a child out of the age range. These participants' data were excluded from all analyses leaving a total of 144 participants who were included in the final sample used for statistical analysis.

Recruitment

The challenges of recruiting and retaining Latino participants for research studies has been addressed in the literature (Guzman et al., 2009; Haack et al., 2012; Rodríguez et al., 2006). Common challenges include difficulties with transportation, childcare, lack of time due to family members working several jobs, and lack of trust due to immigration status (Guzman et al., 2009). In addition to addressing transportation and childcare barriers by employing a survey-based protocol that was completed at the participant's convenience, we also employed a multimodal recruitment and retention approach integrating cultural adaptations suggested by experts in this area (Guzman et al., 2009; Haack et al., 2012). These included 1) flexibility to complete surveys

in preferred language and method (i.e., online, phone, mailed paper copies), and 2) *personalismo* through frequent contact, technology support, and emphasizing continuity and stability.

Recruitment consisted of 1) online advertisements and social media posts (i.e., Facebook and Instagram); 2) snowball recruitment; and 3) targeted communications (i.e., emails and direct messages) with organizations serving Latinos and/or Latina mothers (Appendix A)

Procedure

All study activities were completed remotely, to maximize family and research team safety with regards to the COVID-19 pandemic. This study's protocol was approved by the University of Oregon Institutional Review Board (IRB) in September 2021. (Appendix B) Potential participants completed an online application form in their preferred language (English or Spanish) to determine eligibility and indicate preferred language, preferred form of communication and contact information (i.e., name, email address, phone number).

Once the application was completed, an experimenter sent out an email to the potential participant, in which they introduced themselves and asked potential participants to share their availability to schedule an eligibility screening and demographic interview either via phone call or video call (i.e., Zoom). During this phone call the experimenter confirmed eligibility through a series of questions, verbally explained the study to the eligible participants in their preferred language and provided all pertinent information including study purpose, duration, risks, benefits, alternatives to participation, and compensation. In this call participants also indicated how they would like to complete their surveys, either using secure survey software (i.e., Qualtrics) or printed paper surveys mailed to the participant's home. Once participant's eligibility was confirmed, verbal consent to participate was obtained and preferences were

recorded, the experimenter proceeded to complete the demographic questionnaire *(CECER-DLL)*.

After completing the eligibility screening and demographic interview, the experimenter sent an email or text message with the link to the survey and instructions to complete the online survey Once all questionnaires were completed, participants received a third email to confirm that their responses were received and let participants know their compensation was on the way. Participants were asked to confirm via email or text when they have received their compensation. The written informed consent form was included as the first page in the survey packet (Appendix C). All surveys and documentation were available in English and Spanish**.** Full participation consisted of completing the screening questionnaire and demographic interview via phone call or video call, and all surveys. Families were compensated with either a $50 gift card or $50 check, mailed to their home. Average participation time was 1.5 hours per participant.

Measures

Demographics and Unique Cultural Factors of Acculturation and Ethnic Identity

Mothers completed a shortened version of the *Center for Early Care and Education Research-Dual Language Learners (CECER-DLL) Child and Family Questionnaire* (Hammer et al., 2020) during the phone call or video call with the experimenter. The CECER-DLL Child and Family Questionnaire original version contains 98 questions on six content areas; 1) child demographics; 2) child language exposure and usage; 3) family's demographic information; 4) household characteristics; 5) childcare experiences; and 6) home literacy environment. For this study we used a shortened version of 32 items. The CECER-DLL Child and Family Questionnaire was designed specifically to capture key linguistic and contextual characteristics of Spanish-speaking preschoolers and their families, and was developed through the use of two

rounds of cognitive interviews with Latina mothers of dual language learners (English and Spanish) to maximize its content validity (Hammer et al., 2020).

Acculturation was assessed using the information gathered by the CECER-DLL family demographic interview through questions asking about; 1) English language proficiency, which was indicated by participants by rating their English language abilities (responses ranged from 1 "Not all, meaning you don't speak English or can only say a few words" to 4 "Very well, meaning you are a native speaker or have abilities close to a native speaker"; 2) Generational Status: place of birth, age of participant when they first moved to the United States (if foreign-born), and first person in the family to live permanently in the United States. These types of questions are widely used in research and have been validated to assess acculturation through proxy acculturation scales such as The Proxy Acculturation Scale-4 (PAS-4; Cruz, et al., 2008). For this study an Acculturation composite score was created by converting the obtained scores on the English language proficiency and Generation Status to z-scores and averaging across them. These two proxy measures were chosen due to their adequate correlation with each other (r = .55) and adequate internal consistency in this sample (α = .64).

Ethnic identity was assessed using the mean score obtained on the *Multigroup Ethnic Identity Measure–Revised* (MEIM-R; Phinney & Ong, 2007), which consists of 6 items with 5-point Likert scale response options ranging from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). The MEIM-R measures two aspects of ethnic identity formation across diverse ethnic groups, 1) Exploration, and 2) Commitment. Phinney & Ong (2007) provided evidence for the measure's structural validity through a multigroup confirmatory factor analysis. In this study we utilized both subscales and obtained good internal consistency in this sample (α = .81).

Maternal Distress

Maternal depression was assessed using the total score on the *Center for Epidemiological Studies Depression Scale-Revised* (CESD-R; Radloff, 1977). The CESD-R is a 20-item short self-report scale to assess depressive symptoms by asking questions of feelings and behaviors experienced by the respondent in the past week. The CESD-R has a clinical cutoff score of 16, with higher scores indicate the presence of more symptoms of depression. The CESD-R has been widely used in clinical and research settings due to its high internal consistency both in the general population and clinical samples. The Cronbach alpha in this sample was $\alpha = .88$. Moreover, the CESD-R demonstrates adequate test-retest reliability, and appropriate validity (Radloff, 1977). Lastly, there is sufficient evidence proposing the validity of using the CESD-R Spanish Version with Latino/Hispanic populations (González et al., 2017). This evidence suggests that there are cross-cultural components of depression that are well captured by this measure despite cultural and linguistic differences (Walsh, 2014). Some examples of statements in the CESD-R include, *I felt that I was just as good as other people, People were unfriendly,* and *I could not get "going".*

Parenting stress was assessed by the total score on the *Parenting Stress Index-Short Form* (PSI-4 SF; Abidin, 2012), a 36-item measure that assesses three main factors that contribute to overall parenting stress: 1) Difficult Child; 2) Parental Distress; and 3) Parent-Child Dysfunctional Interactions. Thirty-three items response options use a 5-point Likert scale going from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*), and three items use multiple choice response options. Examples of items presented to caregivers in the PSI-4SF include, *I am not as interested in people as I used to be, My child gets upset easily about the smallest thing,* and *My child makes*

more demands on me than most children. Total score is calculated by summing the subscales scores ranging from 36 to 180. Scores above 90 may indicate clinical levels of stress.

Abidin (1995) reported high internal consistency, and test-retest reliability (correlations ranging from 68 to .85). This study employed the full 36-items and found good internal consistency for this sample ($\alpha = .91$). Lee and colleagues (2016) presented evidence suggesting the construct validity of the PSI-SF three-factor model with culturally and linguistically diverse parents/caregivers including Latino families.

Stress of immigration was assessed using the total score on the *Stress of Immigration Scale* (SOIS; (Sternberg et al., 2016), a 21-item screening tool to assess stress among low-income immigrant women of Mexican descent residing in the United States. Response options are presented in a 5-point Likert scale ranging from 1 (*No Stress*) to 5 (*Severe Stress*). The total score is obtained by calculating the mean of non-missing items, with higher scores indicating higher levels of stress of immigration. The SOIS captures five sources of immigration stress including, 1) limited English proficiency; 2) lack of legal immigrant status; 3) disadvantages in the workplace; 4) yearning for family and home country; and 5) cultural dissonance with the United States. Examples of statements presented to respondents include, *How much stress or worry have you experienced because you cannot get a driver's license because you do not have the right documents,* and *How much stress or worry have you experienced because you are worried that you or your family might be deported?* Cronbach's alphas for all five subscales used in this study suggest high internal consistency in this sample ($\alpha = .87$).

Discrimination was assessed using the total score obtained on the *Perceived Racism Scale for Latinas/os* (PRSL; Collado-Proctor, 1999), a 34-item self-report tool that measures the exposure to several types of racial discrimination across settings. These settings include, Racism

on the Job (*Because I am Latina/o, I have been given more work to do than people who are not Latina/os*), Racism in Academic Settings (*Some people who are not Latina/os assume I gained admission to school only because of my ethnic background*), Racism in Public Settings (*Because I am Latina/o, I have been turned down for loans*), Racism in Health Care Settings (*I have been refused treatment in health care settings because I am Latina/o*), and Racism in General Settings (*I have been physically assaulted because I am Latina/o*). Response options utilize a 5-point Likert scale ranging from 1 (*Never*) to 5 (*Several times a day*), and a *Not Applicable* option is available for settings that are not relevant to individuals reporting. A total score is obtained by averaging across items, with higher scores indicating higher levels of perceived racism.

Collado-Proctor (1999) reported a Cronbach's alpha of .93 for perceived discrimination frequency scores among a national-origin diverse Latino/a sample (e.g., Cuba, Mexico, Puerto Rico, Venezuela, El Salvador, U.S., Costa Rica). Similarly, subsequent studies have reported good alpha reliability coefficients ranging from .92 to .95 (Moradi & Risco, 2006; Torres et al., 2012; Victoria, 2014) reported convergent validity by showing an association between discrimination frequency and higher levels of anxiety and depression. Similarly, Moradi and Risco (2006) found that perceptions of discrimination were positively correlated with psychological distress. Subsequently, Torres et al. (2012) established PRSL's construct validity by showing that perceived discrimination was associated with higher levels of acculturative stress and psychological distress in a diverse Latino sample. For this study the five subscales were used with an $\alpha = .94$ in this sample.

Maternal social support was assessed by the *Single-item Measure of Social Supports* (*SIMSS*, Blake & McKay, 1986). This single-item tool measures the perceived availability of tangible social support and assistance. The item asks how many people the responder has near

and can readily count in for help in times of difficulty or trouble. Response options are 0 to 1, 2 to 5, 6 to 9, and 10 or more, and higher number of people identified indicate higher levels of tangible assistance. The SIMSS concurrent validity has been established by comparing it to a longer 12-item measure of social support (Blake & McKay, 1986).

Maternal Language Use and Child's Language Exposure and Use

Child language exposure and use, as well as maternal language use were assessed through the CECER-DLL language exposure and usage questions. These questions ask about the amount of English and Spanish spoken by each member of the dyad. (E.g., How much Spanish the do you use when speaking to your child). Responses range from 1 (*All Spanish/All English*) to 4 (*All English/All Spanish*). This questionnaire also asks the mother to rate their language abilities in each language with responses ranging from 1 (*Not at all, meaning you don't speak Spanish/English, or you can only say a few words*) *to 4 (Very well, meaning you are a native speaker or have abilities close to a native speaker*). The CECER-DLL Child and Family Questionnaire has been validated as a measure to examine bilingual children's language experiences (i.e., exposure and usage) during early childhood (Castro et al., 2020).

Child Self-Regulation

Executive functioning was assessed by the *T*-scores from the *Behavior Rating Inventory of Executive Function-Preschool Version Parent-Report* (BRIEF-P; Gioia et al., 2003). The BRIEF-P is a widely used tool that consists of 63 questions to assess executive function behaviors in preschool-aged children (2-5 years old). Parents are asked to rate behaviors observed at home across five domains: 1) inhibit; 2) shift; 3) emotional control; 4) working memory; and 5) plan/organize. Items are rated on a 3-point Likert scale from 1 (*Never*) to 3

(*Often*). Examples of item questions include *Overreacts to small problems, Becomes upset with new situations,* and *Completes tasks or activities too quickly.*

The authors reported convergent and discriminant validity with other measures of inattention, hyperactivity/impulsivity, internalizing behaviors and somatic complains (Gioia et al., 2003). The BRIEF-P has been translated to several languages including Spanish and has undergone validation studies with samples in several Spanish-speaking countries (e.g., Spain, Colombia, Mexico; (Bausela-Herreras & Luque-Cuenca, 2017). Regarding reliability and validity, the 63 items of the BRIEF-P were used in this study, with high internal consistency in this sample ($\alpha = .95$).

Parenting Behaviors

Parenting behaviors was assessed using *z*-scores from the *Multidimensional Assessment of Parenting Scale* (MAPS; Parent & Forehand, 2017). The MAPS is a 34-item parent-report tool that assesses positive and negative parenting using seven subscales. Positive parenting is assessed by 1) proactive parenting; 2) positive reinforcement; 3) warmth; and 4) supportiveness, while negative parenting is assessed by 5) hostility; 6) lax control; and 7) physical control. Parents rate statements addressing parenting behaviors using a 5-point Likert scale ranging from 1 (*Never*) to 5 (*Always*). Examples of items include *I yell or shout when my child misbehaves, I encourage my child to talk about her/histroubles,* and *I provide my child with a brief explanation when I discipline his/her misbehavior.* While the MAPS has been translated to several languages including Spanish and Latino parents represented 8.3% of the normative sample, this measure has not been validated with this population. However, we decided to employ this measure since it is one of the few tapping into both the positive and negative dimensions of parenting while adjusting for developmental stage. The authors of this measure reported adequate internal

consistency with the original sample with high between time-point correlations ranging from .81 to .91, indicating strong two-week test-retest reliability across subscales, and adequate validity of interpretation for all subscales (Parent & Forehand, 2017). This study used the Positive Parenting Broadband and the Negative Parenting Broadband, both of which obtained Cronbach alphas of .83, indicating adequate internal consistency in this sample.

Data Analysis

All statistical analyses in this study were conducted using RStudio 2022 for macOS. Two Confirmatory Factor Analyses were conducted using the *lavaan* package (Rosseel, 2012) to explore if a one-factor solution or a two-factor solution better represented the four variables included in the *a priori* maternal GPS composite (see Figure 1). Based on the results of the CFAs, a two-factor solution was employed, and two independent variables were created. First, a composite variable of Maternal Distress (MD) was created by converting the obtained scores on the *Center for Epidemiological Studies Depression Scale-Revised* (CESD-R), and the *Parenting Stress Index-Short Form* (PSI-4 SF) to *z*-scores and averaging across them. Similarly, a composite variable of Racial Stress (RS) was created by converting obtained scores on the *Stress of Immigration Scale* (SOIS), and the *Perceived Racism Scale for Latinas/os* (PRSL) to *z*-scores and averaging scores. Five participants (7.15% of the sample) did not complete the SOIS, therefore only their obtained scored on the PRSL was used as a measure of Racial Stress.

Descriptive statistics (e.g., mean, standard deviation, range), measures of central tendency and measures of dispersion were calculated for all study variables using the *psych* and *Hmsic* packages (Revelle, 2022; Harrell, 2022). Missing data patterns were visualized, and person-mean imputation was used for computing sum scores for participants missing item-level data (i.e., some items in a scale were completed but not all). A series of regression analyses were

conducted using the packages *stats* (R Core Team, 2013), and *lessR (Gerbing, 2021)* to investigate the three research questions proposed in this study. First, a hierarchical linear regression (HLR) was conducted by building sequential regression models and adding covariates and the study's independent variables (MD and RS). The goal of the HLR was to regress MD and RS on child SR as measured by executive function problems reported by mothers on the BRIEF-P, while controlling for known correlates to child SR.

Covariates

All regression models in the HLR controlled for maternal education, child age, and child sex. These variables were collected during the demographic interview using the shortened version of the CECER-DLL. This study controlled for maternal education since this variable has been frequently associated with child SR. In particular, higher maternal education has been positively associated with higher levels of behavioral regulation (Montroy et al., 2016) and lower maternal education attainment with child's poorer performance on SR tests (Sektnan et al., 2010). In terms of child-level demographics, child sex and child age included as covariates, because previous literature suggests that individual differences such as sex and age are implicated in the development and trajectory of self-regulation abilities (Montroy et al., 2016; Piotrowski et al., 2013). An Akaike Information Criteria (AIC) test using the *tidyverse* (Wickham et al., 2019) and *DHARMa* (Harting, 2022) packages was used to compare models including study variables and covariates and select the best-fit model for this study's data (Burnham et al., 2002).

To address research question 2 and determine the degree to which parenting affects the association between the two independent variables (MD and RS) and child SR, Positive Parenting (composite of proactive parenting, positive reinforcement, warmth, and supportiveness

subscales) and Negative Parenting (composite of hostility, lax control, and physical control subscales) were tested as both a mediators and moderators on the association between MD and child SR. To determine whether a mediation or a moderation best describes the effects of Positive Parenting and Negative Parenting on the associations between MD and child SR, two steps were followed. First, both the effects of the predictors (MD and RS) and the effects of the interaction terms (MD x Positive Parenting, MD x Negative Parenting, RS x Positive Parenting, and RS x Negative Parenting) were examined looking for statistical significance ($p \leq 0.05$) as well as changes in explained variance (R^2) due to incorporating the interaction term. Then, we evaluated the differences in simple slopes for significant interactions, which provides additional information (Robinson et al., 2013). Moderation analyses were conducted using *lessR,* and *interactions* (Long, 2019) packages in RStudio. With regard to mediation analysis, four models were specified to test both Positive and Negative parenting as mediators in the association between MD and child SR, and RS and child SR. For this, the following packages were used in R *lavaan, semPlot* (Epskamp, 2022), *tidySEM* (J van Lissa, 2022), *and ggplot2* (Wickham, 2016). Bootstrapping significance testing was used to test the accuracy of the mediation effects (Preacher & Hayes, 2004; Shrout & Bolger, 2002).

To address research question 3, we explored the degree to which cultural factors such as ethnic identity, perceived social support, and acculturation separately moderated these effects by testing both the interaction terms and the difference in simple slopes using packages *lessR*, *interactions* and *jtools* (Long, 2022) in RStudio.

Preliminary Analyses

The first step of the analysis plan was to examine the distribution of variables and ensure that underlying assumptions were met (e.g., normality). All study variables were within the

acceptable ranges of distribution (+/-2 for skewness and kurtosis) and no corrective actions were taken. Missing data patterns were visualized, and person-mean imputation procedures were used to deal with participants with incomplete data. Person-mean imputation allowed us to include participants with incomplete data by simply averaging responses across non-missing items (Heymans & Eekhout, 2019; Yuan, 2011). There was one outlier identified in the data (case 63) which endorsed extremely high levels of depressive symptoms, parenting stress, and child's executive functioning problems. This case was eliminated from analyses after running regression diagnostics (distribution of residuals and Cook's distance), and determining that it was in fact an influential case (See Appendix D).

Regarding this sample's demographic characteristics, mothers were on average 34.62 years old (*SD* = 5.68), and children were on average 4.4 years old (*SD* = 0.84). Although this study aimed to recruit mother-child dyads with children between 3 and 5 years old, there were six children older than 5 years and 11 months old. Five children were retained for analyses of which three were 6.0 years old, and two were 6.3 years old. There was one child who was 7.0 years old; this case was removed from analyses because the child was considerably out of this study's intended age range. Most of the children in this sample were female (57.64%) and 97.2% of children were born in the United States. Descriptive statistics for child demographic variables are shown in Table 1.

Table 1

Child Demographic Characteristics (N=144)

Variable	M (n)	SD (%)
[a] Child Age (in years)	4.41	.85
[b] Child Sex		
Male	61	42.36
Female	83	57.24
Child Country of Birth		
United States	139	96.52
Mexico	2	1.37
Guatemala	2	1.37
Spain	1	.69

Note. M and *SD* are used to represent mean and standard deviation, respectively.
[a] Child Age range was 2.4 – 6.3.
[b] Child Sex was coded 1= male and 2= female.

All mothers identified as Latina/Hispanic, with 10.4% identifying with a second race/ethnicity (e.g., White, Afro-Latina, Native/Indigenous). With regards to their Latin origin, 64% of mothers identified as Mexican American or from Mexican origin, and the rest were distributed across twelve countries in Latin America and Spain (See Appendix). Most mothers participating in this study (73.6%) indicated being currently employed. Thirty-six percent of participants had a graduate degree (e.g., master's, doctoral, medical, law), 34.7% held a bachelor's degree, and the lowest level of schooling reported was "Some schooling but no high school diploma" which was endorsed by 2% of the sample. Mothers indicated their family's annual income by selecting one of the 11 possible options. Responses ranged from 1 to 11 with 1 ($10,000 or less) to 9 (More than $80,000) providing income brackets and options 10 (Don't know) and 11 (Refused) were included as non-responsive options. The average annual household income for this sample was $60,000 to 70,000, and six participants (4.16%) refused to answer this question. Most indicated being married or in a partnership (86%), 13% reported being single,

and one participant did not wish to report her relationship status. Mothers in this sample represented 23 states across the United States based on their current place of residence, 14 countries of Latin America based on their Latin origin, and 13 countries across the globe based on their birth country (See Appendix E). Maternal demographic characteristics are presented in Table 2.

Ninety-five percent of the sample reported speaking another language other than English at home and only 5% reported speaking only English at home. Participants reported English and Spanish language use at home. Forty-nine percent of mothers indicated using "More English than Spanish" when communicating with their children, whereas 17% reported "More Spanish than English", 15% reported using "The same amount of Spanish and English", 14% endorsed "All Spanish" and 5% indicated "All English" ($M = 3.13$, $SD = 1.18$). With respect to how much English and Spanish their children used when speaking to them, mothers reported that 53% of children used "More English than Spanish" when speaking to them. Mothers also reported that 21% used "All English", 14% "More Spanish than English", 6% "The same amount of Spanish and English", and 6% "All Spanish" ($M = 3.68$, $SD = 1.13$). Mother and child language use is reported in Table 3.

Table 2

Maternal Demographic Characteristics (n =144)

Variable	M (n)	SD (%)	Range
Maternal Age	34.01	4.77	22 - 44
Maternal Race/Ethnicity			
Latina/Hispanic only	129	89.58	
Multiracial	15	10.34	
Marital/ relationship status			
Married/partnered	126	86.89	
Single	19	13.10	
[a] Maternal educational level	6.41	1.65	2 - 9
Some schooling (no HS diploma)	2	1.39	
High School	6	4.14	
Some college	20	13.79	
Associate degree	7	4.83	
Bachelor's Degree	50	34.48	
Postgraduate degree	52	35.86	
Employment			
Unemployed	39	26.90	
Employed	105	72.92	
Maternal Birth Country			
U.S born	87	60	
Foreign born	58	40	
Generational Status			
Immigrated	23	15.86	
1st Generation	37	25.69	
2nd Generation	80	55.17	
3rd + Generation	4	2.7	

Note. M and SD are used to represent mean and standard deviation, respectively.
[a] Maternal Education response options ranged from 1 (No schooling) to 9 (Refused). Only response options selected by participants were reported.

Table 3

Mother and Child Language Use (*N = 144*)

Variable	*M* (n)	*SD* (%)
[a] Mother's Spanish Proficiency	3.67	.59
Mother's English Proficiency	3.81	.45
[b] Mother's language spoken to child	3.13	1.18
Child's language spoken to mother	3.68	1.13
Interview Language		
English	121	84.02
Spanish	23	15.86

Note. M and *SD* are used to represent mean and standard deviation, respectively.
[a] Mother Language Proficiency Scale 1 (Not at all) to 5 (Very well)
[b] Language Spoken Scale 1 (only Spanish) 2 (more Spanish than English), 3 (equal Spanish and English), 4 (more English than Spanish) and 5 (only English).

Descriptive statistics (means, standard deviations, and range) for all study variables included in our analyses are presented in Table 4. About 33% of the mothers in our sample endorsed responses that indicate clinically significant levels of depressive symptoms (scores above 16) on the Center for Epidemiologic Studies Depression Scale Revised (CESD-R). The mean score of our study's sample on the CESD-R was 13.29 (*SD* = 8.70). Similarly, 30% of participants reported clinically significant levels of parenting stress on the Parent Stress Index Short Form-4 (PSI SF-4; scores above 90). The study's sample mean score on the PSI was 78.74 (*SD* = 19.81). Maternal responses on the Behavior Rating Inventory of Executive Function-Preschool Version (BRIEF-P) indicated that children in our sample obtained a mean score of

88.45 (*SD* = 16.85) in the Global Executive Composite (GEC). Based on the normative samples

on the BRIEF-P professional manual, boys 4 to 5 years old have a GEC mean score of 90.36 (*SD*

= 16.48) and for girls 4 to 5 years old the mean score was 92.09 (*SD* = 17.45).

Zero-order correlations across study variables were computed and are displayed in the

correlation matrix (See Table 5). Based on the zero-order correlation, the measures originally

considered for the latent variable of GPS (CESD-R, PSI, SOIS, and PRSL) were not moderately

to largely correlated with each other at least at *r* = .5. The highest correlation coefficients were

between maternal depression (CESD-R) and parenting stress (PSI; *r* = .48), and stress of

immigration (SOIS) and perceived racism (PRSL; *r* =.45). Thus, a Confirmatory Factor Analysis

(CFA) was conducted to determine if a one-factor solution or a two-factor solution would best fit

this study's data.

Table 4

Continuous Study Variables: Means, Standard Deviations, and Range

Variable	M (n)	SD (%)	Range	Possible Range
CESD-R [a]	13.29	8.70	0 - 44	0-60
PSI [b]	78.74	19.81	39 -145	36-180
SOIS [c]	1.5	0.60	1- 4	1-4
PRSL [d]	1.19	0.55	0 – 3.03	1-4
SIMSS [e]	2.82	1.01	1-5	1-5
Positive Parenting*	.49	.60	-1.59 - 1.31	-
Negative Parenting*	.13	.80	-1.43 - 3.13	-
MEIM-R [f]	4.07	.84	1.3 - 5	1-5
Acculturation*	.05	1.74	-5.74 - 2.37	-
BRIEF-P [g]	88.45	16.55	63 - 136	63 to 189

* Indicates *z*-scores were used.

Notes. M and *SD* are used to represent mean and standard deviation, respectively.

[a] CESD-R = Center for Epidemiological Studies Depression Scale-Revised. A score equal to or above 16 indicates a person is at risk for clinical depression.

[b] PSI = Parenting Stress Index-Short Form. A score equal or above 90 indicates clinically significant levels of stress.

[c] SOIS= Stress of Immigration Scale.

[d] Perceived Racism Scale for Latinas/os.

[e] SIMSS = Single-item Measure of Social Supports.

[f] MEIM-R = Multigroup Ethnic Identity Measure–Revised.

[g] Behavior Rating Inventory of Executive Function-Preschool Version Parent-Report.

Table 5

Zero-Order correlations of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Child Sex													
2. Child Age	-.08												
3. Maternal Age	-.02	**.19***											
4. Maternal Education	-.02	.11	**.33***										
5. CESD	-.01	.08	-.10	-.14									
6. PSI	.00	-.16	-.06	-.14	**.50***								
7. SOIS	-.02	-.05	-.02	-.06	**.31***	**.23***							
8. PRSL	-.12	-.02	-.09	-.06	**.24***	**.19***	**.37***						
9. SIMSS	-.06	.07	-.15	.05	-.14	**-.26***	-.08	.05					
10. Positive Parenting	.04	.10	-.16	.02	**-.23***	**-.30***	-.12	.02	**.20***				
11. Negative Parenting	-.07	-.10	-.05	-.09	**.30***	**.48***	.06	.11	-.08	**-.34***			
12. Ethnic Identity	.09	-.01	-.08	**.18***	.03	**-.19***	.02	**.19***	**.17***	.16	-.02		
13. Acculturation	.01	.13	-.11	.07	.10	.02	**-.45***	.13	**.20***	.13	.12	**.19***	
14. EF Problems	-.16	-.04	.06	.02	**.27***	**.57***	**.18***	.07	**-.21***	**-.19***	**.47***	.04	-.02

*p < .05, **p < .001

CHAPTER III

RESULTS

Confirmatory Factor Analysis (CFA)

Two CFAs were performed using Structural Equation Modeling. The first CFA looked at a one-factor solution with maternal Global Psychosocial Stress (GPS) as the latent variable and the observed variables CESD-R, PSI, SOIS, and PRSL included in Factor 1(See Table 6). After interpreting the first CFA fit indices, we determined that a two-factor solution might be a better representation of the data than a one-factor solution. In this second CFA, Factor 1 (MD) included CESD-R and PSI, and Factor 2 (Racial Stress; RS) included SOIS and PRSL. All standardized factor loadings were above 0.3 (See Table 7 and Figure 7). Statistical fit indices of both CFAs are displayed in Table 8.

Table 6

Standardized Factor Loadings for the One-Factor Solution CFA

Scales	Factor 1 Maternal Global Psychosocial Stress
CESD-R	0.73
PSI	0.61
SOIS	0.45
PRSL	0.37

Table 7

Standardized Factor Loadings for the Two-Factor Solution CFA

Scales	Factor 1 Maternal Distress	Factor 2 Racial Stress
CESD-R	0.80	-
PSI	0.60	-
SOIS	-	0.69
PRSL	-	0.53

Figure 7

Path Diagram of the Two-Factor Solution Confirmatory Factor Analysis
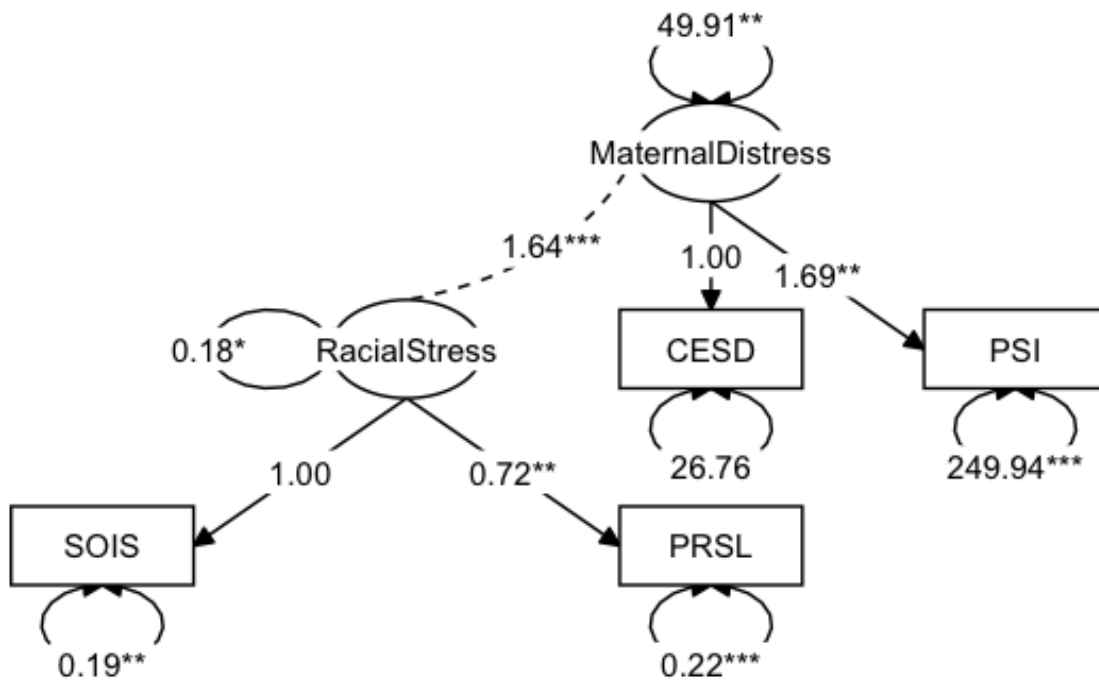
p < .05. **p* < .01. ***p* < .001

Interpretation of the Fit Indices

After estimating the model, goodness-of-fit statistics were obtained and interpreted

following the recommendations in Kline & Kline (2015). As shown in the table above, the one-

factor solution had a poor fit ($\chi^2(2) = 10.424$, $p = 0.005$, RMSEA = 0.175, CFI = 0.879, TLI =

0.638, AGFI = 0.814. Conversely, the two-factor solution model had an excellent fit ($\chi^2(1) =$

0.016, $p = 0.899$, RMSEA = 0.000, CFI = 1.000, TLI = 1.085, AGFI = 0.999). Based on the

results of the CFAs, a two-factor solution best fit this study's data. Therefore, all analyses

were conducted with Maternal Distress and Racial Stress as independent variables.

Table 8

Statistical and Practical Fit Indices for the Confirmatory Factor Analyses

Model	$\chi 2$	*df*	CFI	TLI	RMSEA [90% CI]	SRMR	GFI	AGFI
One-factor Maternal GPS	10.42*	2	0.87	0.63	.17[.08, .28]	0.06	0.96	0.81
Two-factor Maternal Distress and Racial Stress	0.01	1	1	1	0 [.00, .10]	0.00	1	0.99

* $p < .05$
Note. RMSEA = root mean-square error of approximation, CFI = comparative fit index, TLI = Tucker-Lewis's index, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index

Hierarchical Linear Regression

To address research question 1, the main effect of Maternal Distress (MD) and Racial

Stress (RS) on child SR, as measured by mother-reported child Executive Function (EF

problems) was quantified. A hierarchical linear regression was employed to explore the effects of

MD and RS on child SR while controlling for child age, child sex and maternal education. The

first model included all three covariates (child age, child sex, and maternal education). The

overall regression was not significant $F(3,139) = 1.31$, $p = 0.27$, $R^2 = 0.02$. Results showed that

only child sex accounted for a significant amount of variance in EF Problems (B = -0.32 β = -0.16, $p < .05$). This may suggest that mothers of males endorsed higher problems in EF in their children than mothers of females did. Independent variables were entered in the second and third models respectively. MD was entered in the second step, which revealed a significant regression $F(4,138) = 12.99$, $p < 0.01$, $R^2 = 0.27$, and accounted for a significant amount of variance in EF problems above and beyond child sex, child age, and maternal education ($B = 0.29$, $β = .050$ $p < 0.01$). Results presented in Table 9 show that 27% of the variance in children EF problems was explained by the addition of MD to the model. When RS was entered in the third model, the regression was still significant $F(5,137) = 10.35$, $p < .01$, $R^2 = .27$, yet RS did not account for a significant amount of variance in EF problems nor did it improve the predictive value of the model ($B = -0.01$, $β = -0.02$, $p = 0.73$).

Akaike Information Criterion (AIC)

After conducting the hierarchical linear regression and analyzing its results, we decided to conduct an Akaike Information Criterion (AIC) test to compare models and determine which variables and covariates to retain for further analyses. Six models were created and compared; results of the model selection by AIC are displayed in Table 10. Based on the AIC results, it was concluded that Model 4 had the best and more parsimonious fit for this study's data (for residual diagnostics see Appendix F). This model included MD, RS, and child sex as predictors of EF Problems. Thus, only child sex was retained as covariate in all further statistical analyses.

Table 9

Hierarchical Linear Regression of Maternal Distress and Racial Stress Predicting Child Self-Regulation

Predictor Variable	*B*	*SE B*	β	*F/t*	*df*	*R²*	*ΔR²*
Model 1				1.31	3	0.02	
Child Age	-0.06	0.09	-0.05	-0.63			
Child Sex	-0.32	0.16	-0.16	**-1.91***			
Maternal Education	0.01	0.05	0.02	.024			
Model 2				**12.99***	4	**0.27***	0.25
Child Age	-0.04	0.08	-0.03	-0.50			
Child Sex	-0.31	0.14	-0.15	**-2.11***			
Maternal Education	0.06	0.04	0.10	1.35			
Maternal Distress	0.29	0.04	0.50	**6.83***			
Model 3				**10.35***	5	**0.27***	0
Child Age	-0.04	0.08	-0.03	-0.51			
Child Sex	-0.31	.014	-0.15	**2.13***			
Maternal Education	0.06	0.04	0.09	1.34			
Maternal Distress	0.29	0.04	0.51	**6.54***			
Racial Stress	-0.01	0.04	-0.02	-0.33			

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

Table 10

Akaike's Information Criterion Results

Model ID	Predictors	df	AIC	ΔAIC
M4	EF Problems ~ MD + RS + Child Sex	5	1171.65	**0.0000**
M3	EF Problems ~ MD + RS + Child Sex + Child Age + Maternal Education	7	1173.24	1.58
M1	EF Problems ~ MD	3	1174.71	3.05
M6	EF Problems ~ MD + RS + Maternal Education	5	1176.81	5.15
M5	EF Problems ~ MD + RS + Child Age	5	1178.52	6.87
M2	EF Problems ~ RS	3	1209.27	37.6

Note: Models are rank ordered based in their AIC values, the model with the lowest value is considered the "best" model (Burham & Anderson, 1998).
ΔAIC= The difference in AIC score between the best model and the model being compared.

Moderation Analyses

To answer research question 2 and determine whether a mediation or a moderation best described the effects of parenting on the associations between MD and RS with child SR, a series of regression analyses were run. First, the effects of the predictors (MD and RS) and the effects of the interaction terms (MD x Positive Parenting, MD x Negative Parenting, RS x Positive Parenting and RS x Negative Parenting) were analyzed looking for statistical significance ($p \leq$ .05) as well as changes in explained variance (R^2) because of the incorporation of the interaction terms. Although the main association between RS and child SR appeared to be not significant, interactions effects were analyzed to obtain additional information. Four hierarchical linear regressions were run, and all models controlled for child sex.

Positive Parenting as Moderator in the association between MD and child SR.

Positive Parenting (a composite of the proactive parenting, positive reinforcement, warmth, and supportiveness subscales on the MAPS) was tested as a moderator of the two associations (MD and child SR; RS and child SR). To test the hypothesis that Positive Parenting moderated the relationship between MD and child SR, the variables MD, Positive Parenting, and child sex were included in the model as the first step. These variables accounted for a significant amount of variance in child's EF problems, $R^2 = 0.26$, $F(3,139) = 16.64$, $p < 0.001$. In the second step, the interaction term (MD x Positive Parenting) was added to the regression model. Results showed that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = .01$, $\Delta F(4,138) = -3.73$, $p < 0.001$, $b = -0.09$, $t(138) = -.1.27$, $p = 0.13$. Regression results are displayed in Table 11.

Positive Parenting as Moderator in the association between RS and child SR.

Then, a second HLR was run to test Positive Parenting as a moderator in the RS and child SR relation. As a first step, RS, Positive Parenting, and child sex were entered in the model. These variables accounted for 7.3% of variance in child's EF problems, $R^2 = 0.07$, $F(3,139) = 3.70$, $p < 0.01$. In the subsequent step, the interaction term (RS x Positive Parenting) was added to the model. Results showed that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = 0.02$, $\Delta F(4,138) = -0.89$, $p < 0.05$, $b = -0.03$, $t(138) = -0.44$, $p = 0.65$ (See Table 12).

Table 11

Hierarchical Linear Regression MD by Positive Parenting Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step1					$R^2 = .264**$ 95% CI [.14,.36]
(Intercept)	0.33	[-0.16, 0.82]			
MD	**0.28****	[0.19, 0.36]	0.48	[0.33, 0.63]	
Positive Parenting	-0.06	[-0.31, 0.19]	-0.03	[-0.19, 0.12]	
Child Sex	**-0.31***	[-0.60, -0.02]	-0.15	[-0.30, -0.01]	
Step 2					$R^2 = .273**$ 95% CI [.14,.37]
(Intercept)	0.30	[-0.19, 0.79]			
MD	**0.32****	[0.21, 0.42]			
Positive Parenting	-0.02	[-0.27, 0.24]			
Child Sex	**-0.31***	[-0.60, -0.03]			
MD x Positive Parenting	-0.09	[-0.22, 0.05]			

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

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Table 12

Hierarchical Linear Regression RS by Positive Parenting Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					R^2 = .074* 95% CI[.00,.15]
(Intercept)	0.40	[-0.15, 0.95]			
RS	0.08	[-0.02, 0.18]	0.13	[-0.03, 0.29]	
Positive Parenting	**-0.29***	[-0.55, -0.02]	-0.17	[-0.33, -0.01]	
Child Sex	-0.28	[-0.60, 0.05]	-0.14	[-0.30, 0.02]	
Step 2					R^2 = .075* 95% CI[.00,.15]
(Intercept)	0.41	[-0.14, 0.97]			
RS	0.09	[-0.02, 0.20]			
Positive Parenting	**-0.29***	[-0.55, -0.02]			
Child Sex	-0.29	[-0.62, 0.04]			
RS x Positive Parenting	-0.03	[-0.17, 0.11]			

* $p < .05$. ** $p < .01$.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Negative Parenting as Moderator in the association between MD and child SR.

To investigate if Negative Parenting (hostility, lax control, and physical control subscales on the MAPS) acted as a moderator in the two main associations (MD and child SR; RS and child SR) we ran two additional HLRs (all models controlled for child sex). In the first step of the HLR, the variables MD, Negative Parenting, and child sex were included in the model. These variables accounted for 33% of variance in child's EF problems, $R^2 = 0.33$, $F(3,139) = 23.52$, $p < 0.001$. The interaction term (MD x Negative Parenting) was added to the regression model in the second step. Results showed that the interaction term did not significantly increase the predictive

value of the model at a $p < .05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -5.64$, $p < .001$, $b = -0.03$,

$t(138) = -0.51$, $p = 0.60$. Table 13 shows the regression results of this HLR.

Table 13

Hierarchical Linear Regression MD by Negative Parenting Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	Fit
Step 1					$R^2 = .337$** 95% CI[.20,.43]
(Intercept)	0.19	[-0.26, 0.65]			
MD	**0.20****	[0.11, 0.29]	0.35	[0.20, 0.50]	
Negative Parenting	**0.38****	[0.19, 0.58]	0.30	[0.15, 0.46]	
Child Sex	-0.27	[-0.54, 0.01]	-0.13	[-0.27, 0.01]	
Step 2					$R^2 = .338$** 95% CI[.20,.43]
(Intercept)	0.21	[-0.25, 0.68]			
MD	**0.20****	[0.11, 0.29]			
Negative Parenting	**0.40****	[0.20, 0.60]			
Child Sex	-0.27	[-0.55, 0.01]			
MD x Negative Parenting	-0.03	[-0.13, 0.07]			

* $p < .05$. ** $p < .01$.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Negative Parenting as Moderator in the association between RS and child SR.

Similarly, for the second HLR the variables RS, Negative Parenting, and child sex were

entered first in the model. These variables accounted for 24% of variance in child's EF problems,

$R^2 = 0.24$, $F(3,139) = 15.33$, $p < .001$. For the following step the interaction term (RS x Negative

Parenting) was added to the model. Results showed that the interaction term did not significantly

increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) =$ -3.91, $p < 0.001$, $b = -0.01$, $t(138) = -0.14$, $p = 0.88$. Table 14 includes the regression results.

Table 14

Hierarchical Linear Regression RS by Negative Parenting Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .249^{**}$ 95% CI [.12,.35]
(Intercept)	0.11	[-0.38, 0.60]			
RS	0.06	[-0.03, 0.15]	0.10	[-0.05, 0.25]	
Negative Parenting	**0.57****	[0.39, 0.75]	0.46	[0.31, 0.60]	
Child Sex	-0.23	[-0.52, 0.07]	-0.11	[-0.26, 0.03]	
Step 2					$R^2 = .249^{**}$ 95% CI [.12,.34]
(Intercept)	0.11	[-0.38, 0.60]			
RS	0.06	[-0.03, 0.15]			
Negative Parenting	**0.57****	[0.39, 0.76]			
Child Sex	-0.23	[-0.53, 0.07]			
RS x Negative Parenting	-0.01	[-0.12, 0.10]			

$* p < .05. ** p < .01.$
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Mediation Analyses

To examine the potential mediating role of Positive and Negative Parenting in the relation between MD and child SR, this study followed a Path Analysis Framework (Structural Equation Modeling; SEM) and employed the Product of Coefficients Method (MacKinnon et al., 2002). The first step was to specify the path analysis models (all models controlled for child sex) and indicate the three paths on each model; 1) path *c'* (direct effect) which regressed EF

problems on the independent variable (MD); 2) path *a* which regressed the mediator variable (Positive/Negative Parenting) on the predictor variable (MD); and 3) path *b* which regressed EF problems on the mediator variable (Positive/Negative Parenting). Then, the indirect effect (*a*b*) was entered into the model specification (product of coefficients). Lastly, we estimated the models specified above and tested the accuracy of the mediation effects by using the resampling method of percentile Bootstrap significance test with 95% confidence intervals ((Preacher & Hayes, 2004).

Results from the mediation analyses indicated that Positive Parenting did not mediate the relation between MD and EF problems in this sample (*b* = .00, SE *b* = .01, 95% CI [-0.22, 0.03]). However, Negative Parenting significantly mediated the relation between MD and EF Problems (*b* = .008, SE *b* = 0.02, 95% CI [0.03, 0.13]). Table 15 shows the regression results for the mediation analyses.

Table 15

Indirect Effects of Positive and Negative Parenting in the Association Between MD and Child SR

Mediator	Total Effect (c')	Effect of IV on mediator (*a*)	Unique effect of mediator (*b*)	Indirect effect (*ab*)	95% CI [LL, UL]
Positive Parenting	**.28 (.04) *****	**-.11(.02) ***	-.05(.12)	.00(.01)	[-.22, .03]
Negative Parenting	**.20(.13) *****	**.21(.04) *****	**.38(.10) *****	**.08(.02) *****	[.03, .13]

*p < .05., **p < .01., ***p < .001.
Note. All coefficients reported for paths *a, b,* and *ab* are unstandardized slopes (*B*) with the corresponding standard error of the slope (*SE B*) in parentheses. Percentile Bootstrap *CI*s of each indirect effect are based on 2,000 resamples.

Figure 8

Path Diagram of the Indirect Effects of MD on Child SR (EF Problems) as Mediated by Negative
Parenting
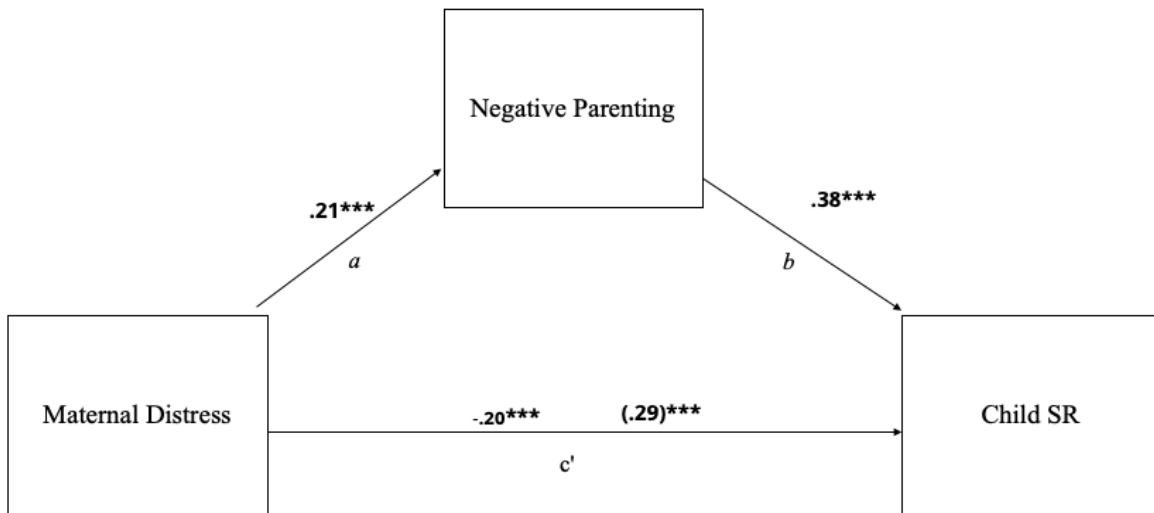
p < .05., **p* < .01., ***p* < .001.

Note. The unstandardized regression coefficient of the relation between MD and
child SR controlling for child sex is shown in parentheses.

The Moderating Role of Cultural Factors

To address the third and last research question of this study, we investigated if cultural
factors unique of this population such as acculturation, ethnic identity and social support played
a role as moderators in the two main effects (MD and child SR; RS and child SR). To test this,
several HLRs were run. The continuous moderator variables of Ethnic Identity and Social
Support were grand-mean centered to increase the interpretability of the results.

Acculturation as Moderator in the association between MD and child SR.

First, a composite variable of Acculturation was created by converting the obtained

scores on the English language proficiency and Generational Status ($r = .55$) questions on the

CECER-DLL demographic interview to z-scores and averaging across them. To investigate the

potential moderating role of Acculturation in the two main effects, two HLRs were run

controlling for child sex. For the first HLR, the variables MD, Acculturation, and child sex were

included in the model as part of step 1. These variables explained a significant amount of

variance in child's EF problems, $R^2 = 0.278$, $F(3,139) = 16.76$, $p < .001$. The interaction term

(MD x Acculturation) was added to the model in the second step. Results showed that the

interaction term did not significantly increase the predictive value of the model at a $p < .05$

significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -4.27$, $p < .001$, $b = -0.03$, $t(138) = -0.10$, $p = 0.91$.

Regression results are displayed in Table 16.

Table 16

Hierarchical Linear Regression MD by Acculturation Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .266$** 95% CI [.14,.37]
(Intercept)	0.31	[-0.17, 0.79]			
MD	**0.28****	[0.20, 0.37]	0.49	[0.35, 0.64]	
Child Sex	**-0.31***	[-0.60, -0.02]	-0.15	[-0.30, -0.01]	
Acculturation	-0.03	[-0.11, 0.05]	-0.05	[-0.19, 0.09]	
Step 2					$R^2 = .266$** 95% CI [.13,.36]
(Intercept)	0.31	[-0.17, 0.79]			
MD	**0.28****	[0.20, 0.37]			
Acculturation	-0.03	[-0.11, 0.05]			
Child Sex	**-0.31***	[-0.60, -0.02]			
MD x Acculturation	-0.00	[-0.05, 0.05]			

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Acculturation as Moderator in the association between RS and child SR.

In the second HLR, the first step included RS, Acculturation, and child sex. Together these variables revealed that the regression was not significant, $R^2 = 0.04$, $F(3,139) = 2.15$, $p = 0.09$. The interaction term (RS x Acculturation) was added in the second step. Results presented in Table 17 show that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level and the overall regression model remained non-significant ($\Delta R^2 = 0$, $\Delta F(4,138) = 0.04$, $p = 0.16$, $b = 0.01$, $t(138) = 0.47$, $p = 0.63$.

Table 17

Hierarchical Multiple Regression RS by Acculturation Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .044$ 95% CI[.00,.11]
(Intercept)	0.28	[-0.27, 0.82]			
RS	0.09	[-0.01, 0.19]	0.14	[-0.02, 0.31]	
Child Sex	-0.29	[-0.62, 0.04]	-0.14	[-0.31, 0.02]	
Acculturation	0.01	[-0.09, 0.10]	0.01	[-0.16, 0.18]	
Step 2					$R^2 = .046$ 95% CI[.00,.11]
(Intercept)	0.28	[-0.27, 0.83]			
RS	0.09	[-0.01, 0.20]			
Acculturation	0.00	[-0.10, 0.10]			
Child Sex	-0.29	[-0.62, 0.05]			
RS x Acculturation	0.01	[-0.04, 0.06]			

* p < .05. ** p < .01.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Ethnic Identity as Moderator in the association between MD and child SR.

Then, to investigate the potential moderating role of Ethnic Identity in these two relationships, two additional HLRs were run. All models controlled for child sex and Ethnic Identity scores were grand-mean centered. The first step included MD, Ethnic Identity, and child sex. These variables accounted for 27.3% of the variance in child's EF problems, $R^2 = 0.273$, $F(3,139) = 17.49$, $p < 0.001$. Then, the second step included the interaction term (MD x Ethnic Identity). Results of the HLR (See Table 18) show that the interaction term did not significantly increase the predictive value of the model at a $p < 0.05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -4.37$, $p < 0.001$, $b = -0.197$, $t(138) = -0.54$, $p = 0.58$.

Table 18

Hierarchical Linear Regression MD by Ethnic Identity Predicting Child SR

Predictor	*b*	*b* 95% CI [LL, UL]	*beta*	*beta* 95% CI [LL, UL]	Fit
Step 1					R^2 = **.273**** 95% CI[.14,.37]
(Intercept)	0.34	[-0.14, 0.81]			
MD	**0.29****	[0.20, 0.37]	0.50	[0.35, 0.64]	
Child Sex	**-0.33***	[-0.62, -0.04]	-0.16	[-0.31, -0.02]	
Ethnic Identity	0.12	[-0.05, 0.29]	0.10	[-0.04, 0.25]	
Step 2					R^2 = **.275**** 95% CI[.14,.37]
(Intercept)	0.35	[-0.13, 0.82]			
MD	**0.28****	[0.20, 0.37]			
Ethnic Identity	0.13	[-0.05, 0.30]			
Child Sex	**-0.33***	[-0.62, -0.04]			
MD x Ethnic Identity	0.03	[-0.08, 0.14]			

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

Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Ethnic Identity as Moderator in the association between RS and child SR.

In the second HLR, RS, Ethnic Identity, and child sex were entered as part of the first step. Jointly these variables did not account for a significant amount of variance in child's EF problems, $R^2 = 0.04$, $F(3,139) = 2.22$, $p = .08$. The interaction term (RS x Ethnic Identity) was added to the model in the second step. Results show that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -0.56$, $p = 0.16$, $b = -0.01$, $t(138) = -0.16$, $p = 0.87$. Regression results are shown in Table 19.

Table 19

Hierarchical Linear Regression RS by Ethnic Identity Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .046$ 95% CI[.00,.11]
(Intercept)	0.29	[-0.26, 0.84]			
RS	0.08	[-0.02, 0.18]	0.14	[-0.03, 0.30]	
Child Sex	-0.30	[-0.63, 0.04]	-0.15	[-0.31, 0.02]	
Ethnic Identity	0.05	[-0.15, 0.24]	0.04	[-0.13, 0.20]	
Step 2					$R^2 = .046$ 95% CI[.00,.10]
(Intercept)	0.29	[-0.26, 0.84]			
RS	0.09	[-0.02, 0.19]			
Ethnic Identity	0.04	[-0.16, 0.24]			
Child Sex	-0.29	[-0.63, 0.04]			
RS x Ethnic Identity	-0.01	[-0.16, 0.14]			

* $p < .05$. ** $p < .01$.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Social Support as Moderator in the association between MD and child SR.

Lastly, we investigated maternal Social Support as moderator in the two main effects. All models controlled for child sex and Social Support scores were grand-mean centered. The first step in the model included MD, Social Support, and child sex. These variables accounted for 27.4% of the explained variance in child's EF problems, $R^2 = 0.274$, $F(3,139) = 17.49$, $p < .001$. The second step included the interaction term (MD x Social Support). Results (See Table 20) showed that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -4.37$, $p < .001$, $b = -0.191$, $t(138) = -0.54$, $p = 0.58$.

Table 20

Hierarchical Multiple Regression MD by Social Support Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .274**$ 95% CI[.14,.37]
(Intercept)	0.33	[-0.14, 0.80]			
MD	**0.27****	[0.18, 0.35]	0.46	[0.32, 0.61]	
Child Sex	**-0.32***	[-0.61, -0.03]	-0.16	[-0.30, -0.02]	
Social Support	-0.11	[-0.25, 0.04]	-0.11	[-0.25, 0.04]	
Step 2					$R^2 = .276**$ 95% CI[.14,.37]
(Intercept)	0.32	[-0.15, 0.80]			
MD	**0.27****	[0.18, 0.35]			
Social Support	-0.12	[-0.27, 0.03]			
Child Sex	**-0.32***	[-0.61, -0.04]			
MD x Social Support	-0.02	[-0.09, 0.05]			

* $p < .05$. ** $p < .01$.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Social Support as Moderator in the association between RS and child SR.

The last HLR conducted included RS, Social Support, and child sex in the first step.

Together, these variables explained 9% of variance in child's EF problems, $R^2 = 0.09$, $F(3,139) = 4.55$, $p < .001$. The interaction term (RS x Social Support) was added to the model in the second step. Results showed that the interaction term did not significantly increase the predictive value of the model at a $p < .05$ significance level, $\Delta R^2 = 0$, $\Delta F(4,138) = -1.16$, $p < .05$, $b = -0.00$, $t(138) = -0.10$, $p = 0.91$. Regression results are displayed in Table 21.

Table 21

Hierarchical Linear Regression RS by Social Support Predicting Child SR

Predictor	b	b 95% CI [LL, UL]	beta	beta 95% CI [LL, UL]	Fit
Step 1					$R^2 = .090**$ 95% CI[.01,.17]
(Intercept)	0.32	[-0.21, 0.85]			
RS	0.08	[-0.01, 0.18]	0.14	[-0.02, 0.30]	
Child Sex	-0.32	[-0.64, 0.01]	-0.16	[-0.32, 0.00]	
Social Support	**-0.21****	[-0.37, -0.05]	-0.21	[-0.37, -0.05]	
Step 2					$R^2 = .090*$ 95% CI[.01,.17]
(Intercept)	0.32	[-0.22, 0.86]			
RS	0.08	[-0.02, 0.18]			
Social Support	**-0.21***	[-0.37, -0.05]			
Child Sex	-0.32	[-0.64, 0.01]			
RS x Social Support	-0.01	[-0.11, 0.10]			

*$p < .05$. **$p < .01$.
Note. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.

Regression Diagnostics

Regression diagnostics were run post analysis. Multicollinearity was assessed by looking at the zero-order correlations among study variables, and no multicollinearity was detected.

Cook's distance test was performed to identify influential cases. One influential case (Case 63)

was detected and removed from the final set of analyses (See Appendix D). Residuals diagnostic plots (See Appendix G) were analyzed to ensure the linear relation between the dependent variable (EF problems) with the independent variables (MD and RS), as well as the normal distribution, and homoscedasticity of this study's data. This analysis did not reveal any violation of the regression assumptions.

Exploratory Analyses

Since 41% of the Latina mothers who participated in this study identified themselves as being immigrants or first generation, we decided to conduct a series of exploratory analyses using a subset of our total sample. A subset of 60 participants was created with mothers who identified themselves as immigrants and first-generation. The purpose of this was to gain more information about potential differences in the rates of MD and RS reported by Latina mothers who might be experiencing higher levels of stress of immigration and perceived discrimination due to their generational status. Specifically, the associations between study variables might be more significant among mothers who are immigrants or first-generation Latinas living in the United States compared to those who were further removed from the immigration experience. To test this, the same set of statistical analyses described above (e.g., main effects, moderation, and mediation) were conducted with the subset of the sample who identified as immigrant and first-generation. All the analyses were conducted using the same software, statistical tests, and methods previously stated.

The results of the statistical analyses conducted with the subset of the sample ($N = 60$) did not noticeably differ from the results obtained with the original sample ($N = 143$). Therefore, only significant results are presented below. Descriptive statistics for all study variables used in

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the exploratory analyses are displayed in Table 22. Zero-order correlations across variables with

the subset sample are presented in Table 23.

Table 22

Study Variables Means and Standard Deviations (n=60)

Variable	M	SD
1. Child Sex	1.58	0.50
2. Child Age (in years)	4.25	0.85
3. Maternal Age	34.83	4.87
4. Maternal Education	6.42	1.88
5. CESD	11.55	8.62
6. PSI	76.64	21.62
7. SOIS	1.75	0.72
8. PRSL	1.15	0.55
9. SIMSS	2.55	1.17
10. Positive Parenting	0.46	0.65
11. Negative Parenting	-0-01	0.79
12. Ethnic ID	3.98	0.81
13. Acculturation	-1.41	1.79
14. EF Problems	-0.16	1.00
15. Generational Status	1.62	0.48

Note. M and *SD* are used to represent mean and standard deviation, respectively.

Exploratory Hierarchical Linear Regression

To test the effects of MD and RS on child SR while accounting for child sex, child age

and maternal education, a hierarchical linear regression was conducted. The first model included

the three covariates, and the overall regression was not significant $F(3,56) = .097$, $p = 0.67$, $R^2 =$

0.04. Results showed that none of the covariates accounted for a significant amount of variance

in EF Problems. Independent variables were entered in the second and third models respectively.

MD was entered in the second step, which revealed a significant regression, $F(4,55) = 10.28$, $p <$

0.01, $R^2 = 0.42$, and accounted for a significant amount of variance in EF problems above and

beyond child sex, child age, and maternal education, $B = 0.33$, $\beta = 0.62$, $p < .001$. Results

presented in Table 24, show that 42% of the variance in child EF problems was explained by the

addition of MD to the model. In the third model, RS was entered. Consistent with the results obtained in the analysis with the total sample, the final model was significant, $F(5,54) = 8.74$, $p < .001$, $R^2 = 0.44$. The addition of RS did not account for a significant amount of variance in EF problems, and the predictive.

Exploratory Mediation Analysis

Results from the mediation analyses indicated that Negative Parenting uniquely mediated the relation between MD and EF Problems in this subset of the sample ($b = 0.09$, SE $b = 0.03$, 95% CI [0.03, 0.17]). Table 25 shows the regression results for the mediation analysis.

value of the model was not improved, $B = -0.08$, $\beta = -0.15$, $p = 0.16$.

Table 23

Zero-Order Correlations Of All Study Variables- Subset Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Child Sex														
2. Child Age	-.01													
3. Maternal Age	.05	.23												
4. Maternal Education	.04	.25	**.30***											
5. CESD	-.03	-.01	.15	-.08										
6. PSI	-.06	-.24	.01	-.12	**.60****									
7. SOIS	-.03	.00	-.08	-.08	**.46****	**.28***								
8. PRSL	-.24	-.07	-.10	-.14	**.28***	.24	**.44****							
9. SIMSS	-.12	.04	-.19	-.08	-.11	-.14	.07	.08						
10. Positive Parenting	.11	**.26***	-.22	.12	-.24	**-.32***	-.08	.03	**.28***					
11. Negative Parenting	-.21	-.23	.08	-.03	.21	**.48****	-.02	.23	-.07	**-.39****				
12. Ethnic ID	-.05	.24	-.21	.06	.08	-.16	.10	**.27***	.11	.24	-.07			
13. Acculturation	-.04	.05	.06	.12	-.05	-.03	**-.38****	.12	.06	.24	.11	**.26***		
14. EF Problems	-.16	-.02	.04	.14	**.37****	**.70****	.09	.13	-.20	**-.32***	**.61****	.07	.08	
15. Generational Status	-.11	-.09	-.22	-.10	-.04	-.03	**-.37****	.10	.11	.21	.07	**.27***	**.83****	.00

*p < .05. ** p < .01.

Table 24

Hierarchical Linear Regression of MD and RS Predicting Child SR – Subset Sample

Predictor Variable	*B*	*SE B*	β	*F/t*	*df*	*R²*	*ΔR²*
Model 1				0.97	3(56)	0.04	
Child Age	-0.06	0.15	-0.05	-0.21			
Child Sex	-0.32	0.26	-0.16	-1.21			
Maternal Education	0.08	0.07	0.16	.024			
Model 2				**10.28*****	4(55)	**0.42****	0.38
Child Age	0.02	0.12	0.02	0.22			
Child Sex	-0.26	0.20	-0.13	-1.29			
Maternal Education	0.11	0.05	0.21	2.00			
Maternal Distress	0.33	0.05	0.62	**6.02*****			
Model 3				**8.74*****	5	**0.44****	0.02
Child Age	0.03	0.12	0.02	0.28			
Child Sex	-0.30	0.20	-0.15	-1.48			
Maternal Education	0.10	0.05	0.19	1.88			
Maternal Distress	0.36	0.68	0.06	**6.11*****			
Racial Stress	-0.08	0.06	-0.15	-1.39			

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

Table 25

Indirect Effect of Negative Parenting in the Association Between MD and Child SR – Subset Sample

Mediator	Total Effect (c')	Effect of IV on mediator (a)	Unique effect of mediator (b)	Indirect effect (ab)	95% CI [LL, UL]
Negative Parenting	.23(.61) ***	.17 (.06) **	.54 (.12) ***	.09(.03) ***	[.03, .17]

*p < .05., **p < .01., ***p < .001.
   Note. All coefficients reported for paths *a, b,* and *ab* are unstandardized slopes (*B*) with the corresponding standard error of the slope (*SE B*) in parentheses. Percentile Bootstrap *CI*s of each indirect effect are based on 2,000 resamples.

Figure 9

Path Diagram of the Indirect Effects of MD on Child SR (EF problems) as mediated by Negative Parenting in the Immigrants/First-Generation Subset Sample.
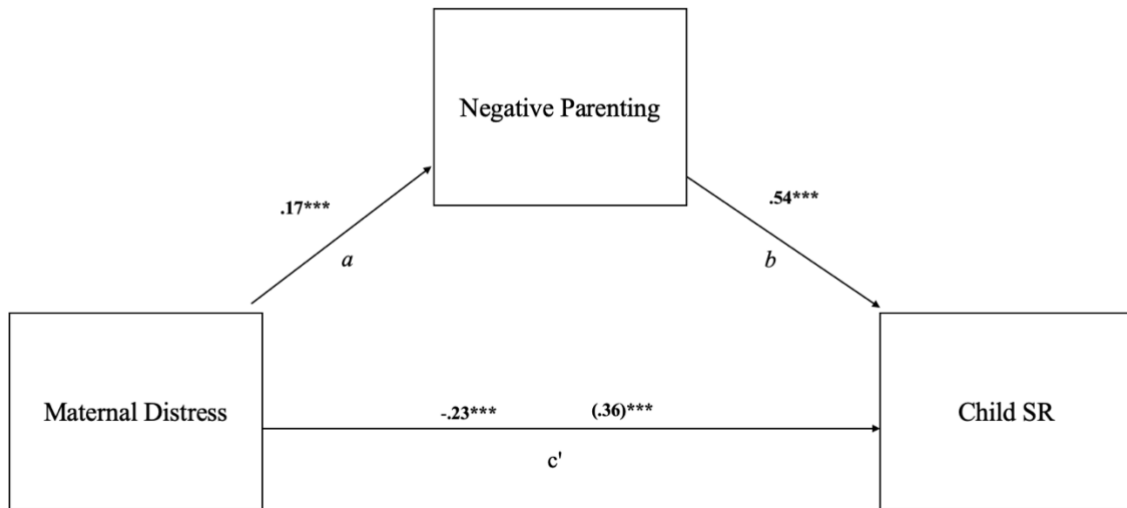
*p < .05., **p < .01., ***p <. 001.
Note. The unstandardized regression coefficient of the relation between MD and child SR controlling for child sex is shown in parentheses.

CHAPTER IV

DISCUSSION AND CONCLUSION

Summary

This study had three main goals; the first was to understand the associations among maternal distress (depression and parenting stress), racial stress (stress of immigration and perceived discrimination) and child self-regulation (as measured by child executive functioning), in a sample of Latina mothers with preschool aged children. The second goal was to explore the possible mediating and moderating role of parenting (positive and negative parenting behaviors) in these associations and move towards a better understanding of the mechanisms and key factors affecting these associations. Lastly, the third goal of the present study focused on how cultural elements commonly present in the Latino culture (i.e., ethnic identity, social support) act as either risk or resilience factors and affect the associations of maternal distress and racial stress with child self-regulation.

Very few studies have investigated the role of culture in the development of self-regulation in children from diverse ethnic/racial and linguistic backgrounds, and none had focused solely on Latino families. It is well known that people from Latino/Hispanic backgrounds are largely underrepresented in psychology research, and more specifically in the field of self-regulation development. Most research studies (80% to 85%) conducted in this area have focused on non-Latino White and middle-class individuals, thus limiting the generalizability of findings to other ethnic groups (Mills et al., 2019). This is concerning given the rise of Latino population in the United States and the fact that both mothers and children from this group are at increased risk for negative outcomes such as psychological distress and academic failure respectively (Harris & Santos, 2020; Wang et al., 2011).

While theory and research in the field of self-regulation agree that parenting and socialization are two key environmental determinants of self-regulation development, and that these are strongly influenced by culture (Jaramillo et al., 2017; Li-Grining, 2012), little is

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known about the interplay of these associations in diverse samples. Thus, the present dissertation study sought to address this research gap and contribute to the literature on maternal depression, parenting behaviors, and self-regulation development in Latino families, while paying special attention to unique cultural factors present in this population. It is important to note that this study aimed to achieve this through a strength-based approach by celebrating the cultural assets of Latino culture and recognizing the challenges faced by Latinos in this country due to systemic and social inequities. Additionally, this study tried to be particularly aware of the -often overlooked- heterogeneity of this ethnic group. Recruitment efforts focused on having an adequate representation of the wide variety of Latina mothers living in the United States. We tried to achieve this by having a fully remote study allowing individual across the country to participate and represent diverse socioeconomic and linguistic backgrounds, as well as diverse national origins within their Latino heritage.

The full sample was comprised of 144 Latina mother-child dyads with maternal age ranging from 22 to 44 years and children ranging from 2 to 6 years old. Although our main recruitment goal was to gather a diverse group of mothers representing the heterogeneity of this ethnic group, our final sample consisted of mostly well-educated, middle class Latina mothers. Participants endorsed higher than expected education levels, with one third of participants holding a bachelor's degree and another third a postgraduate degree (i.e., master's, doctorate). Most mothers were employed (73%), in their early to mid-thirties, and indicated an annual family income between $30,000 to 60,000 USD. Participants also endorsed responses indicating that this was a low-risk sample with low levels of depression, stress of immigration, and perceived racism, and with adequate social support. As low socioeconomic status, young age (>25 years old), being a single mother, and experiencing high rates of race-related stress are significantly correlated to higher symptoms of depression (Calzada & Sales, 2019; Huang et al., 2014), the ways in which the demographic characteristics of the present sample differ from these, are important to keep in mind when interpreting the results of this study.

Discussion of Key Findings

Main Effects

      The first aim of the present study was to determine the degree to which maternal Global Psychosocial Stress (GPS; a composite of depression, parenting stress, stress of immigration and perceived discrimination) was associated with child SR in a sample of Latina mother-child dyads. First, we determined that the measures we planned to use for the creation of a maternal GPS score, did not sufficiently correlate among each other ($r \leq .5$) to produce a single composite. Therefore, we conducted two Confirmatory Factor Analyses, which suggested that having two independent variables—Maternal Distress (MD; a composite of maternal depression and parenting stress) and Racial Stress (RS; a composite of stress of immigration and perceived discrimination)—better fit the data.

      Using a hierarchical linear regression, we tested the association between the two independent variables (MD and RS) and child SR. Results suggest that only MD was significantly associated with poorer child SR above and beyond child sex. This finding is consistent with the abundant existing literature linking higher levels of depression and parenting stress with poorer child SR. It is important to highlight this key finding given that this was a low risk, highly educated, middle class, and relatively acculturated community sample of Latina mothers. As the bulk of the extant literature is on higher risk and/or non-Latino White families, the present finding not only adds to the literature on the associations between maternal distress and child development, but it contributes to the essential cross-cultural research needed in the field of self-regulation development.

      Conversely, RS was not significantly associated with child SR and did not significantly increase the predictive value of the models when entered. These findings are not surprising since participants reported low levels of stress of immigration and perceived discrimination, congruent with sample demographics indicating that 60% of the sample was U.S. born and 84% had second or higher generational status. Similar results were observed when testing this

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association in a subsample of 60 Latina mothers who indicated that they were either immigrants or first-generation. Similar levels of MD and RS were present in the two samples; we attribute this in part to the overall high educational level reported by mothers in the full sample and immigrant/first-generation subsample. Higher educational level may facilitate immigration procedures thorough sponsoring of U.S. visas by academic institutions (e.g., colleges and universities) or place of employment and may indicate more English language proficiency and less acculturative stress. Although RS did not uniquely explain variance in child SR in this sample, the significant correlations among RS measures (SOIS and PRSL) and MD measures (CESD-R and PSI), as well as the significant correlation between the stress of immigration scale and child SR measure warrant further investigation of the effects of RS in the associations among MD, parenting, and child SR in Latino families.

Parenting Effects in the Association between MD and child SR.

The second aim of this study explored the degree to which parenting affects the association between each independent variable (MD and RS) and child SR. Moderation analyses did not support a moderating effect of either positive or negative parenting in these relations. The lack of significant interaction effects in our models are not surprising since numerous findings have confirmed that parenting practices partially mediate the association between MD and child SR (Crossley & Buckner, 2012) and often have identified positive parenting as a predictor (rather than a moderator) of several positive child outcomes, including language development and pre-academic skills (Tamis-LeMonda et al., 2014; Wade et al., 2018).

Mediation results indicate that, in this sample, negative parenting (i.e., hostility) partially mediated the association between MD and child SR. This result contributes to existing literature documenting the negative effects of maternal depression and parenting stress on parenting abilities (Hughes et al., 2013; Raphael et al., 2010), and ratifies negative parenting as one of the most salient mechanisms by which maternal mental health may impact

child SR. Moreover, this finding may suggest that, to some extent, this relationship is also present in Latina mother-child dyads even when parenting practices and values may culturally differ from those endorsed by the dominant culture. Lastly, the mediating effects of negative parenting on child SR demonstrated in this study, contribute to the literature on the malleability of child self-regulation abilities. Our findings coincide with the idea discussed by Blair et al. (2014) that intervention to promote the development of self-regulation should focus on shaping the environment in which these skills are developing (e.g., parenting behaviors).

The role of Cultural Factors: Acculturation, Social Support and Ethnic Identity

The third and final aim of our study was to explore the moderating role of acculturation, social support, and ethnic identity in the associations between MD and RS with child SR. Results from these moderation analyses did not confirm our hypothesis that the three cultural factors would act as protective factors buffering the negative association between MD and child SR. Nonetheless, our results suggest that since maternal distress negatively impacts child SR and this association is partially mediated by negative parenting behaviors, cultural factors may in fact have moderating effects in the association between negative parenting and child self-regulation. Moreover, bivariate correlations of study variables in the immigrants/first-generation subset sample point to another possible explanation of the lack of significant moderating effects of cultural factors. Correlation coefficients indicate that even though this sample reported low levels of maternal distress and racial stress, the three cultural factors investigated in this study are significantly correlated with both independent variables. This may suggest that these cultural factors may also moderate the influence of racial stress on maternal distress. This falls in line with robust evidence indicating that for Latina mothers, a strong sense of ethnic identity, adequate social support, and higher levels of acculturation may decrease mental health difficulties, and in particular depressive symptoms (Arbona et al., 2010; Balidemaj & Small, 2019; Becerra et al., 2020). Recent findings have indeed demonstrated the protective role of ethnic identity, in particular ethnic self-identification and

ethnic knowledge, as these were associated with fewer behavior problems in young Latino children (Serrano-Villar & Calzada, 2016). These findings call for future research to consider how cultural factors impact not only maternal mental health and parenting behaviors, but also child development more directly.

Strengths, Limitations and Future Directions

The present study has several strengths that are important to highlight. First, this study was successful at recruiting and retaining mothers from Latino background, which is a commonly hard population to reach. By developing and employing a culturally sensitive and COVID-19 safe procedure, we increased the participation of Latina-mother dyads representing several geographical areas of the country, as well as diversity in Latino origin. Second, to our knowledge this is one of the few studies looking at the role of cultural factors in the development of Latino preschooler's' self-regulation. Our findings not only contribute to the scant literature on cross-cultural child development, but it does so from a strength-based and ecological approach which is rarely seen in research. We urge researchers to continue this work, for this effort may expand the understanding of risk and resilience factors which can lead to important clinical and practical implications. Third, we were able to have a large sample size which allowed for sufficient statistical power to run several robust analyses as well as exploratory analyses with a subset of the full sample.

While this study has numerous strengths, there are several limitations that are important to acknowledge and consider when interpreting its results. First, the cross-sectional nature of this study limits its ability to establish causal relations among variables and only allows for correlational conclusions. Second, data were collected using self-report measures which are valid and widely used measurement tools in psychology research but can lead to response bias. Future studies should try to employ longitudinal and multimethod procedures (multiple raters, parent-child interaction observations, experimental data) to assess these variables, with the goal of increasing experimental control and generalizability.

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Third, there were some limitations regarding the specific measurement tools we used. This study assessed acculturation using English language proficiency and generation status as proxy measures which, although commonly used, do not capture the multiple dimensions of this construct. Future research should strive to include multidimensional instruments to capture individual attitudes, behaviors, and beliefs within the continuum of the acculturation process. Similarly, social support was measured using a single-item measure (SIMSS), which may not capture the nuances of perceived social support. Future studies should consider more robust measures to capture several aspects of social support such as family supports, support from friends, support from significant others, and community supports.

Fourth, although the use of social media as the main recruitment strategy was successful and appropriate given the safety concerns ensuing the COVID-19 pandemic, this strategy might have increased the number of participants with high educational attainment and higher socioeconomic status. This may have limited this study's ability to reach Latina mothers from lower socioeconomic status and lower levels of educational attainment, those who recently immigrated, and those who might be at an overall higher risk for psychological distress and racial stress. This is not surprising given the existing literature on the digital divide and how socioeconomic status, education, and ethnicity are important determinants of internet use (Lythreatis et al., 2022). Furthermore, evidence indicates that most Latinos who engage with social media and social networking sites on a regular basis are predominantly U.S. born and English-speakers (Lopez et al., 2013).

Despite the substantial efforts made by researchers nowadays to have more diverse samples in their studies, Latino communities have been historically a challenging population to recruit and retain (Guzman et al., 2009). Thus, this study sough to employ culturally sensitive and appropriate recruitment strategies to build trust (e.g., *personalismo*), minimize potential barriers (transportation, time constrains, childcare) and increase the representation and diversity within the Latino culture. Future studies interested in recruiting individuals

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belonging to Latino communities should consider employing these strategies and using a combination of social media, snowball recruitment, and in-person participation of researchers in organizations and agencies serving this population to increase the representation of Latinos in their studies.

Based on the results of the present study, we urge scholars to investigate the moderating effects of parenting values often associated with Latino culture, such as *cariño, familismo*, and *respeto,* may have in the association between MD and child SR. Moreover, researchers should further investigate the mechanisms through which parenting may operate on child SR in Latina mother-child dyads. There is evidence suggesting that positive and responsive parenting affects child SR through child language development, which may be of particular importance to investigate in bilingual Latino families (Fay-Stammbach et al., 2014; Palacios & Bohlmann, 2020; Wade et al., 2018). Lastly, we encourage future studies to continue exploring the impact of racial stress on Latina mothers' mental health and children's outcomes due to the myriad of adverse consequences associated with this construct. Racial stress has been linked to negative health outcomes (e.g., cardiovascular reactivity, poor immunological functioning, sleep disturbances) and has been identified as historically traumatic, intergenerational, and pervasive in the daily life of family life (Anderson & Stevenson, 2019).

Conclusion

Poor maternal mental health has been associated with both negative parenting behaviors and poor self-regulatory abilities in children (Blair et al., 2014; Lengua et al., 2007). The negative impact of maternal psychological distress on behavioral, academic, and health outcomes in young children has been well established by research and has been targeted by parenting interventions for decades. However, despite evidence that Latina mothers and their young children face unique psychosocial stressors that increase their risk for negative outcomes, little is known about these associations in Latina mother-child dyads. The present

study sought to address this research gap and provide information about how these associations may present in this rapidly growing population.

This study replicated findings from previous studies and confirmed that maternal distress is significantly and negatively linked to child self-regulation in Latino families. In addition, this study shows that maternal distress may predict child self-regulation deficits in this population even when controlling for child sex. Moreover, we were able to identify negative parenting as a key mechanism by which maternal distress negatively impacts child self-regulation. These findings suggest that, for educated, middle-class Latina mothers, addressing symptoms of parenting stress and depression, as well as facilitating parenting interventions may increase maternal responsiveness. This in turn may promote positive parenting behaviors, better mother-child interactions, and ultimately improved self-regulation in their young children.

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Latina Moms Study

Participate in a study looking at how Latina mothers' well-being, culture and parenting behaviors support their preschool age children's self-regulation skills.

Who can participate?

Mothers of children ages 3 to 5 who identify as Latina/Hispanic.

What do I have to do?

Full participation in the study will take about 3 hours and consists of a phone call/Zoom interview and the completion of an online survey. Participants will be compensated for their time with a $50 gift card.

How can I sign up?

Email us:
latinamoms.study@gmail.com
Complete this form: link
Scan to apply now:
Have questions? Call us at: 541-357-7437

Estudio de Mamás Latinas

Participa en un estudio que analiza cómo el bienestar, la cultura y los comportamientos de crianza de las madres latinas apoyan el desarrollo de habilidades de autorregulación en sus hijos en edad preescolar.

¿Quién puede participar?

Madres de niños entre 3 y 5 años que se identifican como Latinas/Hispanas.

¿Qué deberé hacer?

La participación en el estudio durará aproximadamente 3 horas y consiste en una entrevista por teléfono o video llamada (Zoom) y una encuesta en línea. Participantes serán compensadas por su tiempo con una tarjeta de regalo de $50.

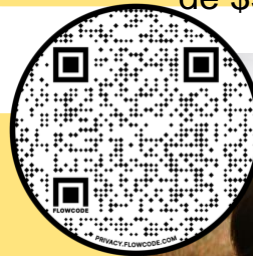## ¿Cómo puedo participar?

Mándenos un correo electronico: latinamoms.study@gmail.com

Complete este formulario: enlace

Escanee este código QR para aplicar ahora:

¿Tiene preguntas? Llamenos al: 541-357-7437

UNIVERSITY OF OREGON | Research Compliance Services

EXEMPT DETERMINATION

September 10, 2021

Antonella Onofrietti

Magrassi

aonofrie@uoregon.edu

Dear Antonella Onofrietti Magrassi:

On 9/10/2021, the following research was reviewed and determined to qualify for exemption.

Type of Review:	Initial Study
Study Title:	Maternal distress, parenting behaviors, and child self-regulation in Latina mother-child dyads
Principal Investigator:	Antonella Onofrietti Magrassi
Study ID:	STUDY00000247
Funding Source:	None
IND, IDE, or HDE:	None
Documents Reviewed:	• application form, Category: IRB Protocol; • COI Form.pdf, Category: IRB Protocol; • e-flyer English, Category: Recruitment Materials; • E-Informed Consent_9.1.pdf, Category: Consent Form; • E-informedconsentSpanish_9.1.pdf, Category: Consent Form; • electronic use, Category: Recruitment Materials; • English Flyer - For physical use.pdf, Category: Recruitment Materials; • English Phone Script, Category: Other; • Informed consent 9.1.pdf, Category: Consent Form; • Informed_consentSPAN_9.1.pdf, Category: Consent Form; • Latina Moms Study Instruments , Category: Survey Instrument; • List of measures.pdf, Category: Survey Instrument; • Phone Scrip Spanish , Category: Other; • research plan, Category: IRB Protocol; • Spanish Flyer - For physical use.pdf, Category: Recruitment Materials;
Approval Date:	9/2/2021
Expiration Date:	9/1/2022

For this research, the following determinations have been made:
- This study has been reviewed under **the 2018 Common Rule** and determined to qualify for exemption under **Title 45 CFR 46.104(d)((2)(ii) Tests, surveys, interviews, or observation (low risk)).**

The research is approved to be conducted as described in the approved protocol using the approved materials. Approved materials can be accessed in the protocol workspace in the IRB module of the research administration portal (RAP).

All changes to this research must be assessed to ensure the study continues to qualify for exemption. Research Compliance Services has developed [specific guidance](#) to help you understand when a modification is required before a change can be implemented. It is your responsibility to ensure modifications are submitted when required and approval secured before implementing changes to the protocol

Continuing Review is <u>not required</u> for this study. **An institutional approval period has been established based on your application materials.** If you anticipate the research will continue beyond the approval period, you must submit a **Continuing Review Application** at least 45-days days prior to the expiration date. A closure report must be submitted once human subject research activities are complete. Failure to maintain current approval or properly close the protocol constitutes non-compliance.

With the submission of your request, you agreed to uphold the responsibilities of the Principal Investigator and have agreed to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB module of the RAP.

If you have any questions regarding your protocol or the review process, please contact Research Compliance Services at ResearchCompliance@uoregon.edu or (541)346-2510. The University of Oregon and Research Compliance Services appreciate your commitment to the ethical and responsible conduct of research with human subjects.

Sincerely,

Research Compliance Services
on behalf of the Committee for Protection of Human Subjects

cc: Nicole Giuliani

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

University of Oregon
Informed Consent for Participation as a Subject in:
Maternal distress, parenting behaviors and child-self-regulation in Latina mother-child dyads
Investigators: Antonella Onofrietti Magrassi and Dr. Nicole Giuliani

Introduction: You are being asked to participate in a research study by investigators at the University of Oregon. The study is about how Latina mothers support the development of their children's self-regulation skills through parenting, and how distress and cultural factors impact parenting behaviors.

Purpose & Benefits of the Study: The purpose of this research is to examine the influence of maternal distress and cultural factors on parenting behaviors and the self-regulation skills of preschool-aged children from Latino backgrounds. Although there are no direct benefits for participating in this study, we believe that new knowledge gathered from participants in this study will provide us with the insights needed to understand how Latina mothers support their children's development during times of distress.

Description of the Study Procedures: You will be asked to engage in a remote video or phone interview and complete a series of surveys.

Risks/Discomforts of Being in the Study: Some of the foreseeable risks or discomforts of your participation include that some respondents may find some questions uncomfortable to answer. You may skip any question.

Confidentiality: The records of this study will be kept private. Research records will be kept in a locked file in a locked office. All electronic information will be coded and secured using a password protected file. Access to the records will be limited to the study investigators, the Institutional Review Board, and internal University of Oregon auditors. No identifying information will be disclosed to others without participants' written permission, except, if necessary, to protect participants' rights or welfare (for example, in case of injury) or if required by law. In particular, research team members are required by law to report when they hear that someone plans to hurt themselves or someone else or if a child is in danger or has witnessed violence. Other than that, under no circumstance will your personal information be disclosed to any government agency.

Compensation:
We anticipate full participation will take approximately 2 hours and you will be compensated with a $50 gift card once you have completed the surveys. Gift cards can be delivered electronically or mailed to your preferred mailing address. In case you decide to withdraw from the study (or that the researchers have to terminate your participation) we will do our best to compensate you for the portion of the study you have completed based on an hourly rate of $15.

Statement of Consent: I have had the opportunity to read and consider the information in this form. I have asked any questions necessary to make a decision about my participation. I understand that I can ask additional questions throughout my participation.
I understand that by agreeing I volunteer to participate in this research. I understand that I am not waiving any legal rights. I have been offered a copy of this consent form. I understand that if my ability to consent or assent for myself changes, either I or my legal representative may be asked to re-consent prior to my continued participation in this study.

If you agree with the statement of consent above and decide to participate in the study, we ask you to click on the "Agree" button below to continue.

For questions or more information concerning this research you may contact:
Antonella Onofrietti Magrassi
aonofrie@uoregon.edu
541-238-5507
and/or
Dr. Nicole Giuliani
giuliani@uoregon.edu
541-346-2194
HEDCO Education Building, 5251 University of Oregon, Eugene, OR 97403

For questions about your rights as a research participant you may contact:
Research Compliance Services, University of Oregon at (541) 346-2510 or
ResearchCompliance@uoregon.edu
Electronic Consent: Please select your choice below. You may print a copy of this consent form for your records. Clicking on the "Agree" button indicates that
- You have read the above information
- You voluntarily agree to participate
- You are 18 years of age or older

CONSENTIMIENTO PARA PARTICIPAR EN UN ESTUDIO DE INVESTIGACIÓN

Universidad de Oregón
Consentimiento informado para la participación como sujeto en:
Sufrimiento materno, comportamientos de crianza y auto-regulación del niño en las diadas madre-hijo latinas
Investigadores: Antonella Onofrietti Magrassi y la Dra. Nicole Giuliani

Introducción: Los investigadores de la Universidad de Oregón le piden que participe en un estudio de investigación. El estudio trata sobre cómo las madres latinas apoyan el desarrollo de las habilidades de autorregulación de sus hijos a través de la crianza de los hijos, y cómo el estrés y los factores culturales afectan los comportamientos de crianza de los hijos.

Propósito y beneficios del estudio: El propósito de esta investigación es examinar la influencia del estrés materno y los factores culturales en los comportamientos de crianza y las habilidades de autorregulación de los niños en edad preescolar de origen latino. Aunque no hay beneficios directos para participar en este estudio, creemos que el nuevo conocimiento obtenido de las participantes en este estudio nos proporcionará las ideas necesarias para entender cómo las madres latinas apoyan el desarrollo de sus hijos durante tiempos de angustia.

Descripción de los procedimientos del estudio: Se le pedirá que participe en un vídeo remoto o entrevista telefónica y que complete una serie de encuestas.

Riesgos/Descomodidades de estar en el estudio: Algunos de los riesgos o molestias previsibles de su participación incluyen que algunas participantes pueden encontrar algunas preguntas incómodas de responder. Puede omitir cualquier pregunta.

Confidencialidad: Los registros de este estudio se mantendrán privados. Los registros de investigación se guardarán en un archivo cerrado en una oficina cerrada. Toda la información electrónica se codificará y se protegerá mediante un archivo protegido por contraseña. El acceso a los registros se limitará a los investigadores del estudio, la Junta de Revisión Institucional y los auditores internos de la Universidad de Oregón. Ninguna información personal será compartida con otros sin permiso escrito de la participante, a menos que sea necesario para proteger los derechos de bienestar de la participante (por ejemplo, en caso de lesiones) o si es requerido por ley. En particular, nuestro equipo de investigación está obligado por ley a reportar si se enteran de que alguien está planeando lastimarse a sí mismo o a alguien más o si un niño se encuentra en peligro o ha sido testigo de violencia. Fuera de este caso, bajo circunstancia se divulgará su información personal a ninguna agencia gubernamental.

Compensación:
Anticipamos que la participación total tome aproximadamente 2 horas y se le compensará con una tarjeta de regalo de $50 una vez que haya completado las encuestas. Las tarjetas de regalo pueden ser enviadas de forma electrónica (E-card) o a través de correo tradicional a la dirección de su preferencia. En caso de que usted decida retirarse del estudio (o que los investigadores tengan que terminar su

participación) haremos todo lo posible para compensarle por la parte del estudio que ha completado basándonos en una tarifa de $15 por hora.

Declaración de consentimiento: He tenido la oportunidad de leer y considerar la información en este formulario. He hecho cualquier pregunta necesaria para tomar una decisión sobre mi participación. Entiendo que puedo hacer preguntas adicionales durante mi participación.
Entiendo que al estar de acuerdo en participar como voluntaria en esta investigación. Entiendo que no estoy renunciando a ningún derecho legal. Se me ha ofrecido una copia de este formulario de consentimiento. Entiendo que, si mi capacidad de consentimiento o asentir por mí misma cambia, se puede pedir a mí o a mi representante legal que vuelva a consentir antes de continuar mi participación en este estudio.

Si está de acuerdo con la declaración de consentimiento anterior y decide participar en el estudio, le pedimos que haga clic en el botón "Acepto" que aparece a continuación para continuar.

Para preguntas o más información sobre esta investigación, puede ponerse en contacto con:
<div align="center">

Antonella Onofrietti Magrassi
aonofrie@uoregon.edu
541-238-5507
y/o
Dra. Nicole Giuliani
giuliani@uoregon.edu
541-346-2194
HEDCO Education Building, 5251 University of Oregon, Eugene, OR 97403

</div>

Si tiene preguntas sobre sus derechos como participante en la investigación, puede ponerse en contacto con:
Research Compliance Services, Universidad de Oregón, al (541) 346-2510 o
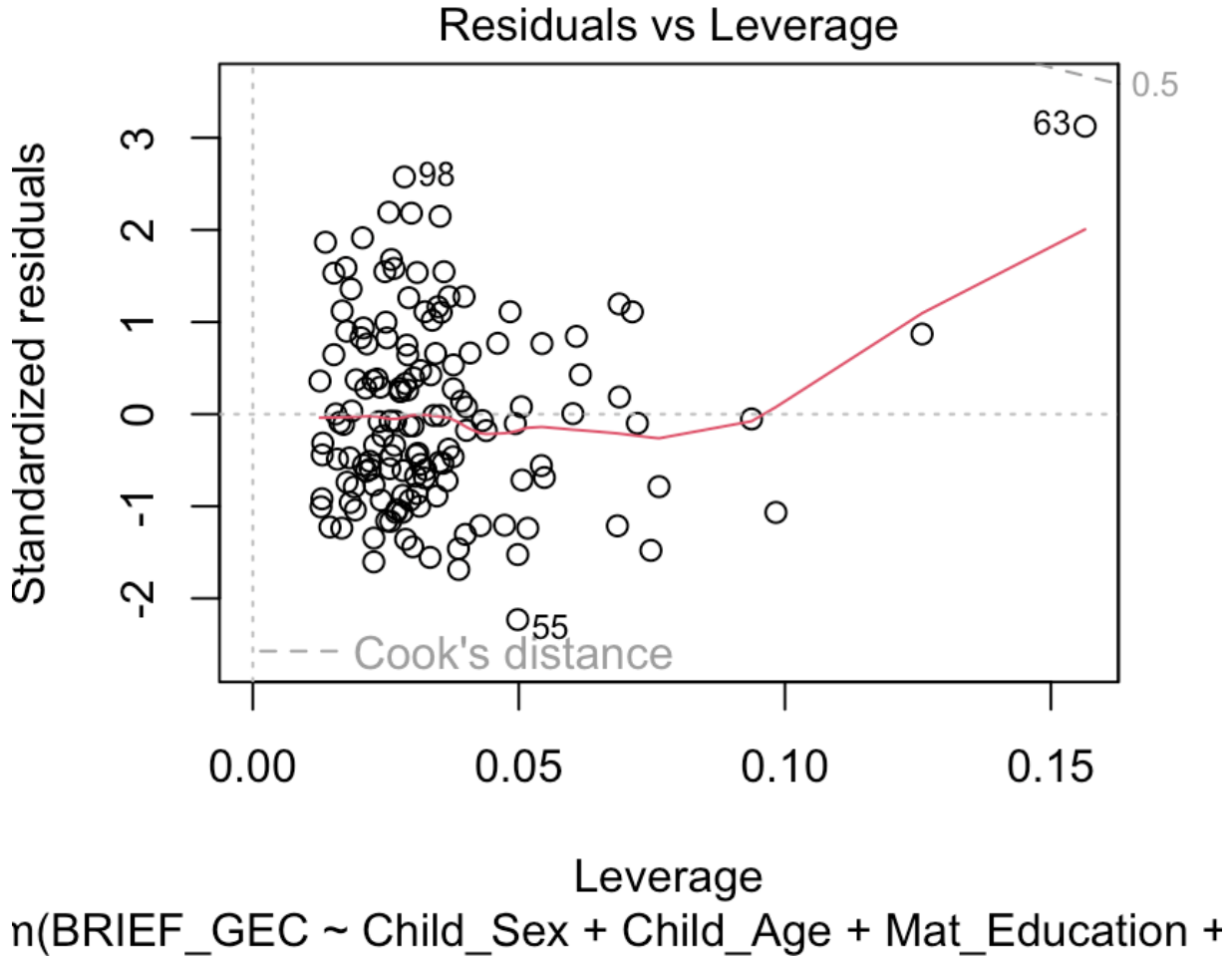ResearchCompliance@uoregon.edu

Consentimiento electrónico: Seleccione su opción a continuación. Usted puede imprimir una copia de este formulario de consentimiento para sus registros. Si hace clic en el botón "Acepto", esto indica
- Ha leído la información anterior
- Usted acepta participar voluntariamente
- Tiene 18 años o más

Figure 10

Residuals vs Leverage Plot with Cook's Distance

Figure 11

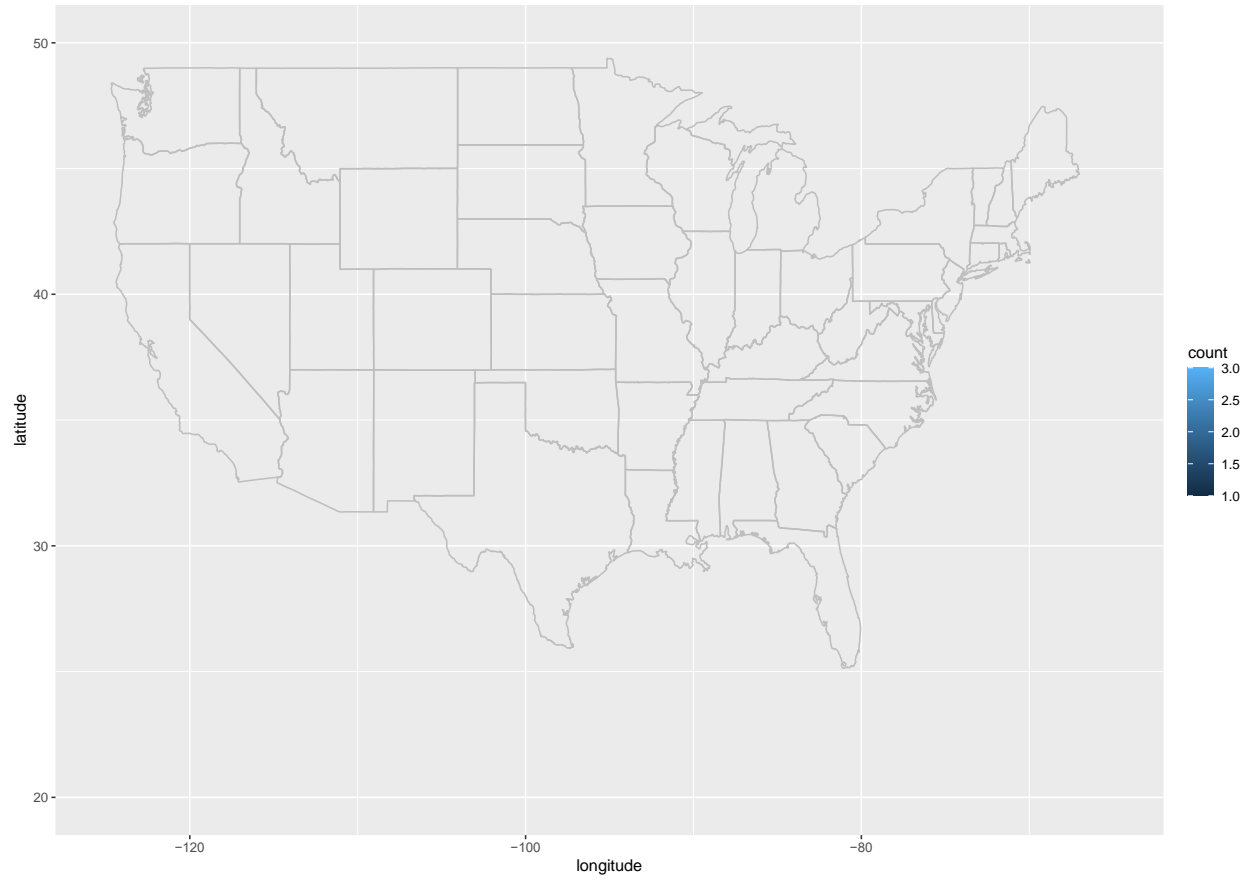*United States Map Showing Participants' Geographical Location Based on Zip Code*

Table 26

Birth Countries of Mothers Born Outside the U.S. (N=58)

Country of Birth	Frequency
Mexico	28
Venezuela	7
Dominican Republic	4
Puerto Rico	3
Guatemala	3
Colombia	3
Spain	3
Peru	2
Brazil	1
Russia	1
Ecuador	1
Argentina	1
Netherlands	1

Figure 12

World Map Indicating Countries of Birth for Foreign-Born Mothers
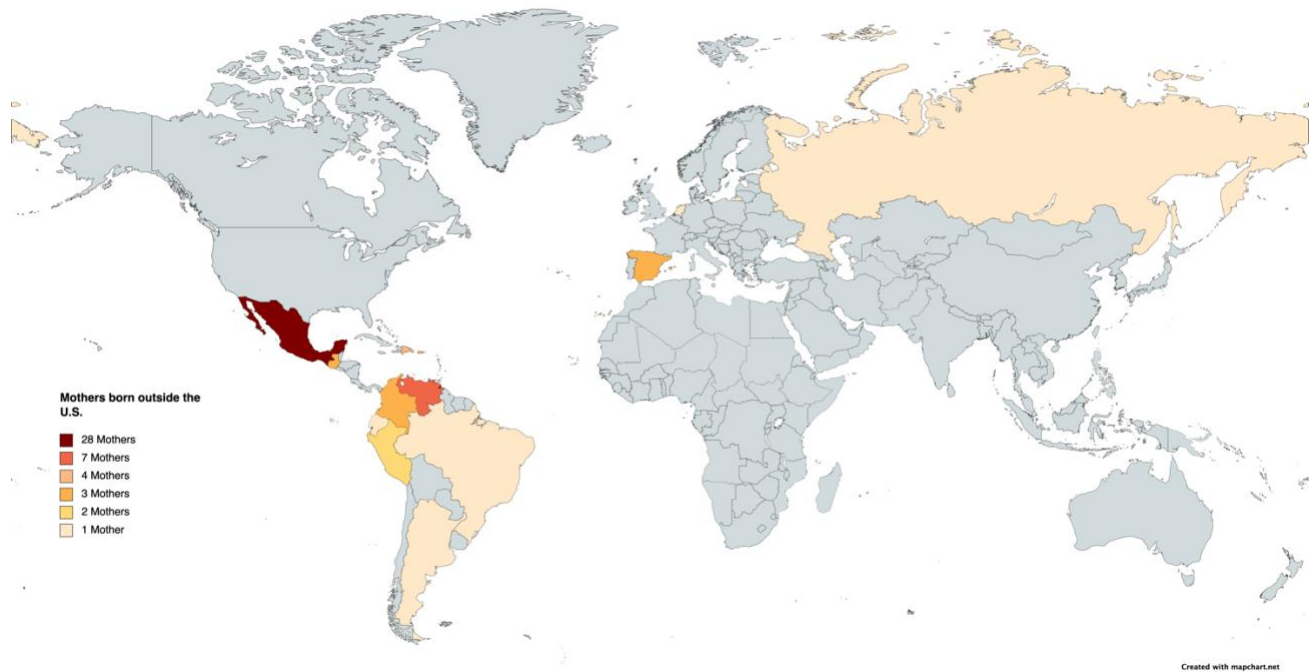
Table 27

Countries Associated with Maternal Latino/Hispanic Origin (N=144)

Country of Origin	Frequency
Mexico	89
Dominican Republic	13
Peru	8
Puerto Rico	8
Colombia	7
Venezuela	7
Salvador	6
Spain	4
Ecuador	4
Cuba	3
Guatemala	3
Nicaragua	2
Argentina	1
Brazil	1
Panama	1

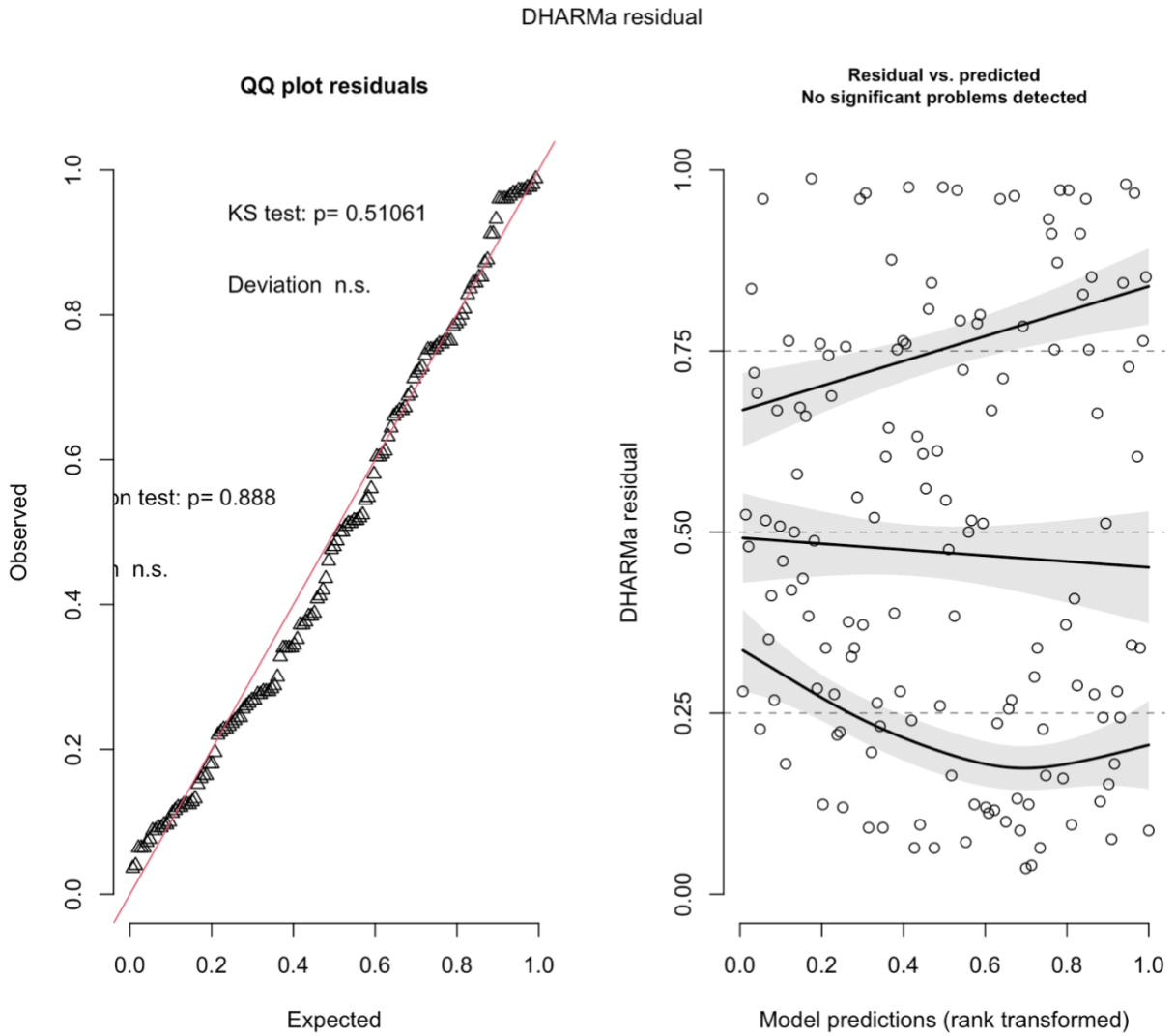*Note. Participants were able to select more than one country.*

Figure 13

World Map Indicating Countries Associated with Maternal Latino/Hispanic Origi
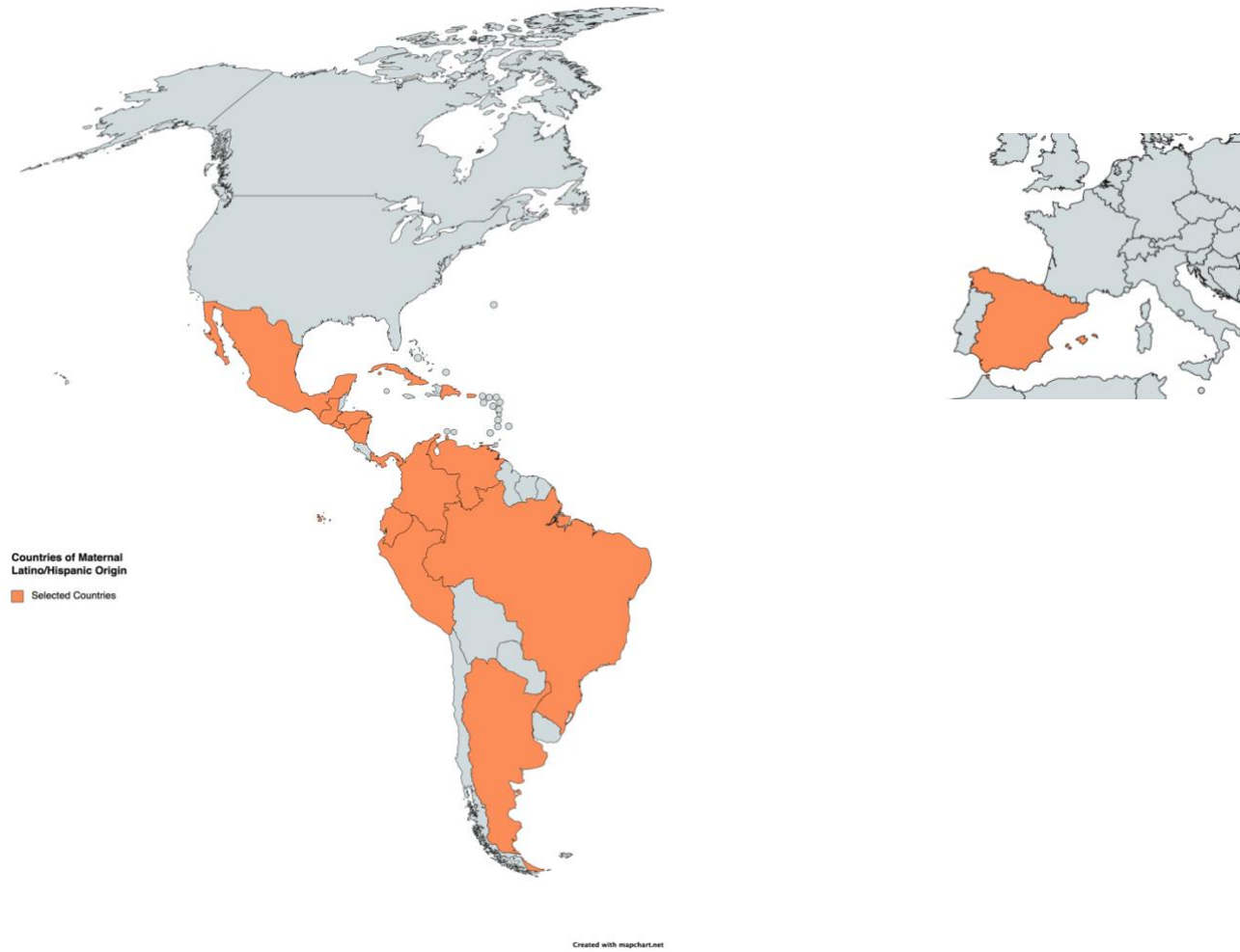
Figure 14

Akaike's Information Criteria Model Fit- Regression Residuals Plot

DHARMa residual

Figure 15

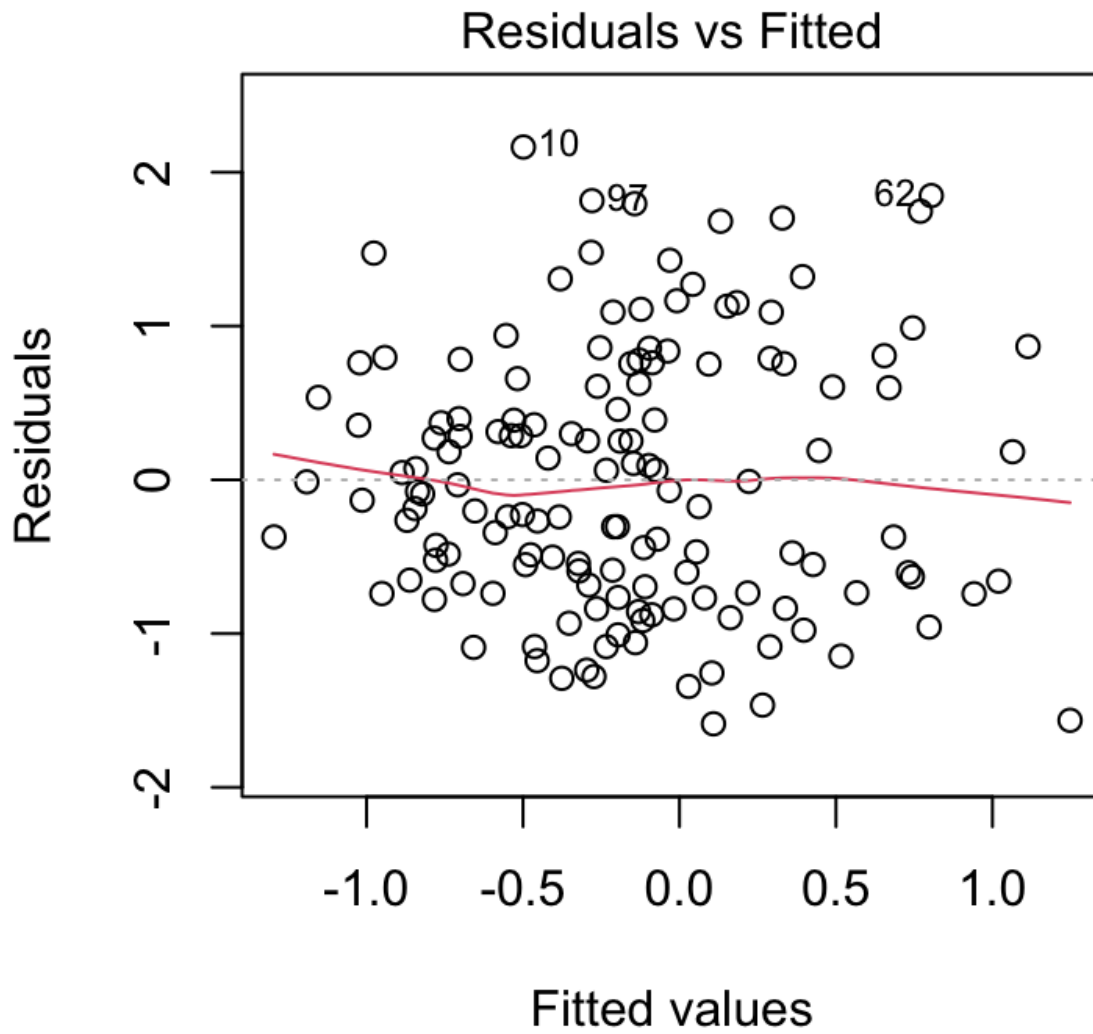*Regression Residuals vs Fitted Values Plot -Full Sample*

Figure 16

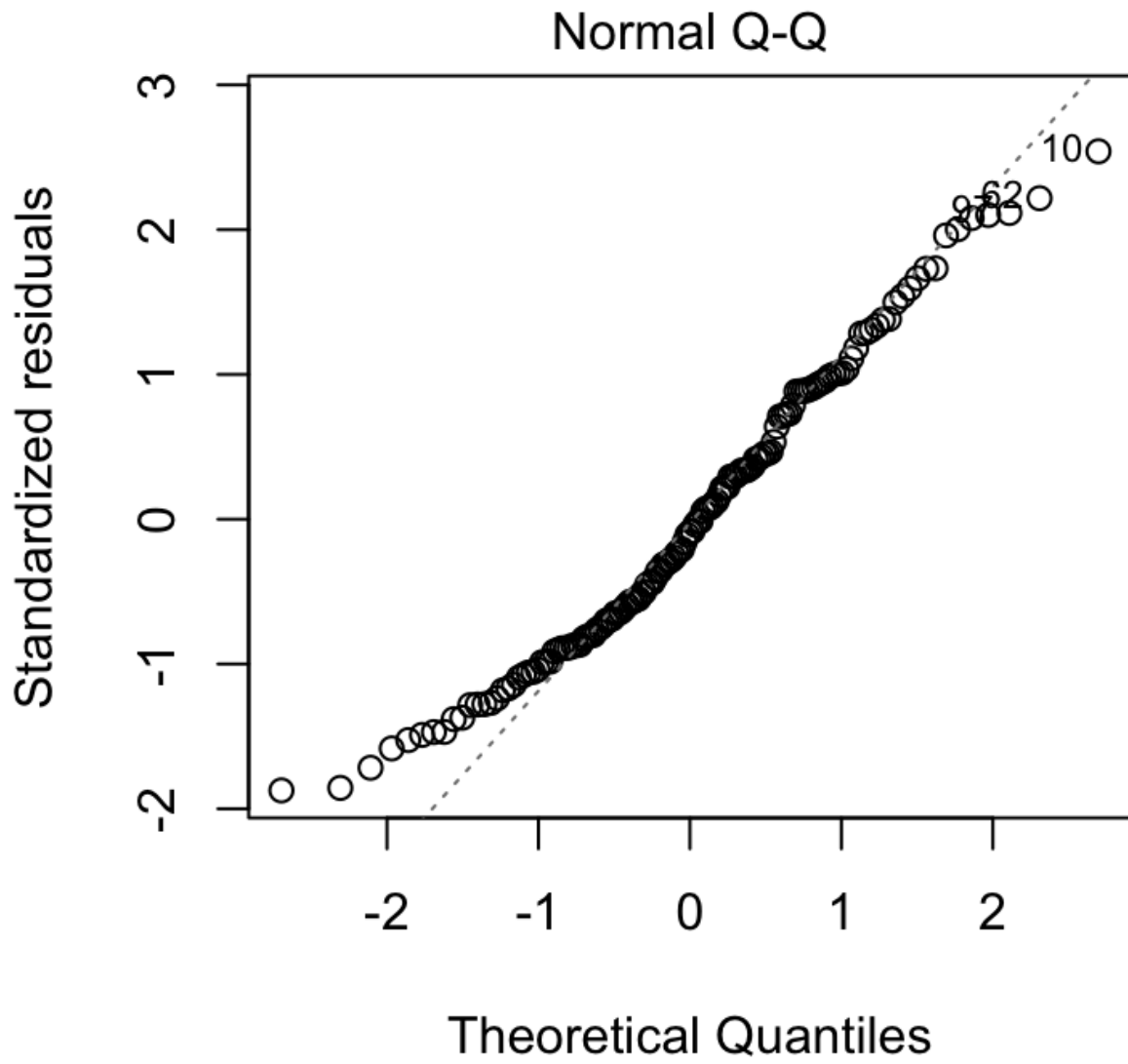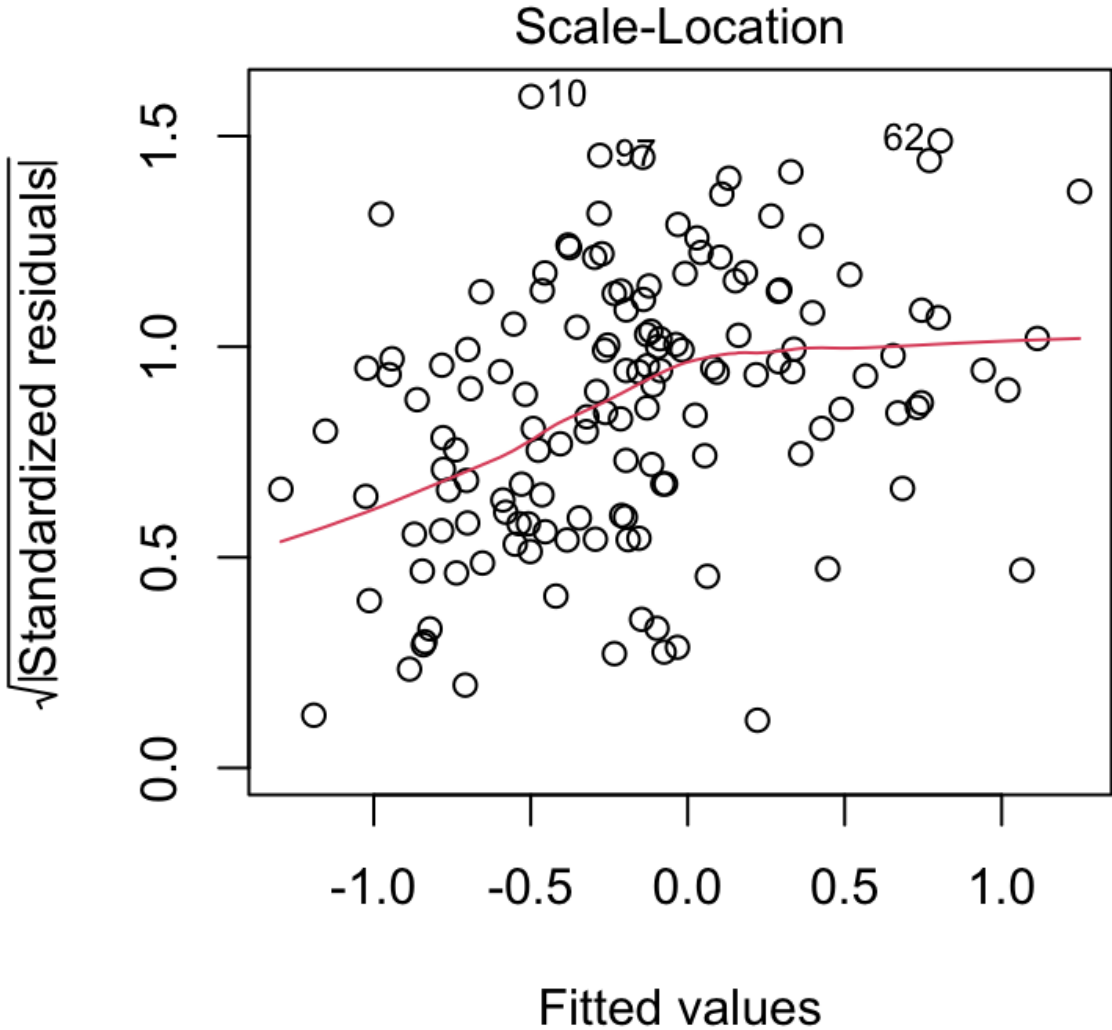*Regression Residuals Normal Q-Q Plot – Full Sample*

Figure 17

Regression Standardized Residuals Plot – Full Sample

Figure 18

Regression Residuals vs Fitted Values Plot - Subset Sample

Figure 19

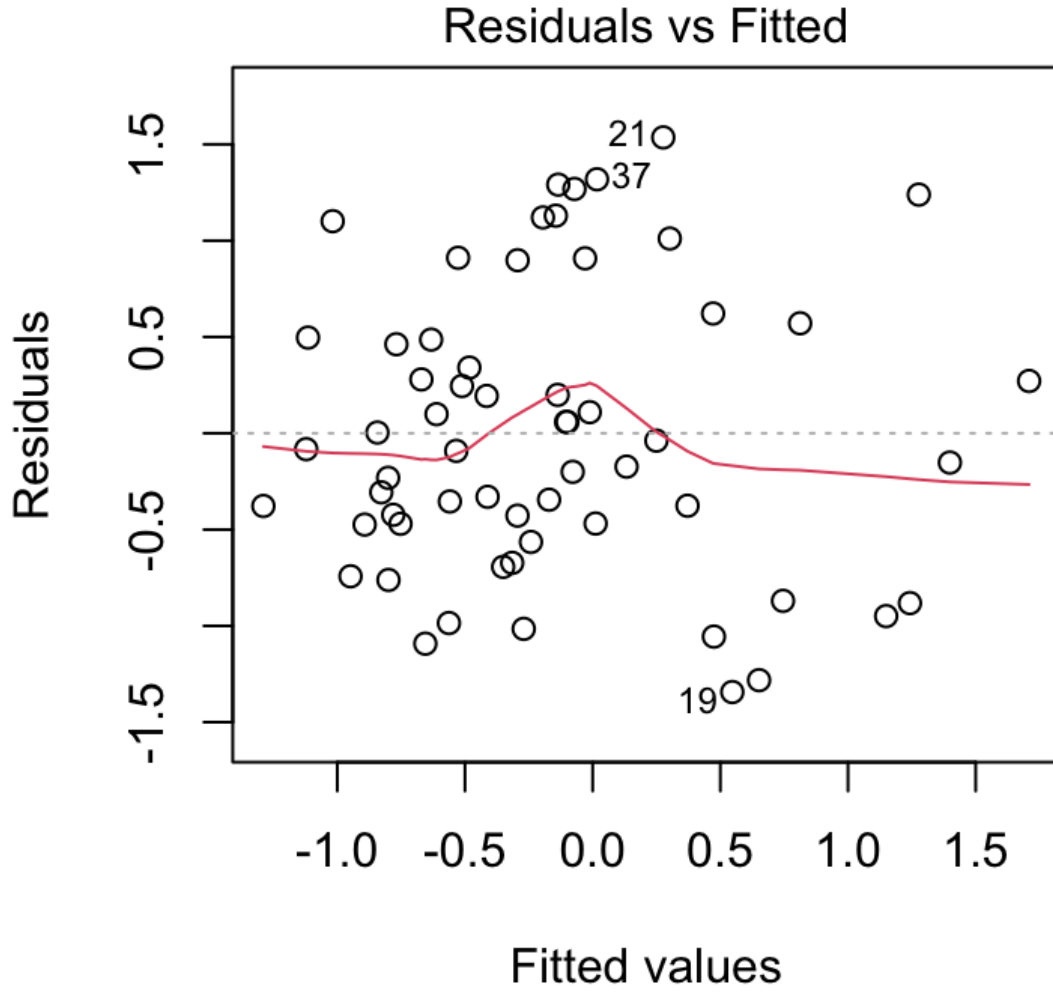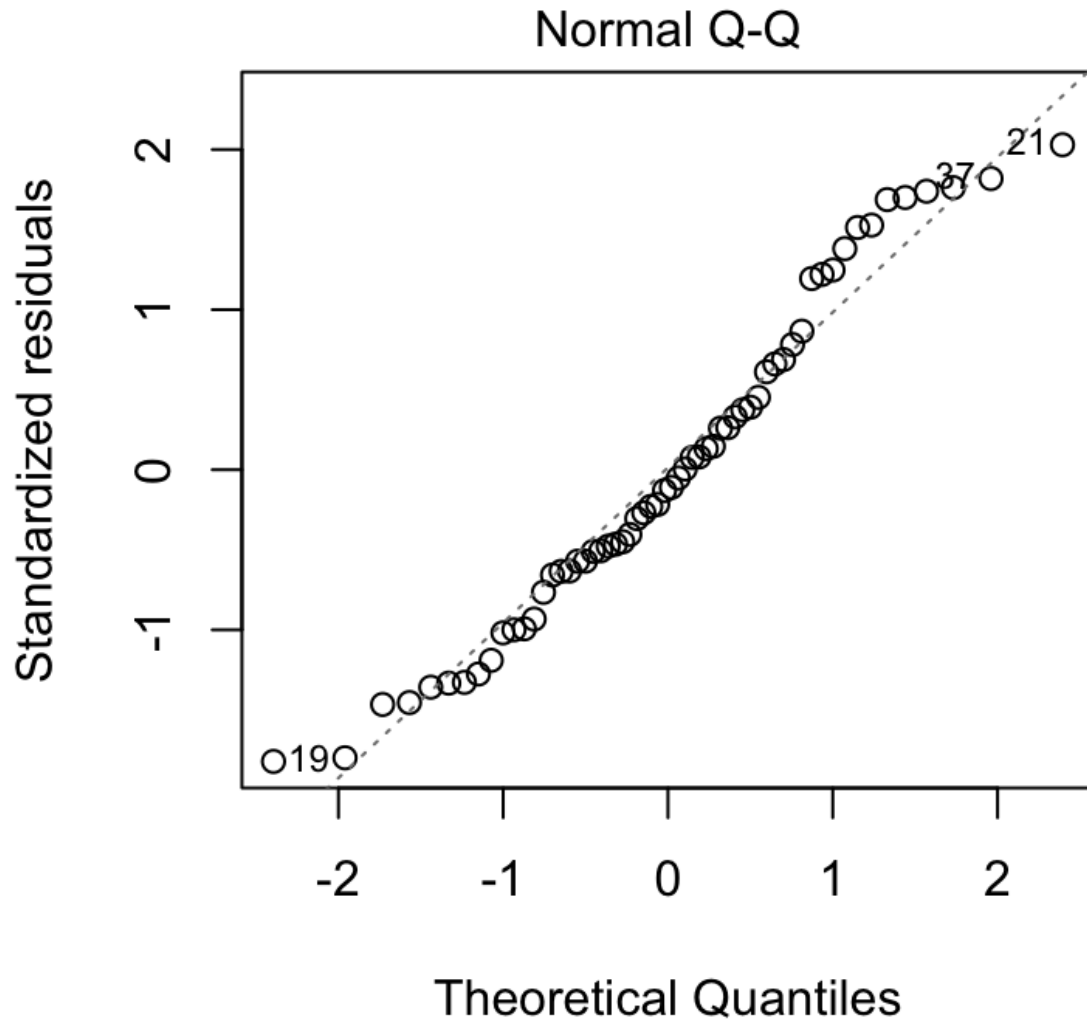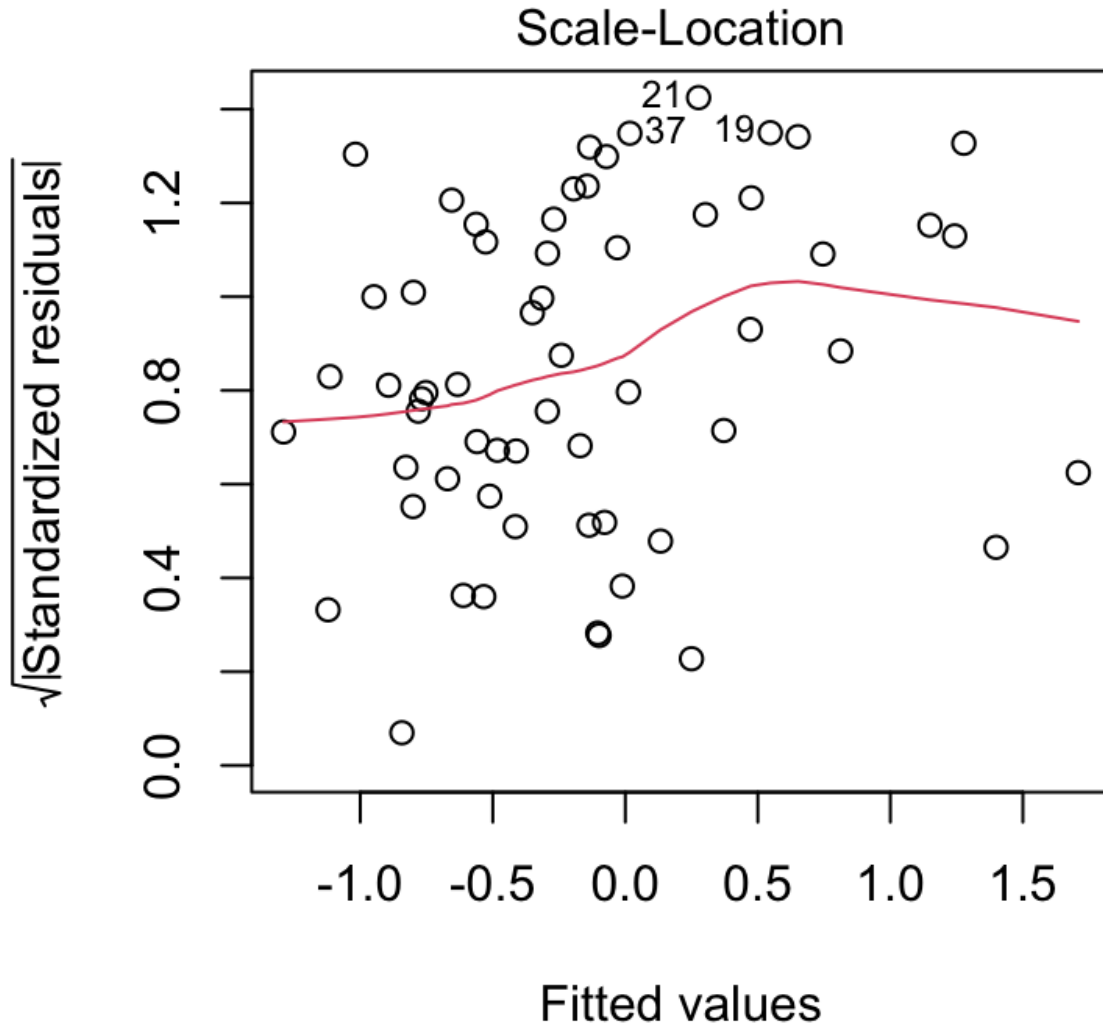*Regression Residuals Normal Q-Q Plot -Subset Sample*

Figure 20

Regression Standardized Residuals Plot for- Subset Sample

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