Assessing a Culturally Informed Transactional Model of Latino Children's Temperament Development

by

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ABSTRACT

The goal of this study is to contribute to the understanding of Mexican-American three- to five-year-old children's effortful control (EC) and negative emotionality (NE) development by examining whether Mexican-American adolescent mothers' parenting transacts with their three- to five-year-old children's EC and NE and by exploring whether mothers' familism acts as a protective factor. I hypothesized that mothers' harshness and warmth would transact with EC and NE over time. I further hypothesized that mothers' familism values would (a) positively predict mothers' warmth and negatively predict mothers' harshness, and (b) act as a buffer between low EC and high NE, and high harshness and low warmth. These hypotheses were tested within a sample of Mexican-American adolescent mother-child dyads (N = 204) and assessed longitudinally when children were 36, 48, and 60 months. Mothers were predominantly first generation (i.e., mothers' parents were born in Mexico; 67%) and spoke English (65%). When children were 36 months, average family income (i.e., wages, public assistance, food stamps) was $24,715 ($SD$ = $19,545) and mothers had started community college (13%) or completed high school/GED (30%), 11th grade (19%), 10th grade (8%), or less than 9th grade (14%). In this sample, transactions between harshness or warmth and EC or NE were not found, but a bidirectional association between NE and harshness was found. Familism marginally negatively predicted harshness, but not warmth. Familism moderated the relation between NE and harshness such that there was only a negative relation between NE and harshness when familism was high. However, familism did not moderate the relations between NE and warmth, or EC and harshness or

warmth. The results of this study are discussed with respect to (a) current methodological limitations in the field, such as the need to test or develop parent-report measures of Mexican-American children's temperament and value-driven socialization goals, (b) future avenues for research, such as person-centered studies of clusters of mothers' values and how those relate to clusters of parenting behaviors, and (c) implications for interventions addressing parenting behavior of adolescent mothers.

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Introduction

Children of adolescent mothers are more at risk for poor developmental outcomes than children of older mothers because adolescent mothers tend to be under resourced and lack the developmental assets to effectively parent (Contreras, Narang, Ikhlas, & Teichman, 2002; Whitman, Borkowski, Keogh, & Weed, 2001). Scholars contend that cultural values, such as familism, may introduce variability in Latina mothers' parenting and in some contexts may promote positive parenting and optimal child outcomes (Harwood, Leyendecker, Carlson, Asencio, & Miller, 2002). Thus, although there are risks associated with adolescent parenthood, Latina adolescent mothers may hold values that act as a protective factor and promote their children's resilience (Contreras et al., 2002).

The relations amongst Latina adolescent mothers' values, their parenting, and children's outcomes are not well understood. It is important to understand Latina adolescent mothers and their children to better support them. In the U.S., Latinas have the highest rate of *adolescent* births compared to other racial-ethnic groups, and adolescent Mexican-Americans have the highest percentage of births compared to other Latino countries of origin (Centers for Disease Control and Prevention, National Center for Health Statistics, 2012). Accordingly, I aim to understand protective factors and processes that lead to better developmental outcomes in Mexican-American adolescent mother-child dyads.

As will be described, parenting and child characteristics (i.e., temperament) are two key factors in children's development. In this study, I focus on the process of how

mothers' parenting practices and child temperament bidirectionally influence each other over time. The bidirectional influence of parenting and temperament over time is called transactions (*transactions* meaning parenting → child temperament → parenting, or child temperament → parenting → child temperament). Scholars have argued that cultural values held by mothers may be related to children's development through these transactions (Chen, Yang, & Fu, 2012; Super et al., 2008). Theory and evidence to support these claims largely have been based on cross-group comparative designs using Whites and Asians in the U.S. or within-group designs using Asian subgroups in the U.S. and other countries abroad (Chen et al., 2012). However, evidence of mothers' cultural values relating to children's development via parenting-temperament transactions in U.S. Latino groups is lacking.

Within-group transactional studies of Latina adolescent mother-child dyads are needed and may be particularly important for describing adolescent Latina's children's temperament development during early childhood. A within-group study of Latina adolescent mothers is advantageous for two reasons. First, within-group designs allow researchers to examine how the processes of interests occur within the specific ecological and cultural context that is theorized to frame that subgroups' experiences (Knight, Roosa, & Umaña-Taylor, 2009). Second, results of within-group studies are more generalizable to, and representative of, the subpopulation studied than when the same subpopulation is studied with convenience samples including multiple groups (Jager, Putnick, & Bornstein, 2017). Rather than comparing average relations between parenting and temperament or between values and parenting across populations (e.g., Mexican-

American and White adolescent mother-child dyads), I am able to focus on variability and processes within Mexican-American adolescent mother-child dyads.

The primary objective of this study is to broaden the literature by examining parenting-temperament transactions in a sample of U.S. Latina adolescent mothers and their preschool-aged children (i.e., three- to five-year olds) by exploring whether mothers' values meaningfully contribute to their parenting and act in a protective capacity. The decision to focus on the developmental period from three- to five-years of age was partially a practical decision, in that these were the ages investigated in the larger study and the developmental period allowed for consistent measurement of all study constructs across waves. In addition, the developmental disparities between children of older and adolescent mothers start to become more apparent when children are approximately 48 months of age (Mollborn & Dennis, 2012). Thus, the period from three- to five-years of age may be an especially critical period for understanding the risk and protective factors associated with adolescent mothers' children's outcomes. Additionally, Latina mothers have reported that they believe their children have little control over their own behavior when they are infants and toddlers, but they start to behave intentionally when they become preschoolers (Halgunseth, Ispa, & Rudy, 2006). This may signal a shift in parents' perceptions of their children, and parents may choose different parenting strategies when they think their child's behavior is intentional versus unintentional. Also, scholars theorize that to effectively support their children during the transition from toddlerhood (18 to 42 months) to preschool, mothers need to flexibly alter their parenting practices to match their children's development of new skills and

competencies (Teti & Huang, 2005). Specifically, Teti and Huang (2005) argued that although mothers may exhibit affection and responsivity with their infants, the developmental needs of preschoolers require mothers to adapt their parenting practices to also include supportive, but not hostile, control. Mothers who do not have the capacity to flexibly change their parenting practices may not adequately parent their children in ways that support optimal temperament development. Therefore, this period is also an important time for studying how mothers' parenting practices change in relation to their children's development and characteristics.

The present study focuses on the role of mothers, but not fathers, in parenting-temperament transactions. Adolescent mothers tend to be single and although some fathers remain involved through infancy, adolescent fathers tend to have less contact than adolescent mothers with their older, preschool-aged children (Coley & Chase-Lansdale, 1998; Whitman et al., 2001; Wiemann, Agurcia, Rickert, Berenson, & Volk, 2006). Although it is recognized that fathers' parenting also plays a significant role in children's development (Harwood et al., 2002; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008), fathers' parenting is outside the scope of this study because there is a lower likelihood of significant adolescent father involvement in their preschoolers' lives.

The following literature review starts with an overview of parenting and children's development of EC and NE. Note that literature was reviewed on Mexican-American adolescent mothers' parenting with their three- to five-year-old children. However, given the small number of studies on this specific population, other studies were included with non-Latina adolescent and older mothers and children ranging in age

from birth to 84 months. Next, I present evidence on the transactional associations between parenting and child temperament in non-Latino and Latino samples. I will provide theory and some evidence that demonstrates how these transactions may vary in U.S. Latina adolescent mother-child dyads. Lastly, I discuss how mothers' values act in a protective capacity by predicting their parenting practices, as well as weakening the relation between difficult child temperamental characteristics (i.e., low EC, high NE) and negative parenting.

Parenting

Parenting practices are one of the most important environmental influences to children's development (e.g., Belsky, 1984; Phillips & Shonkoff, 2000). Scholars have used different approaches for describing parenting. Some use Baumrind's (1967) parenting styles (i.e., authoritative, authoritarian, permissive), whereas others have argued that a more favorable approach is to examine clusters of related practices, sometimes referred to as dimensions (Darling & Steinberg, 1993; Domenech-Rodríguez, Donovick, & Crowley, 2009). Scholars find that the three Baumrind (1967) parenting styles most commonly used in the literature do not adequately capture the types of parenting practices utilized by most Latina mothers (Domenech-Rodríguez et al., 2009). Harshness and warmth, two broad dimensions of parenting, more accurately depict parenting in samples of U.S. Latina mothers (Domenech-Rodríguez et al., 2009). In addition, harshness and warmth are consistently related to child outcomes (e.g., Maccoby & Martin, 1983; Phillips & Shonkoff, 2000). Thus, I focused on harshness and warmth in the present study.

Harshness and warmth are broad dimensions that represent clusters of parenting behaviors that researchers have examined. Below I provide a conceptualization for harshness and warmth as well as the components of each construct that have been identified in the literature. By comparison to parenting in infancy, parenting in the preschool period is more complex and requires that parents simultaneously integrate multiple strategies to socialize children so that they behave appropriately within and outside the home (Teti & Huang, 2005). The individual parenting behaviors described below need to work in conjunction during the preschool period to support children's temperament development (Darling & Steinberg, 1993; Teti & Huang, 2005).

Harshness is when mothers are irritable and use hostile control with their children. Irritated mothers tend to exhibit anger and frustration towards their children and talk to their children in stern or cruel ways (e.g., yelling; *irritation*). Hostile control is when mothers use strict rules for children's behavior and tend to use punitive interventions, such as physical control (e.g., grab child by the wrist) or verbal control (e.g., scold, humiliate), to get their children to comply (*hostile control*). For example, if a child does not comply when they are told to clean up, a harsh mother might yell at the child and physically move the child over to the mess, forcing the child to clean up. Harshness is distinct from abuse, however, and is a milder form of parental aggression. Harsh mothers may also respond to their children's behavior inconsistently by not responding in some instances and then acting punitively in other instances or they may act inappropriately, such as ignoring children's bids for help or physical affection.

Conversely, warmth is when mothers are affectionate, responsive, and supportive.

Affectionate mothers exhibit genuine happiness and engage in gentle physical touch (e.g., hugs) with their children (*affection*). Responsive mothers attend to their children's cues in an appropriate (i.e., not intrusive) and sensitive manner (*responsiveness*). Supportive mothers engage in a number of behaviors to help their children through a task or interaction by providing alternatives to gain compliance, frequently praising their children when they are compliant or to maintain their engagement, letting their children lead play, providing comfort in stressful or anxiety-provoking situations, and thoughtfully structuring and scaffolding a task to their children's abilities (*support*). Using the previous clean-up example, a warm mother might gently guide their child to clean up by explaining why the child should clean up and modeling the desired behavior. These efforts demonstrate to children that their mothers are invested in their success and can be relied on for support. The following sections include a review of harshness and warmth in samples of non-Latina and Mexican-American adolescent mothers as well as older Mexican-American mothers.

Parenting in Adolescence

Since the 1980s, several scholars have focused on identifying and reducing risk factors for poor parenting and subsequent child outcomes related to adolescent childbirth, however, the research is still somewhat scarce (Brooks-Gunn & Furstenberg, 1986; Coley & Chase-Lansdale, 1998). More is understood about the risk factors for becoming an adolescent mother and the consequences for the mother, than about parenting and child correlates of adolescent motherhood. Furthermore, the bulk of the literature on adolescent mothers' parenting and its relation to children's outcomes is relatively old; most of the

frequently cited studies are nearly 20 years old (Savio Beers & Hollo, 2009). When reading the following review, it is important to consider that the context of adolescent parenting may be different today than it was, even, ten years ago. I will begin to fill this gap with the present study by examining adolescent mothers (i.e., 19 or younger) who gave birth in the current decade (i.e., 2012-2013).

Generally, researchers find adolescent mothers' parenting to be similar to older mothers' when other contextual factors, such as poverty, education, and marital status, are controlled (Brooks-Gunn & Chase-Lansdale, 1991; Contreras et al., 2002; García Coll, 1989). Adolescent mothers, however, are more likely than older mothers to be impoverished, have lower educational attainment, to be single, and be socially isolated all of which are risk factors for poorer parenting (Contreras et al., 2002; Whitman et al., 2001) and place their children at increased risk for poorer developmental outcomes and problems (Brooks-Gunn & Chase-Lansdale, 1995; Phillips & Shonkoff, 2000). Scholars contend that the differences in parenting and children's outcomes that arise between adolescent and older mothers are primarily a function of adolescent mothers' socioeconomic and marital circumstances (Brooks-Gunn & Furstenberg, 1986; Coley & Chase-Lansdale, 1998).

Although differences between adolescent and older mothers' parenting may mostly be due to differences in resources, there are reasons to expect that parenting may be more challenging for adolescent mothers because they are still developing. Children may also be affected because mothers may be ill-equipped to effectively parent without meeting these developmental milestones. Adolescents tend to be ego-centric and

unrealistic about the consequences of their actions and these developmental deficiencies may affect mothers' parenting. For example, adolescent mothers' knowledge of children's developmental milestones and attitudes about parenting are often idealistic and inaccurate (Field, Widmayer, Stringer, & Ignatoff, 1980; Jahromi, Guimond, Umaña-Taylor, Updegraff, & Toomey, 2014; Pinzon & Jones, 2012; Whitman et al., 2001), which may be why adolescent mothers tend to perceive their children as being "unusually" difficult (Brooks-Gunn & Chase-Lansdale, 1991; Brooks-Gunn & Furstenberg, 1986; Field et al., 1980).

Furthermore, Piaget and Erickson contended that adolescents are still in the process of developing the cognitive capabilities that allow them to adequately solve problems and are still developing psychosocial competencies that help them to formalize their identities. Adolescent mothers' underdeveloped cognitive and self-regulation skills, such as lack of impulse control and higher reactivity (Contreras et al., 2002; Sommer et al., 1993), may be associated with poorer parenting when children act in undesirable ways and especially when mothers' believe undesirable acts are intentional (Lorber, O'Leary, & Smith Slep, 2011; Milner & Chilamkurti, 1991; Stith et al., 2009).

Although there is likely variability in parenting behaviors among adolescent mothers (Brooks-Gunn & Chase-Lansdale, 1995), research on the differences between older and adolescent mothers' parenting indicates adolescent mothers may be more likely to use less-optimal strategies and their children may exhibit deficits relative to children of older mothers. For instance, adolescent mothers tend to verbalize less, use intrusive physical handling more, and reinforce infants' vocalizations less than older mothers

(Field, 1980; McAnarney, Lawrence, Ricciuti, Polley, & Szilagyi, 1986; Osofsky & Osofsky, 1970), which may contribute to their children's delays in cognition and social functioning (Field, Widmayer, Adler, & de Cubas, 1990; Field, Widmayer, Stoller, & de Cubas, 1986; Flanagan, Coppa, Riggs, & Alario, 1994; García Coll, Vohr, Hoffman, & Oh, 1986; Jahromi, Umaña-Taylor, Updegraff, & Lara, 2012). In general, preschool-aged children of adolescent mothers have more behavior problems than children of older mothers (Black et al., 2002; Coley & Chase-Lansdale, 1998; Furstenberg, Brooks-Gunn, & Chase-Lansdale, 1989; Jahromi et al., 2014). Results of three, longitudinal studies indicate that as adolescent mothers' children age from infancy to early school age, their developmental deficits become worse (Hann, Osofsky, & Culp, 1996; Mollborn & Dennis, 2012; Spieker, Larson, Lewis, Keller, & Gilchrist, 1999). Thus, adolescent mothers and their children are thought to be at higher risk for maladjustment, on average, than older mothers and their children.

Adolescent mothers' harshness and warmth. Some scholars have surmised that adolescent mothers exhibit less responsivity and more harshness than do older mothers, but they are just as affectionate toward their children as older mothers (see review by Coley & Chase-Lansdale, 1998). However, others suggest that the literature on adolescent mothers' parenting is somewhat inconsistent (Berlin, Brady-Smith, & Brooks-Gunn, 2002). Many researchers have examined adolescent mothers' harshness and warmth with their infants. Most researchers found that adolescent mothers were more irritable, unresponsive, and use more hostile control with their infants than older mothers (Berlin et al., 2002; Culp, Appelbaum, Osofsky, & Levy, 1988; Culp, Culp, Osofsky, &

Osofsky, 1991; García Coll et al., 1986; McAnarney et al., 1986; Osofsky & Osofsky, 1970; Ragozin, Basham, Crnic, Greenberg, & Robinson, 1982); however, some researchers reported no differences between adolescents' and older mothers' harshness and warmth (Field et al., 1980; Wasserman, Brunelli, Rauh, & Alvarado, 1994).

Fewer studies have examined adolescent mothers' parenting with their three- to five-year-olds. In a sample of young mothers (16.6 to 29 years) and their three-year-old children, childbearing age was unrelated to mothers' harshness and warmth (Chase-Lansdale, Brooks-Gunn, & Zamsky, 1994). In contrast, another study's results indicate that younger mothers are more likely to use harsh parenting strategies with their three-year olds than older mothers (Y. Lee & Guterman, 2010). Both studies' analyses included several controls for socio-demographic factors such as poverty and educational attainment. In summary, whereas most researchers find that non-Latina adolescent mothers are more harsh and less warm with their young children than older mothers, some researchers find no differences between adolescent and older mothers. Inconsistencies in these findings may indicate that other factors (e.g., mothers' values) may explain some variability in adolescent mothers' parenting.

It is important to note that despite potential differences between younger and older mothers' parenting, on average, there is variability in parenting behaviors among adolescent mothers. For instance, adolescent mothers' parenting with their three-to-five-year-old children find that adolescent mothers vary in their use of harsh and warm parenting practices (Black et al., 2002; Furstenberg et al., 1989; Spieker et al., 1999).

Mexican-American mothers' harshness and warmth. The literature on adolescent mothers' parenting is mostly comprised of studies with samples of African American and White mothers and, therefore, may not generalize to Latinas. Furthermore, researchers have not typically used within-group designs to study Latina adolescent mothers' parenting, which is important for identifying factors mitigate risks on Latina mothers' parenting and produce variability in their children's outcomes. Scholars contend that the context of adolescent parenting might be different for Latina mothers compared to other adolescent mothers, on average, because pregnancy at an earlier age may be viewed as more acceptable, normative, and valued (García Coll & Vázquez García, 1996). This value may be particularly true for Mexican-American adolescent mothers. Other than countries in sub-Saharan Africa, Mexico had the highest rate of adolescent pregnancies of other large countries in 2009 (Sedgh, Finer, Bankole, Eilers, & Singh, 2015). Thus, results from other studies of adolescent mothers may not generalize to Latina adolescent mothers.

The positive emphasis on pregnancy and family cohesion in some Latino families may produce variability in their parenting. Latino parents may be more willing to provide logistical and emotional support to maintain positive relationships with their pregnant adolescent daughters than their non-Latino counterparts (Field et al., 1990; Uno, Florsheim, & Uchino, 1998). Latina adolescent mothers are also more likely to be married than their White or African American peers (U.S. Census Bureau, 2016). Although the percentage of Latina adolescent mothers who are married is still small (2.1%), Latina adolescent mothers may also have more support from their partners than

adolescent mothers of other racial-ethnic backgrounds. Some researchers also have also found for Latina adolescent mothers, co-residing with partners (husbands, boyfriends, child's biological father) was related to more maternal warmth in interactions with their children than those in other living arrangements (Contreras, 2004; Field et al., 1990). These additional sources of support may promote Latina adolescent mothers' parenting (Contreras et al., 2002).

The evidence on what produces variability in Mexican-American mothers' harsh and warm parenting behaviors is sparse. In one study, researchers found that Mexican-American adolescent mothers' financial and parenting stress was positively related to mothers' reported hostile control and negatively related to mothers' reports of how frequently they engaging in activities that are enjoyable for their children (Uno et al., 1998). Uno and colleagues' (1998) measure of parenting included harsh aspects of parenting, such as hitting, that may border on abuse. Furthermore, warmth in Uno and colleagues' (1998) study is a measure of the frequency of activities that the mother engages in with her child. Although these are parenting behaviors that scholars have identified as "negative" and "positive," they do not represent the conceptualizations of harshness and warmth in the present study. Some researchers have compared Latina adolescent mothers to mothers of other racial-ethnic backgrounds or compared mothers from different Latino countries of origin and found that racial-ethnic background or country of origin was associated with the use of harsh or warm parenting practices (Field et al., 1990; Uno et al., 1998; Wasserman, Rauh, Brunelli, Garcia-Castro, & Necos, 1990). These characteristics explain some variability in Latina adolescent' mothers

parenting; however, they are not useful for describing variability within the subpopulation of Mexican-American adolescent mothers and, because the researchers compared subpopulations based on convenience samples, the results of these comparison studies may be biased. Although other researchers have examined other indicators of parenting, such as mothers' parenting efficacy, using within-group designs (Killoren, Zeiders, Updegraff, & Umaña-Taylor, 2016; Zeiders, Umaña-Taylor, Jahromi, & Updegraff, 2015), no researcher other than Uno and colleagues (1998), to my knowledge, have examined harshness and warmth within a sample of adolescent Mexican-American mothers.

Given the sparse evidence, it is unclear what factors predict Mexican-American adolescent mothers' use of harshness or warmth. It may be critical to consider characteristics of children and their mothers that produce within-group variation in harsh and warm parenting behaviors. Identifying these characteristics will help professionals effectively prevent maladaptive parenting behaviors in Mexican-American adolescent mothers. As will be described in detail in a later section, Mexican-American adolescent mothers' values are thought to be one of these meaningful variables.

Children's Temperament

Rothbart and colleagues (2006; 1998) define temperament as individual differences in self-regulation of behavior and emotion as well as reactivity to environmental stimuli (Rothbart & Bates, 2006; Rothbart & Jones, 1998). Although scholars have identified other dimensions of temperament in the literature, I focus on effortful control (EC) and negative emotionality (NE) in the present study. EC and NE

are central to the present study because they both are susceptible to environmental influences, such as parenting, and as I will discuss in a later section, can be predictive of mothers' parenting practices (Bell, 1968; Belsky, 1984; Putnam, Sanson, & Rothbart, 2002; Wachs & Bates, 2010). Furthermore, researchers consistently demonstrate that EC is positively, and NE is negatively, related to and predictive of children's adjustment in the preschool years (Diaz et al., 2015; Eiden, Colder, Edwards, & Leonard, 2009; Eiden, Edwards, & Leonard, 2007; Eisenberg, Cumberland, et al., 2001; Eisenberg, Spinrad, & Eggum, 2010; Eisenberg, Taylor, Widaman, & Spinrad, 2015; Hernández et al., 2015; Sallquist et al., 2009). In two studies, using the same sample of Mexican-American adolescent mothers as the present study, researchers also found that preschoolers' EC was positively related to their adjustment (Jahromi, Zeiders, Updegraff, Umaña-Taylor, & Bayless, 2017; Seay, Umaña-Taylor, Jahromi, & Updegraff, 2017). Thus, EC may be important for children's future success irrespective of their racial-ethnic background or their mothers' age. No studies, to my knowledge, have examined Mexican-American adolescent mothers' children's NE. Therefore, a gap exists in the literature and the field is lacking an understanding of Mexican-American adolescent mothers' children's NE.

Children's EC

EC is an individual's ability to inhibit a dominant response and elicit a non-dominant response (*inhibitory control*) as well as focusing and shifting attention in accordance with environmental demands (*attentional control;* Rothbart & Bates, 2006). Additionally, EC is the *voluntary* component of regulation, meaning that the behavioral and emotional outputs of EC are not automatic, rather they are controlled, in some way,

by the individual (*emotion or behavioral regulation;* Diaz & Eisenberg, 2015; Eisenberg, Smith, & Spinrad, 2011; Eisenberg & Spinrad, 2004). Children start to develop EC skills around 10 to 12 months old and these skills improve throughout childhood and into adulthood as children become increasingly independent from their caregivers (Eisenberg et al., 2011; Kopp & Neufeld, 2002; Posner & Rothbart, 2000). In particular, EC develops rapidly from three- to five-years of age and children become more capable of attending to a particular stimulus, inhibiting a dominant response, and shifting attention from one stimulus to another (see reviews by Eisenberg, Spinrad, & Eggum, 2010; Rothbart & Bates, 2006).

Few researchers have examined Mexican-American children's EC and even fewer researchers have studied Mexican-American adolescent mothers' children's EC. Some scholars speculate that children of adolescent mothers are at higher risk for low EC than children of older mothers (Borkowski et al., 2002). Furthermore, Galindo and Fuller (2010) found the mean of Mexican-American preschooler's EC was lower than White, non-Latino preschoolers. Therefore, it is plausible that Mexican-American children of adolescent mothers are at risk for low EC.

Children's NE

NE refers to the expression of high degrees of anger, fear, and sadness (*negative expressivity*), high intensity negative reactions to environmental stimuli (*negative reactivity*), and inability to quickly return to a neutral or positive state after a distressing event (*unsoothability;* Rothbart, Ahadi, & Hershey, 1994). NE can be witnessed in children as young as 2-weeks-old (van den Boom, 1989) and scholars have found mean-

level increases in parent-reported NE from infancy to toddlerhood (Carranza Carnicero, Pérez-López, Del Carmen González Salinas, & Martínez-Fuentes, 2000; Gartstein & Rothbart, 2003; Lemery, Goldsmith, Klinnert, & Mrazek, 1999). From three to five years, however, the rank-order of NE tends to remain fairly stable (Lemery et al., 1999; Rothbart, Derryberry, & Hershey, 2000; Sallquist et al., 2009), with mean-level decreases in NE across time (Sallquist et al., 2009). Scholars speculate that the mean decrease in NE from toddlerhood to kindergarten is a function of diminishing affectivity associated with children's increasing EC and recognition of social norms (Rothbart & Bates, 2006; Saarni, Campos, Camras, & Witherington, 2007).

Only one study, to my knowledge, included an analysis of children's NE in a sample of adolescent mothers. Tarabulsy and colleagues (2003) found White, Canadian, adolescent mothers' infants exhibited more negative expressivity during the Still Face Paradigm than infants of older mothers. Some researchers have examined Latino and Mexican-American children's NE. S. J. Lee and Altschul (2015) found three-year-olds of U.S.-born Latina mothers had higher mean NE than children of foreign-born mothers. Ispa and colleagues (2004) found older Mexican-American mothers' 15-month-olds' NE was higher than White mothers' 15-month-olds'; however, at 25 months, Mexican-American children's NE was lower than White 25-month-olds. Ispa and colleagues' (2004) results support the idea that there are factors in Mexican-American families that reduce children's NE. This investigation, however, compared White and Mexican-American children. Additional investigations using within-group designs are needed to,

in order to identify what factors are related to Mexican-American preschoolers' NE and if they also act in a protective capacity in the context of adolescent parenthood.

In summary, the dearth of research on Mexican-American adolescent mothers' children's EC and NE development leaves a gap in scholars' understanding of how EC and NE develop in this sub-population. A limited amount of research indicates that Mexican-American preschoolers and toddlers of older mothers may have lower EC (Galindo & Fuller, 2010) and lower NE (at 25, but not 15 months; Ispa et al., 2004), then their White counterparts. It may be unreasonable to assume that children of older mothers will have similar outcomes to those born to adolescent mothers, given that some scholars speculate that children of adolescent mothers are at higher risk for lower EC (Borkowski et al., 2002), and higher NE (Tarabulsy et al., 2003), than older mothers. Within-group examinations are needed to further scholars' understanding of what environmental and cultural factors produce resilience in Mexican-American children of adolescent mothers and how these factors promote their temperament development.

Parenting-Temperament Transactions in Non-Latino Samples

Transactional Theory on Harshness/Warmth with EC/NE

Several developmentalists have highlighted the need to consider children's characteristics in models of socialization and parenting and this set of ideas is called transactional theories. Transactional theorists contend that children's characteristics and parenting bidirectionally influence each other over time, therefore both children's characteristics and parents' parenting work in-tandem to produce children's developmental outcomes (Bell, 1968; Cicchetti & Lynch, 1993; Sameroff, 2009).

Maternal harshness and warmth are theoretically linked to children's temperament development, and children's EC and NE are theorized to evoke certain parenting behaviors. Thus, these behaviors are important to examine in transactions.

Scholars consistently agree that harshness is related to non-optimal temperamental characteristics, such as low EC and high NE, because irritability and hostile control signal to the child that their mothers are unsupportive (Halberstadt, Crisp, & Eaton, 1999), whereas affectionate, responsive, and supportive maternal behaviors help children to feel secure and safe, thereby facilitating their abilities to regulate and appropriately express emotions (Phillips & Shonkoff, 2000). Mothers' harsh responses may indicate to children that their mothers are uninterested in their children's goals; in contrast, warm responses show mothers' investment and these warm responses promote children's self-regulation and positive, rather than negative, emotional expressions (Grau et al., 2015; Grusec & Goodnow, 1994; Maccoby & Martin, 1983; Wood, Grau, Smith, Duran, & Castellanos, 2017). Furthermore, children learn behaviors and emotional expression by modeling their mothers' harsh and warm responses. Thus, children whose mothers exhibit higher levels of harshness and lower levels of warmth may also exhibit poorer regulation and high negativity (Crockenberg, 1987; Kopp, 1989; Trommsdorff & Rothbaum, 2008).

Scholars also believe some aspects of temperament are driven, in part, by genetics. The shared genetics of parents and their children complicates the parenting-temperament association because observed relations between parenting and children's temperament may be due to shared genetic traits (Sameroff, 2009; Saudino & Wang,

2012). In twin studies, researchers found that environmental influences, such as parenting, contribute to children's temperament above and beyond shared genetic traits (see reviews by Bates et al., 2012; Kiff, Lengua, & Zalewski, 2011). Additionally, Sameroff (2009) concluded that environmental supports of genetic traits need to be present for a genotype to be phenotypically expressed. For example, if a child is genetically predisposed to low NE but his or her mother exhibits a high level of harshness, it is possible that the child will not be able to capitalize on his or her innate traits. Although it is unreasonable to discount the variance attributed to the parenting-temperament association by shared genetic traits, environmental influences, particularly parenting, may be a strong predictor of EC and NE. In the present study, I focus on observable harshness and warmth as it relates to mothers' ratings of their children's EC and NE; however, I recognize that part of this association may be accounted for by shared genetic variance.

Theorists also contend that children's EC and NE can be predictive of harsh and warm parenting practices. Specifically, scholars argue that children who are lower in EC and higher in NE will evoke more harsh and less warm maternal parenting practices than children who are higher in EC and lower in NE (Bates et al., 2012; Bell, 1968; Belsky, 1984; Putnam et al., 2002; Scaramella & Leve, 2004). Children low in EC have difficulty regulating their own behavior and are predisposed to behave erratically and impulsively (Eisenberg et al., 2011). Erratic and impulsive behavior can be stressful and frustrating for mothers, especially when children refuse to behave appropriately. Young children higher in NE may be more difficult to soothe and prone to over-arousal, thus they may

exhibit more anger and frustration than children lower in NE. These behaviors are also more difficult for mothers to manage (Kiff et al., 2011). Scholars suggest that mothers may initially try to reduce their children's NE by responding with sensitivity and empathy, but mothers' patience may be limited, and mothers, especially those without adequate support and resources, may start to react to their children's NE with intrusiveness and rejection (Bates et al., 2012; Chang & Shaw, 2016; Kiff et al., 2011). Thus, children with low EC and/or high NE may have mothers who are more likely to exhibit harshness and less likely to exhibit warmth than their higher EC and/or lower NE counterparts.

Brooks-Gunn and Furstenberg (1986) speculated that adolescent mothers may be less capable than older mothers of interpreting and appropriately adapting their parenting practices to their children's temperament. Thus, adolescent mothers' perceptions of their children's EC and NE as either desirable or undesirable may be an important predictor of their harshness and warmth. Super and Harkness (1986) contend that mothers' perceptions of their children's temperament drives their own socialization strategies and parenting behavior. In adolescent mother-child dyads, mothers' perceptions may be particularly salient because adolescent mothers are more likely than older mothers to rate their children's temperament as more "difficult" (i.e., low EC, high NE) and to believe that their children are acting intentionally (Lorber et al., 2011; Milner & Chilamkurti, 1991; Stith et al., 2009; Whitman et al., 2001). If children are perceived as being difficult and having control over their emotions and behaviors, mothers may respond with more harshness and less warmth (Wang, Deater-Deckard, & Bell, 2016). Therefore, in the

present study, I focus on mothers' perceptions of their children's EC and NE by using mothers' reports of their children's EC and NE.

Correlational and Longitudinal Associations Between Temperament and Parenting

In this section I will summarize the relations between harshness or warmth and EC or NE. It is important to note that harshness, warmth, EC, and NE are broader constructs that are comprised of subdomains that scholars have examined in various ways. In this study, harshness is a combination of irritation and hostile control, warmth includes responsivity, affection, and support, EC encompasses inhibitory control, attentional control, and behavioral regulation, and NE is comprised of negative expressivity, negative reactivity, and unsoothability. If researchers' conceptualization or measurement of these constructs included only certain subdomains, they will be denoted in the review below to more clearly describe how parenting and temperament were related in previous studies.

The studies reviewed in this section were not transactional, meaning the researchers did not examine bidirectional associations between temperament and parenting over at least three time points. I will first cover the relations between EC and harshness or warmth and then NE and harshness or warmth. Each section below will start with an overview of the correlational or concurrent findings and then I will summarize the longitudinal findings.

Harshness or warmth and EC. There are few studies in which the relation between EC and harshness have been investigated. Karreman, van Tuijl, van Aken, and Dekovia (2006) conducted a meta-analysis and they identified 41 studies where

researchers examined correlations between 24-month- to 66-month-old children's self-regulation (i.e., compliance, inhibitory control, and emotion regulation) and parenting (i.e., harshness, warmth). For the present study, compliance was not included in my conceptualization of EC, thus only the results including inhibitory control and emotion regulation from Karreman and colleagues' (2006) analyses are reviewed. Karreman and colleagues (2006) found 19 studies that included inhibitory control and/or emotion regulation. Researchers measured the relations between self-regulation and parenting using questionnaires, assessments, and observations in samples of mostly White, middle- to high-SES, mother-child dyads. In those 19 studies, they found that self-regulation was negatively correlated with harshness, but when they examined compliance, inhibitory control, and emotion regulation individually, inhibitory control and emotion regulation were not correlated with harshness. Within these studies, the association between inhibitory control and harshness was inconsistent, with some researchers finding a negative association whereas others found a positive association. Similarly, some researchers found a negative association between emotion regulation and harshness, whereas others found no association and study characteristics could not explain the differences in these associations (Karreman et al., 2006).

In terms of longitudinal studies, Bridgett and colleagues (2009) tested whether changes in mother-reported EC across infancy predicted a latent variable of mother-reported negative parenting behavior, including harshness and two factors of permissive parenting (e.g., allowing the child to do something the parent has already said the child can't do), using latent growth modeling. While controlling for income, family size,

maternal relationship stress, and maternal depression (but not earlier negative parenting), the researchers found four-month EC and increasing EC from four to 12 months negatively predicted negative parenting at 18 months (Bridgett et al., 2009). To my knowledge, there was only one study where researchers examined relations between EC and harshness in both directions longitudinally. Kennedy, Rubin, Hastings, and Maisel (2004) measured emotion regulation with vagal tone and harshness with mothers' reports. They found that 2-year emotion regulation negatively predicted 4-year harshness, while controlling for 2-year harshness; however, 2-year harshness did not predict 4-year emotion regulation, while controlling for 2-year emotion regulation.

Although Karreman and colleagues (2006) did not find a concurrent relation between EC and harshness, two longitudinal studies' results suggest that in young children EC negatively predicts harshness, but harshness may not predict EC. However, there are some limitations to these two studies that make it difficult to draw conclusions about the association between EC and harshness over time. Bridgett and colleagues' (2009) latent variable included parenting behaviors other than harshness and they also did not control for previous harshness. Likewise, Kennedy and colleagues' (2004) only assessed children's emotion regulation and although harshness did not predict emotion regulation, it may predict inhibitory control or attentional control. In particular, when mothers are overly reactive children may learn, through modeling, to initiate an inappropriate dominant response and focus their attention on a distressing stimulus. These two study's samples were also mostly White and middle- to high-socioeconomic status, which may mean that the results may not be generalizable to racial-ethnically and

socioeconomically diverse groups. Finally, these two studies examined EC and harshness over two different developmental periods (infancy to toddlerhood, toddlerhood to preschool) and the development of EC as well as parenting needed to foster EC during those periods are quite different; thus, drawing conclusions across these two studies may discount important distinctions between these two periods. More longitudinal studies with adequate controls for stability of harshness and EC, consistent conceptualizations of harshness, similar measurement of EC, and across the same developmental periods are needed to truly understand how these constructs are related over time.

In their meta-analysis, Karreman and colleagues' (2006) examined warmth: support and sensitivity (combination of responsivity and affection). They found that two- to five-year-olds' self-regulation was positively correlated with support, but not correlated with sensitivity. The authors speculate that it may be harder to find a correlation between self-regulation and sensitivity than a correlation between self-regulation and support because most parents tend to exhibit sensitivity leading to low variability where as some children may require more support than others. Karreman and colleagues (2006) did not analyze compliance, inhibitory control, and emotion regulation individually with sensitivity, like they did with harshness because homogeneity statistics were not significant indicating there would not be differential results by type of self-regulation. Support was only positively correlated with compliance and was unrelated to inhibitory control and emotion regulation. As with harshness, some researchers found inhibitory control to be positively related to support, whereas others found a negative relation. Also, some researchers found emotion regulation to be positively related to

support and others found no relation. Therefore, EC may be concurrently related to some aspects of warmth, such as support, and not others, such as responsiveness and affection. Furthermore, certain aspects of self-regulation, such as compliance, may be more strongly related to warmth than others, such as inhibitory control and emotion regulation.

In younger children, there is one study, to my knowledge, where researchers examined EC predicting warmth longitudinally over two time points. Popp, Spinrad, and Smith (2008) found, while controlling for 18-month responsiveness, family socioeconomic risk (e.g., low income, parent education, parents age at birth of the child), and child sex, that a composite of parent reported and observed EC and frustration at 18-months did not predict 30-month responsiveness. There are three studies in which researchers examined warmth predicting EC in samples of younger children. Kochanska, Murray, and Harlan (2000) found mothers' observed responsivity at 22 months positively predicted children's assessed EC at 33 months, while controlling for assessed EC at 22 months, children's gender, and children's age. Another group of researchers also found that some aspects of mothers' warmth, such as support during a challenging task, but not others, such as responsiveness at 15 months positively predicted EC at 26 months, while controlling for 12-month cognitive capabilities, but not 12-month EC (Bernier, Carlson, & Whipple, 2010). Also, Bernier and colleagues' (2010) assessed EC in their study and included inhibitory control, attentional control, and working memory in their EC composite. Lastly, Eiden and colleagues (2007) found that a latent variable of parenting including observed responsiveness, support, and reverse-coded harshness at 24 months positively predicted a latent variable of observed children's self-regulation which

included observed measures of compliance, inhibitory control, and attentional control at 36 months. Eiden and colleagues (2007) controlled for personality characteristics of mothers and fathers, such as depression, antisocial behaviors, and alcoholism, but did not control for self-regulation at 24-months.

One group of researchers examined the relations in both directions between EC and warmth across two time points. Halligan and colleagues (2013) studied relations amongst assessed emotion regulation at 18 and 60 months and observed responsivity at 12 weeks, 18 months, and 60 months and included equal samples of high-risk (i.e., younger, lower socioeconomic status, single), and low-risk mothers in the United Kingdom. Responsivity at 12 weeks positively predicted 18-month emotion regulation, but 12-week emotion regulation was not assessed and, therefore, not controlled. However, they did not find evidence of responsivity and emotion regulation predicting each other from 18 to 60 months. There was no evidence of bidirectional associations in this study which may suggest that when both paths (EC predicting warmth and warmth predicting EC) are in the model, these relations no longer exist.

In summary, in some longitudinal studies warmth positively predicted EC, but, EC did not predict warmth; however, the number of studies is relatively small and some researchers did not control for warmth or EC at earlier time points. As with Karreman and colleagues' (2006) concurrent findings, support or composites of warmth including support most consistently positively predicted EC and emotion regulation, while responsivity inconsistently predicted EC or emotion regulation. As Karreman and colleagues' (2006) pointed out, some children may evoke more support from their

mothers because of low EC skills; however, this relation may also be contingent on mothers' resources and capacities that give them the space and ability to employ supportive strategies when their children are low in EC.

It is important to note that when researchers did examine EC predicting warmth longitudinally, the conceptualizations of warmth only included responsivity and/or support and no researcher looked at affection as a predictor or outcome, either independently or in a composite of warmth, of EC. Affection and EC may also bidirectionally influence one another as affection demonstrates to children that mothers are invested in them and they will provide a positive atmosphere for children to develop EC whereas EC increases the likelihood that children will engage in desirable behaviors thereby increasing mothers' affectionate behaviors. Scholars acknowledge that the components of warmth are theoretically linked to one another (Darling & Steinberg, 1993) and likely work together in relation to EC (Bates et al., 2012), but because researchers longitudinal examinations have included differing conceptualizations of warmth, it is hard to draw conclusions about the longitudinal association between warmth and EC. Lastly, although scholars have noted the rapid development of EC as well as the need for mothers to flexibly incorporate the various aspects of warmth during preschool (Rothbart & Bates, 2006; Teti & Huang, 2005), the previously reviewed studies only included children younger than 36 months. Thus, the longitudinal relation between warmth and EC in preschool-aged children is unknown.

Harshness or warmth and NE. Several groups of researchers have examined the relations between harshness or warmth and young children's NE. Paulussen-Hoogeboom,

Stams, Hermanns, and Peetsma (2007) conducted a meta-analysis and found 22 studies where researchers examined correlations between harshness and young children's (i.e., infancy through preschool) NE. They found that NE was positively associated with harshness, but the effect size was small ($r = .10$, $p < .01$). In nine of the 22 studies with preschoolers, the effect size was slightly larger and NE was also positively related to harshness ($r = .13$, $p < .01$). Furthermore, in comparison to other types of measures (observed, composite of reported and observed) the association between harshness and NE was stronger when mothers reported on their children's NE and their own harshness. It is worth noting that this sample of studies predominantly included middle- or higher-socioeconomic status, older (< 30), and White mothers; thus, Paulussen-Hoogeboom and colleagues (2007) could not examine these factors as moderators.

A few researchers have examined NE and harshness longitudinally over two time points. Bridgett and colleagues (2009) tested whether changes in mother-reported NE across infancy predicted a latent variable of mother-reported negative parenting behavior, including harshness and two factors of permissive parenting (e.g., allowing the child to do something the parent has already said the child can't do), using latent growth modeling. While controlling for income, family size, maternal relationship stress, and maternal depression (but not earlier negative parenting), the researchers found increasing NE from four to 12 months marginally positively predicted negative parenting at 18 months (Bridgett et al., 2009). Lipscomb and colleagues' (2011) study used latent growth modeling and went beyond Bridgett and colleagues' (2009) study by examining the relation amongst the slopes and intercepts of parent-reported harshness and NE across

nine, 18, and 27 months. This study is unique because the researchers included only reports from adoptive parents, thereby controlling for shared genetic variance. The results indicate that as NE increased from nine to 27 months, harsh parenting also increased (Lipscomb et al., 2011).

Only one researcher has examined both NE predicting harshness and harshness predicting NE in a sample of adolescent mothers. In a small sample (N = 40) of low-socioeconomic status White and Mexican-American adolescent mothers (15 to 19 at time of birth) Crockenberg (1987) found, while controlling for infants' observed unsoothability, observed harsh parenting in infancy positively predicted two year olds' negative expressivity; however, while controlling for observed responsivity in infancy, infants' unsoothability did not predict harshness. There were not significant mean differences between White and Mexican-American dyads on harshness or unsoothability in infancy; thus, Crockenberg (1987) did not examine racial-ethnic background as a moderator.

Two studies, where researchers examined relations between NE and harshness in both directions, included young (mean age at birth 19.5 years), but not solely adolescent, and socioeconomically at-risk mothers (low educational attainment and income). Scaramella and colleagues (2008) found, while controlling for 12-month harshness and negative reactivity, that observed harshness at 12 months positively predicted observed negative reactivity at 24 months, but negative reactivity at 12 months did not predict harshness at 24 months. Alternatively, Chang and Shaw (2016) found, while controlling for 18-month harshness and NE, observed harshness at 18 months did not predict a

composite of observed and mother-reported NE in boys at 24 months, but NE at 18 months negatively predicted harshness at 24 months. Follow-up moderation analyses revealed that the association between 18-month NE and 24-month NE was only positive for children whose mothers exhibited high harshness.

Although Paulussen-Hoogeboom and colleagues (2007) found a positive correlation between NE and harshness, longitudinally, the association is not consistent. Researchers often do not find the association between NE and harshness in *both* directions over time. Results indicate that *either* harshness predicts NE or NE predicts harshness; however, in Crockenberg's (1987) study the same component of NE was not measured at both time points and Scaramella and colleagues (2008) only observed negative reactivity, but not other components of NE. The only study where researchers examined both paths from harshness to NE and NE to harshness, only found that NE negatively predicted harshness (Chang & Shaw, 2016), which does not support the theoretical premise that children high in NE will evoke more harshness from mothers. Chang and Shaw (2016) speculate that mothers use permissive parenting, instead of harshness, in response to their children's NE because they might believe that giving in to their children's requests may reduce their negative behaviors. Additionally, Chang and Shaw (2016) studied harshness and NE from 18 to 24 months, a time period when toddlers start to exhibit more defiance as a means for exerting their independence. As mothers start to encounter these negative behaviors in toddlerhood, they may be less apt to react with harshness because they may be empathetic to children's developmental struggles and regard toddlerhood as a "difficult period" that will pass. If children

continue to exhibit these behaviors later into preschool, mothers may begin to lose their patience and start to exhibit harshness in response. The longitudinal studies reviewed, however, only included children younger than 27 months, thus scholars do not know how NE and harshness relate to one another over time in samples of preschoolers.

More researchers have examined the relations between NE and warmth. In Paulussen-Hoogeboom and colleagues' (2007) meta-analysis, they identified 55 studies where researchers examined correlations between responsiveness and young children's (i.e., infancy through preschool) NE. They found that responsiveness was negatively associated with NE, but the effect size was small ($r = .06$, $p < .05$). In nine of the 55 studies with preschoolers, NE was unrelated to responsiveness ($r = .01$, p = ns), which could suggest that preschoolers' NE elicits a variety of responsive or unresponsive behaviors from mothers. Furthermore, the negative association between responsiveness and NE was present only when researchers used a combination of parent-reported NE or responsiveness and observed NE or responsiveness, but not when researchers only used parent-reported or observed measures. Finally, Paulussen-Hoogeboom and colleagues' (2007) only found a negative association between responsiveness and NE when mothers were less than 25 years of age, but no association when mothers were older. They also found a negative association between responsiveness and NE when families were from low- and middle-socioeconomic backgrounds, but a positive association between responsiveness and NE when families were from high-socioeconomic backgrounds.

Results of longitudinal studies where researchers examined warmth and NE were inconsistent. Some researchers only examined unidirectional relations either from NE to

warmth or warmth to NE and studied these associations in older, White, middle- and high-socioeconomic status mothers with children 16 months of age or younger. In one study researchers used change scores (residuals from a regression) to assess how changes in NE related to changes in responsiveness and affection in a small (N = 48) sample. While controlling for three-month NE and change in mothers' trait anxiety, researchers found decreases in mother-reported infant NE from three months to nine months was associated with an increase in observed maternal responsiveness and affection from three to nine months (Feldman, Greenbaum, Mayes, & Erlich, 1997). In another small (N = 37) sample, Mertesacker, Bade, Haverkock, and Pauli-Pott (2004) found mother-reported NE and observed negative expressivity at four months predicted lower observed responsivity at eight months, while controlling for responsivity at four months.

There were more studies where researchers *only* examined whether warmth predicted NE. Belsky, Fish, and Isabella (1991) examined a composite of observed and mother-reported infants' NE and created profiles based on infants' change in NE from three to nine months (high to low, low to high, low to low, high to high). When mothers were observed being responsive to their infant at three months, infants were more likely to change from high NE at three months to low NE at nine months, rather than remain high in NE across time, but mothers' responsiveness did not differentiate infants who remained low in NE across time from those who started low in NE and increased in NE across time. Braungart-Rieker, Hill-Soderlund, and Karrass (2010) also examined change in NE and used growth modeling to examine change in observed negative expressivity of fear and anger across four, eight, 12, and 16 months. Although fear and anger increased

for all children in the study, children whose mothers exhibited more responsivity had slower growth in fear, but responsivity was not related to change in anger. In another study, while controlling for four-month NE, four-month responsivity, and eight-month NE, Pauli–Pott, Mertesacker, and Beckmann (2004) found that observed eight-month responsivity negatively predicted mother-reported 12-month NE.

Some researchers investigated relations in both directions between NE and warmth. The following studies included young, but not solely adolescent, low-socioeconomic status, and racial-ethnically diverse mothers (Owens, Shaw, & Vondra, 1998; Scaramella, Sohr-Preston, Mirabile, Robison, & Callahan, 2008). Owens and colleagues (1998) found, while controlling for 12-month responsivity and observed negative expressivity or mother-reported NE, which observed responsivity at 12 months did not predict 18-month-olds' observed negative expressivity or mother-reported NE and observed negative expressivity and mother-reported NE did not predict 18-month responsivity. Conversely, Scaramella and colleagues (2008) found, while controlling for 12-month warmth and NE, observed warmth at 12 months did not predict 24-month olds' observed NE, but 12-month NE was negatively related to 24-month warmth.

When drawing inferences based on the results of the longitudinal studies including warmth and NE, NE may negatively predict warmth, but warmth may not predict NE. Of the researchers who found that warmth predicted NE, they only examined responsivity and found that responsivity predicted lower NE and reductions in NE over time. Conversely, the one researcher who examined NE predicting responsivity found that NE did not predict responsivity. As children become more cognizant of how their

environment influences their emotions, other aspects of warmth, such as mothers' support, may be particularly important for children's NE development. Mothers who label and empathize with children's NE may help children recognize and modulate their NE. Furthermore, mothers who provide alternatives for their children when a situation seems particularly stressful or anxiety provoking may help children avoid situations where they may be more likely to express negative emotions.

Most researchers examining NE predicting warmth longitudinally found that NE predicted lower warmth; however, the results were more consistent in studies with mothers who had higher in socioeconomic backgrounds and these longitudinal results are consistent with the correlations found by Paulussen-Hoogeboom and colleagues (2007). Bates and colleagues (2012) argue that without socioeconomic stress, high-socioeconomic mothers may be more capable of reacting to their children's NE with warmth (e.g., redirection, understanding) than their low-socioeconomic counterparts and that this may be easier for mothers when their children are younger than when they are older. Similarly, younger mothers may lack the developmental capacities that would allow them to express understanding for their children's NE or identify alternative activities for their children that might reduce NE.

Empirical Examinations of Transactions of Harshness/Warmth with EC/NE

Transactional theorists argue that the relations are not simply unidirectional or correlational, but rather parenting (i.e., warmth, harshness) and child characteristics (i.e., EC, NE) bidirectionally influence each other overtime (e.g., as harshness increases, EC decreases and NE increases, and as EC decreases and as NE increases, harshness

increases; Bell, 1968; Belsky, 1984; Scaramella & Leve, 2004). The following sections will review evidence of transactions of harshness and warmth with EC or NE in non-Latino samples of older mothers. The studies I review below are transactional, meaning they are (a) longitudinal over three time points, (b) utilize appropriate longitudinal modeling techniques, such as those that account for previous levels of the predictor (i.e., parenting and temperament), and (c) test whether parenting or temperament mediates, rather than moderates, the child temperament to child temperament or parenting to parenting association over time. Studies in which researchers examined interactions between parenting and temperament were not included. Interactions between parenting and temperament address a different, albeit an important, theoretical and empirical question than those addressed in this study.

Harshness or warmth and EC. Eisenberg and colleagues conducted a series of studies where they examined transactions between warmth and EC from 18, 30, to 42 months using latent variable cross-lagged panel models with a sample of mostly low-risk (higher socioeconomic status, married) mother-child dyads. Their latent variable of warmth included observed responsivity and affection and mother-reported support and reverse coded harshness and the latent variable of EC included parent-reported and observed EC. They also included behavioral problems, such as internalizing and externalizing, in their models. Eisenberg and colleagues (Eisenberg, Spinrad, Eggum, et al., 2010; Spinrad et al., 2007; Taylor, Eisenberg, Spinrad, & Widaman, 2013) found earlier warmth positively predicted later EC, but earlier EC did not predict later warmth. Their results suggest that transactions of warmth with EC may not be present, but it may

be important to examine how mothers' warmth is related to children's EC development as children start to transition out of toddlerhood and into the preschool period.

Belsky, Fearon, and Bell (2007) studied parenting-EC transactions in an older sample of children by examining a cross-lagged panel model with observed attentional control and a warm parenting composite including observed responsivity and inverse coded harshness across 54, 70, and 96 months using a large-scale dataset (NICHD Study of Early Child Care and Youth Development). The researchers also included externalizing behavior problems in their model. They found that when cross-lagged paths from 54-month attentional control to 70-month warmth and 54-month warmth to 70-month attentional control as well as 70-month attentional control to 96-month warmth and 70-month warmth to 96-month attentional control were included in the model, earlier attentional control positively predicted later warmth and earlier warmth positively predicted later attentional control (Belsky et al., 2007). This is the only study where researchers found bidirectional relations between parenting and EC over time and provides support for the transactional theory of parenting and temperament.

In summary, mothers' warmth typically predicted children's EC, but EC may not always predict warmth. These two groups of researchers used composites of parenting behavior that included some aspects of warmth as well as inverse coded harshness. It is not always the case that harshness and warmth are inversely related; in fact, in some contexts it is adaptive for mothers to employ harshness and warmth simultaneously (Deater-Deckard & Dodge, 1997; Deater-Deckard, Ivy, & Petrill, 2006; Germán, Gonzales, McClain, Dumka, & Millsap, 2013; Nelson, Padilla-Walker, Christensen,

Evans, & Carroll, 2011). Thus, in these studies it is possible that for some mothers the negatively coded harshness may wash out the effect of warmth. Thus, it is plausible that the results may have been different had the researchers examined these two behaviors separately.

Furthermore, Belsky and colleagues (2007) did not include support as part of their parenting variable and found transactions over time whereas Eisenberg and colleagues (Eisenberg, Spinrad, Eggum, et al., 2010; Spinrad et al., 2007; Taylor et al., 2013) only found that warmth predicted EC. Variability in children's EC may mean that some children need more, or less, support from their mothers in preschool and, also, some mothers may be more apt to provide support irrespective of their children's EC (Bates et al., 2012; Teti & Huang, 2005). Thus, there may be an indirect relation between EC and warmth, including support, and other maternal factors (e.g., values, personality) may modify this association. Additionally, although the researchers in the previously reviewed studies included preschoolers, they also studied transactions across two different developmental periods: from infancy to the beginning of preschool and from the beginning of preschool to school-aged. Given the different changes in EC and parenting across these two time periods, it is difficult to compare and draw conclusions about the longitudinal nature of EC and parenting based on these two studies.

Harshness or warmth and NE. To my knowledge, researchers have not examined the transaction of harshness and warmth with NE. As was previously reviewed, several researchers who examined harshness or warmth with NE at two time points found that NE was related to harshness and warmth, but NE predicting harshness or warmth and

harshness or warmth predicting NE was typically not found in the same sample. Additionally, many of the researchers studying harshness, warmth, and NE examined these behaviors from birth to two years of age. Thus, the relations amongst parenting-NE transactions later in childhood (i.e., three to five years of age) are unknown.

Conclusions on the Relations of Harshness or Warmth with EC or NE

To summarize, based on the current literature, the longitudinal relations between parenting and temperament are unclear. Some results may be more indicative of how parenting and temperament truly influence each other based on the statistical and methodological approaches taken by some researchers. In particular, it is important to account for stability in parenting or temperament by including auto-regressive paths between the constructs at each time point or including earlier parenting or temperament as a control when parenting or temperament is the outcomes. Similarly, controlling for other family characteristics, such as income and mothers' education, also is important for producing estimates that are not biased by family's circumstances. In summary, the results of the examinations of the few researchers who conducted more stringent tests of the parenting-temperament relation over time indicates that EC may not predict warmth, but that warmth may predict higher EC and NE may predict lower harshness (Chang & Shaw, 2016; Eisenberg, Spinrad, Eggum, et al., 2010; Halligan et al., 2013; Kochanska et al., 2000; Popp et al., 2008; Spinrad et al., 2007; Taylor et al., 2013). Most of the longitudinal studies with adequate controls only looked at EC and warmth, thus additional well-controlled longitudinal studies are needed to clarify the relations between EC and harshness, NE and warmth, and NE and harshness.

Also, the concurrent, longitudinal, and transactional relations between harshness or warmth and EC or NE were inconsistent. Inconsistencies in the literature may be due to a variety of factors. First, in longitudinal examinations, there is variation in when and how researchers choose to use statistical controls. Depending on the goal of the study, researchers may have included other parent (e.g., depression, stress), child (e.g., externalizing behavior), or familial (e.g., home environment) variables in their models. These controls may have accounted for some variance in the parenting or temperament outcomes and leaves some room to question whether the results of these studies can be reliably compared. Furthermore, researchers did not always include variables at early time points to account for stability in the constructs. Also, only two groups of researchers, to my knowledge, studied parenting and temperament over three time points and both groups only examined EC and no researcher has examined NE. In their review, Bates and colleagues (2012) and Kiff and colleagues (2011) conclude that although there has been considerable progress towards understanding the underlying unidirectional longitudinal parenting-temperament relations, additional cross-lag, longitudinal designs capable of testing the mediational mechanisms (i.e., longitudinal studies with three time points) are needed to truly understand transactional parenting-temperament relations. The present study will add more evidence of whether transactions between parenting and EC occur in early childhood and will be the first empirical examination of parenting and NE in early childhood.

Second, researchers examined parenting and temperament over different developmental periods and most researchers examined these relations in infancy and

toddlerhood. In their review, Kiff and colleagues (2011) also conclude that more stringent tests of parenting-temperament transactions are needed in samples of preschoolers. As was previously mentioned, the preschool period is important for studying parenting-temperament transactions because it is a time characterized by a number of changes such as children's rapid development of EC, decrease in NE, mothers' perceptions of children's behavior as intentional, and a shift in parenting to include support (Bates et al., 2012; Putnam et al., 2002; Rothbart & Bates, 2006; Teti & Huang, 2005). The present study will move the field forward by analyzing parenting-temperament transactions in the preschool period.

Third, scholars conceptualized harshness, warmth, EC, and NE in a variety of ways. In particular, it seems there is great variation in scholars' definitions of warmth and EC as well as which components they choose to study whereas there is somewhat more consistency in scholars' definitions of harshness and NE. Although researchers have valid theoretical, empirical, and logistical reasons for defining these constructs in different ways, these differences make understanding the relations amongst parenting and temperament within and across time challenging. The purpose of this study is not to delineate the relations amongst the components of harshness, warmth, EC, or NE, however, it is recognized that there may very well be differential relations between components harshness or warmth and EC or NE and that these relations may not be the same at different developmental time points. I contend that the conceptualizations, including a combination of the components of harshness, warmth, EC, and NE, used in this study are appropriate for examining parenting-temperament transactions in

preschool, given the previously reviewed development of temperament and changes in parenting during this time period (Bates et al., 2012; Putnam et al., 2002; Rothbart & Bates, 2006; Teti & Huang, 2005).

Fourth, researchers measure parenting and temperament using observations, assessments, and caregiver reports. Each of these forms of measurement has strengths and weaknesses. Observations, for example, are typically conducted by research staff and most researchers take adequate steps to make sure that these research staff are coding these observations in similar ways; thus, data drawn from observations are considered to be objective. Observations are also advantageous to researchers because they can develop or modify existing coding systems to tap into the specific behaviors of interest. One disadvantage to observations are that they often only capture a short period of time and, therefore, the behavior captured may not be representative of the participants' behavior over an extended period of time. Another potential pitfall of observations is the mismatch between the coding system developer and the behaviors that are salient to the participant. This may be particularly problematic when the researcher utilizes a coding system that does not take into account the ecological and cultural context that frames the participants' behavior. Assessments are also considered objective and typically can be used to compare a participant's score against a normative population. Although these comparisons are useful for identifying risk for a disorder or behavioral problem, the normative population the data may be drawn from may not be an appropriate comparison group to the participants in the study. Caregiver reports are useful for capturing participants' perceptions of their own or others' behavior and, if the reporter interacts

frequently with the person of interest, may be indicative of the behavior over a longer period of time. The disadvantage of caregiver reports is that they are subject to the caregivers' biases, namely social desirability. Frequently used questionnaires are also typically developed for and validated with White, middle- to high-socioeconomic status participants. This may be problematic when questions are not relevant or meaningful to caregivers (e.g., Does your child know how to climb stairs? When a family who lives in an apartment may not have access to stairs that are safe for their child to climb) of different backgrounds.

The information researchers obtain from these measures is somewhat a function of the measure's strengths and weaknesses. As noted in the review above, researchers used each of these measures in different ways. Some used only observations or only caregiver report, some averaged observations with caregiver reports, some created latent factors across different types of measures, and some used observed reports of either parenting or temperament with caregiver reports of either parenting or temperament. The variety and use of parenting and temperament measures across studies also makes it difficult to understand the relations amongst parenting and temperament within and across time.

Finally, few researchers examined adolescent mothers' parenting and their children's temperament longitudinally and most of the previously reviewed longitudinal studies included samples that were predominantly White and middle- to high-socioeconomic status. Scholars recognize that adolescent mothers and their children are at-risk for a host of maladaptive behaviors (e.g., high harshness, low warmth) and

developmental outcomes (e.g., low EC, high NE) because of the context of adolescent parenthood (e.g., few socioeconomic resources) and mothers' developmental capacities (Contreras et al., 2002; Whitman et al., 2001). Research on parenting-temperament transactions in these samples may give scholars a better understanding of the parent-child processes through which adolescent mothers become more likely to engage in harshness and less likely to engage in warmth. This knowledge and empirical support could prove useful to interventionists who are developing or modifying programs to promote the outcomes of adolescent mothers and their children.

Many interventions aim to promote adolescent mothers' positive parenting practices. However, many of these programs are implemented early in children's development (infancy, toddlerhood) (National Academies of Science, Engineering, and Medicine, 2016). Children of mothers who do not have the opportunity to participate in these parenting programs in infancy and toddlerhood may benefit from their mothers' participation in preschool. Especially because the added support could help mothers understand the importance of adjusting their parenting practices to foster their children's development during preschool (Teti & Huang, 2005). Additional longitudinal studies are needed to identify whether preschool is an important period for targeted parenting interventions with adolescent mothers.

Furthermore, these parenting interventions generally do not consider children's temperament as a potential predictor of mothers' parenting practices (Putnam et al., 2002). Adolescent mothers tend to view their children as difficult (Brooks-Gunn & Chase-Lansdale, 1991; Field et al., 1990), which may contribute to their parenting

practices. Although few exist, temperament-based interventions have been successful at helping at-risk parents understand their children's temperament and identify practices that will promote temperament development (McClowry, 1998; McClowry, Snow, Tamis-LeMonda, & Rodriguez, 2009; Putnam et al., 2002). Basic research evidence is needed to help interventionists understand whether children's temperament contributes to adolescent mothers' parenting and under what circumstances temperament-based parenting programs could benefit children of adolescent mothers. The following section will review studies of parenting and temperament in Latino mother-child dyads and then Mexican-American cultural values will be presented as a potential source of resilience in this population of adolescent mothers.

Parenting-Temperament Transactions in Latino Mother-Child Dyads

Cultural Transactional Theory Using the Contextual-Developmental Model

The present study uses Chen and colleagues' (2012) conceptualization of the transactional model, called the Contextual-Developmental model. The Contextual-Developmental model frames how culture plays a role in the parenting-temperament transaction. Further, Chen and colleagues (2012) argue that mainstream (e.g., Anglo, U.S.) and heritage (e.g., Mexican) cultures influence mothers' socialization goals and parenting practices. The Contextual-Developmental model also includes an emphasis on the importance of considering children's temperament in the context of values touted in mainstream society and the possible mismatch between society's and mothers' values (Chen et al., 2012). In other words, whether an individual ascribes to the mainstream or heritage culture may dictate how that individual responds to certain behaviors. With their

Contextual-Developmental model, Chen, Yang, and Fu (2012) integrated culture into traditional transactional models by contending that parenting-temperament transactions need to be examined within the mother-child dyad's cultural context.

Important Control Variables

Latino families in the U.S. have very diverse backgrounds (U.S. Census Bureau, 2007) and contextual experiences that likely relate to mothers' values, parenting practices, and perceptions of their children's temperament. Scholars have consistently argued that there are several factors that need to be measured and considered in models describing normative processes in Latino families (Baca Zinn & Wells, 2000; Grau, Azmitia, & Quattlebaum, 2009; Knight, Bernal, Cota, Garza, & Ocampo, 1993; Umaña-Taylor & Updegraff, 2013). Therefore, before I discuss the relations between parenting and temperament in Mexican-American samples, I will review two factors, family socioeconomic status (SES) and mothers' generation status, that may contribute to parenting and temperament in this subpopulation. Then, I will summarize previous research on the relations between parenting and temperament and describe whether these controls were considered.

Family SES. Scholars have recognized that it is unreasonable to examine Mexican-American mothers' parenting practices without accounting for SES (Halgunseth et al., 2006; Harwood et al., 2002). Family SES may be associated with mothers' harsh and warm parenting and perceptions of children's behavior. For example, lower SES mothers are less likely than high SES mothers to respond to their children's low EC and high NE with warmth (Halligan et al., 2013; Putnam et al., 2002). A few studies suggest

that, relative to high-SES Mexican-American mothers, low-SES Mexican-American mothers use, display, and report more harsh parenting practices with their toddlers and preschoolers (MacPhee, Fritz, & Miller-Heyl, 1996), particularly when their children exhibit non-compliance (Livas-Dlott et al., 2010). Studies linking Mexican-American mothers' harshness with their young children's temperament, their values, and family SES are virtually non-existent; however, theorists contend that under circumstances where mothers must be very concerned with meeting their child's basic needs, values may not play as much of a role. Mothers with few socioeconomic resources may need to alter their parenting practices based on environmental threats such as safety (Contreras et al., 2002; Fuller & García Coll, 2010; Johnson et al., 2003).

Generation status. It is also important to account for mothers' generation status. Generation status in this study is defined by mothers' or her immediate family's (i.e., parents, grandparents) country of birth (i.e., U.S., Mexico). Mothers who were the first in their immediate family to immigrate to the U.S. are first generation, mothers whose parents were first generation are second generation, and mothers whose grandparents were the first generation are third generation. Families who have been in the U.S. for more generations may ascribe to less-traditional Latino values than those who have been in the U.S. for fewer generations. Additionally, mothers whose families have been in the U.S. for more generations may be more aware of the disadvantages of being a minority in the U.S. Therefore, second and third generation mothers may adhere to mainstream values and use harshness and warmth to encourage their child's adherence to those values, rather than adherence to heritage values (Buriel, 1993; Halgunseth et al., 2006).

Empirical Examinations of Parenting-Temperament Transactions with Adolescent Mexican-American Mothers

Harshness or warmth and EC. Very few researchers have examined harshness and warmth as they relate to Mexican-American or Latino children's EC and no researcher has examined this relation in Mexican-American or Latina adolescent mothers. Furthermore, no researcher has examined transactions between Mexican-American mothers' harshness or warmth and their children's EC. One researcher conducted a longitudinal study examining observed harshness and EC. In this study of low-SES, first-generation, Mexican-American mothers, Tonyan (2005) found 14-month harshness negatively predicted 24-month EC, while controlling for 14-month EC. Tonyan (2005) also found that 14-month EC was negatively correlated with 24-month harshness, but they did not examine whether EC predicted harshness in a regression model.

There were two studies where researchers examined Mexican-American mothers' warmth and their children's EC longitudinally. In the first study, Tonyan (2005) found that 14-month EC was uncorrelated with 24-month responsiveness and 14-month responsiveness was uncorrelated with 24-month EC. Tonyan (2005) did not examine the relation between warmth and EC in a regression. In the second study, Peredo, Owen, Rojas, and Caughy (2015) examined the relation between warmth and inhibitory control from 30 to 42 months in a sample of mostly Mexican-American, low-SES, and first-generation mothers. While controlling for home environment quality, mothers' language proficiency (in either English or Spanish), and SES (but not earlier EC), they found that a composite of observed warmth (responsivity, support, affection, and reverse coded

harshness) at 30 months was marginally positively associated with inhibitory control at 42 months. Peredo, Owens, Rojas, and Caughy (2015) did not examine whether inhibitory control predicted mothers' later warmth.

There are a limited number of studies where researchers examine Mexican-American mothers' harshness or warmth and their children's EC, thus, it is unclear whether these constructs are related and, further, whether they are related over time. Given the results of Tonyan's (2005) study, it is plausible that harshness negatively predicts EC and EC negatively predicts harshness. The relations of Mexican-American mothers' harshness and EC are based on one correlational study that did not include theoretically meaningful controls or account for previous harshness or EC; thus, the evidence on this relation gives scholars some information on the direction of the association over time but the evidence is not strong. The results of two studies with Mexican-American mothers' warmth and their children's EC were inconsistent. There are a few notable differences between Tonyan's (2005) and Peredo and colleagues' (2015) studies that could account for the discrepancies in their results. First, Tonyan's (2005) studied warmth and EC from 14 to 24 months whereas Peredo and colleagues' (2015) studied warmth and EC from 30 to 42 months. As previously reviewed, EC rapidly develops from three to five years of age, thus mothers' warmth may be more critical for EC development during this period and the emergence of EC skills may also predict warmth. Second, Peredo and colleagues' (2015) included theoretically meaningful controls in their study, while Tonyan (2005) did not. Third, there were different conceptualizations of warmth and EC in the two studies. Tonyan's (2005) observations of

EC included both inhibitory control and attentional control, whereas Peredo and colleagues' (2015) only observed inhibitory control. Also, Peredo and colleagues' (2015) warmth composite included inverse coded harshness. As was previously reviewed, the various components of EC may relate differently to harshness and warmth separately. The lack of agreement between these studies suggest more research is needed to help clarify the relation between parenting and EC in Latino and Mexican-American mother-child dyads.

Harshness or warmth and NE. Some researchers have examined harshness and warmth as they relate to Mexican-American or Latino children's NE, but no researcher has examined these relations in Mexican-American or Latina adolescent mothers. Furthermore, no researcher has examined transactions between Mexican-American mothers' harshness or warmth and their children's NE. Some researchers examined Latina mothers' harsh responses to their children's NE. In a study with Anglo, Puerto Rican, Dominican, and Mexican-American mothers, Lugo-Candelas, Harvey, and Breaux (2015) found that Latina mothers were more likely to ignore children's NE than Anglo mothers. Only two groups of researchers examined harshness and NE over time. While controlling for SES, generation status, psychosocial parenting risks (i.e., stress, depression, alcohol use), child gender, and spanking at three years, three-year-olds' aggression positively predicted Mexican-American and Puerto-Rican mothers' spanking with their five year olds (Altschul & Lee, 2011; S. J. Lee & Altschul, 2015). In Altschul and Lee's (2011; 2015) studies, they only examined aggression and spanking, which are more severe forms of NE and harshness than the conceptualizations used in this study.

One group of researchers examined warmth and parents' (mothers' and fathers') responses to hypothetical children's NE, but not parents' reports of their own children's NE, in a Mexican-American sample. Gamble, Ramakumar, and Diaz (2007) found parents' reports of guidance and support in response to a hypothetical preschooler's NE was positively correlated with parents' observed warmth, whereas minimizing or rejecting responses to a hypothetical preschooler's NE was negatively correlated with warmth. One group of researchers longitudinally examined Mexican-American mothers' warmth and their children's NE. Ispa and colleagues (2004) examined observed maternal affection and found, while controlling for SES, maternal age, marriage status, and 15-month NE, that observed 15-month affection negatively predicted 24-month NE.

In the few studies with Latina mothers' parenting and their children's NE, NE may elicit no response or harshness from mothers and warmth may negatively predict NE. Researchers studied specific parenting practices (spanking, affection) and certain aspects of NE (aggression), rather than looking broader dimensions of parenting and NE. Thus, scholars' understanding of the relation between parenting and NE in Latino samples is limited to these specific parenting and NE behaviors. Additionally, evidence of the longitudinal relations between Latina mothers' parenting and their children's NE are strong because researchers controlled for previous parenting or NE and also included theoretically important controls like SES and generation status but parenting and NE was only studied over two time points and none of the researchers examined both paths from harshness or warmth to NE and NE to harshness or warmth. Thus, scholars' understanding of how harshness or warmth is related to NE over time is limited to either

child- or parent-driven effects. Additional studies with at least three time points would help to clarify whether associations between parenting and NE are bidirectional or unidirectional in Mexican-American mother-child dyads.

Finally, none of the previously reviewed studies included mothers' values as a predictor or modifier of the parenting and temperament relation. These values are thought to be particularly meaningful in understanding the longitudinal bidirectional association between Mexican-American mothers' parenting and their children's temperament (Chen et al., 2012). In Mexican-American adolescent mother-child dyads these values may be an important source of resilience (Contreras et al., 2002), and thus, the role of mothers' values in adolescents' and children's adjustment is reviewed next.

The Role of Familism Values in Transactions

Theory on the Protective Role of Familism Values

In their Integrative Model, García Coll and colleagues (1996) discuss why normative developmental experiences of racial-ethnic minorities are not well understood. First, there are few longitudinal studies where researchers have examined racial-ethnic minority children's experiences and their associated outcomes. Therefore, scholars do not know about the processes that lead to normative developmental outcomes for racial-ethnic minority children. Second, some developmentalists assume racial-ethnic minority children are more likely than their White peers to have poor adjustment and development. García Coll and colleagues (1996) contend that scholars focus more on racial-ethnic minority families' deficits rather than assets that may be unique to racial-ethnic minority families. Third, researchers often do not consider the multitude of contextual factors (e.g.,

SES, immigration experiences, multigenerational family households), especially those experienced by mothers and children in racial-ethnic minority families, that are important for describing the normative developmental process of racial-ethnic minority children. Some of these factors may be risks, while others may act in a protective capacity. In the context of adolescent parenthood, values espoused by the heritage culture, such as grandmothers' acceptance of adolescent pregnancy and mothers' adherence to *familismo* (familism), may act in a protective capacity, whereas fewer socioeconomic resources may act as a risk factor (García Coll & Vázquez García, 1996). In the present study, I focus on familism values as a protective factor.

Central to the present discussion is how mothers' values are related to their parenting and children's temperament within an at-risk context. Mothers' values drive their use of harshness and warmth as well as their perceptions of their children's EC and NE (Arnett, 1995; Harwood, Schoelmerich, Schulze, & Gonzalez, 1999; LeVine, 1977; Ogbu, 1981). Mothers may use harshness or warmth to promote or inhibit child behaviors that are associated with their values (Saarni et al., 2007; Trommsdorff & Rothbaum, 2008). For example, mothers might use warmth in response to negativity and proactively attend to their children's needs before they exhibit negative emotions to foster their children's connectedness and interdependence with family members (Trommsdorff & Rothbaum, 2008). Further, scholars argue that mothers' values are associated with their perceptions of their children's temperament, specifically mothers' values may lead them to see certain temperamental characteristics as especially desirable or undesirable (Super et al., 2008; Trommsdorff & Rothbaum, 2008). Mothers' values are hypothesized to be

meaningfully related to their use of harshness and warmth as well as their children's development of EC and NE.

Familism values are important to consider in the study of Latino mother-child relationships (Harwood et al., 2002). The value of familism refers to beliefs that the family should be promoted over and above the individual. Those who adhere to familism believe it is important to act in ways that support family solidarity, obligation, and reciprocity as well as demonstrate respect for parental authority (Cauce & Domenech-Rodríguez, 2002; Ramirez, 1998). Researchers find that, irrespective of their country of origin, Latinos in the U.S. tend to believe in and adhere to the value of familism (Baca Zinn & Wells, 2000; Harwood et al., 2002; Villarreal, Blozis, & Widaman, 2005). Baca Zinn (1982, 1994) argued that familism is a multidimensional construct and, therefore, identified four distinct aspects: demographic, structural, normative, and behavioral. Demographic and structural familism are the physical and logistical aspects of familism whereas normative and behavioral familism are individuals' attitudes and behaviors that demonstrate their adherence to familism.

In the present study, I focus on the normative aspect of familism. Normative familism is an individual's expressed attitudes and beliefs that family unity and family well-being are important. Evidence suggests that U.S. Latinos demonstrate behavioral and normative familism by respecting parental authority and reporting that they believe in the importance of family cohesion (Cabrera, 2012; Gonzalez-Ramos, Zayas, & Cohen, 1998; Harwood et al., 2002).

Scholars contend that normative familism values (*henceforth* familism), in particular, drive Latina mothers' parenting practices and their expectations for their children's behavior (Grau et al., 2009; Halgunseth et al., 2006; Parke & Buriel, 2007). Familism is maintained through positive and supportive familial relationships. Mothers who value familism may utilize more warmth and less harshness to promote connectedness (e.g., friendly and warm to sustain close relationships) and interdependence in their children. Furthermore, mothers who value familism may expect their children to exhibit prosocial behaviors with family members. As such, scholars consistently identify familism as an important value to understand in relation Latina mothers' parenting practices (Grau et al., 2009; Halgunseth et al., 2006; Parke & Buriel, 2007).

Based on the previously reviewed research, I expect that adolescent mothers are generally more at-risk for poorer parenting (i.e., high harshness, low warmth) and their children are at-risk for lower EC and higher NE, but I also believe that Mexican-American adolescent mothers' familism values may explain important variance in the parenting-temperament transaction. As will be reviewed later, familism promotes better parenting (e.g., low harshness, high warmth) and researchers consistently find that Latino adolescents' adherence to familism acts in a protective capacity by buffering against risk and promoting better outcomes (see review by Stein et al., 2014). Therefore, in the present study, I focus on adolescent mothers' adherence to familism.

Empirical Examinations of Familism and Harshness/Warmth

Familism predicting harshness/warmth. Scholars have discussed the relation between familism values and warmth or (non-hostile or adaptive) control, but theory and evidence on the relation between familism and harshness are, to my knowledge, non-existent. In the absence of theory or empirical examinations of the relations between familism and harshness, I use theoretical arguments framing the relation between interdependence, including conceptually similar tenants of familism such as valuing the maintenance of harmony and cohesion, and harshness. Mothers who value interdependence use strategies other than harshness because harshness models behavior that is inappropriate, self-serving, and demonstrates lack of maturity (Dunsmore & Halberstadt, 2009; Trommsdorff & Kornadt, 2003). When mothers value familism they may be less likely to exhibit harshness because behaviors, such as irritation and hostile control, are not aligned with their value system and also because they do not want to encourage these types of behaviors in their children. In one study with White and Latina mothers, familism negatively predicted child abuse (Coohey, 2001). Although this result suggests that familism reduces negative parenting behaviors, it is not specific to non-abusive harshness. Additional research is needed to understand the relations between familism and harshness and enhance cultural theories of Latino parenting.

Scholars hypothesize that Latina mothers who endorse familism values should exhibit more warmth than mothers who do not adhere to familism because familism values promote socialization goals of connectedness that can be fostered by warmth (Harwood et al., 2002; Hernández & Bámaca-Colbert, 2016; Stein et al., 2014). Although the literature base is small, researchers have found partial support for this hypothesis. In a

sample of Mexican-American mothers and their toddlers, Barnett, Mortensen, Gonzalez, and Gonzalez (2016) found, while controlling for SES and generation status, higher familism was associated with higher warmth. Gamble and Modry-Mandell (2008) also found familism values were positively correlated with warmth in a sample of Mexican-American mothers with five-year-olds, but they did not control for SES or generation status.

Other researchers have examined the relation between familism and mothers' warmth with their adolescent children. Santisteban, Coatsworth, Briones, Kurtines, and Szapocznik (2012) found low-income and mostly first-generation Latino parents' (mothers and fathers of various countries of origin, but predominantly Cuban and Nicaraguan) familism values positively predicted warmth. Additionally, their results suggest that warmth mediates the relation between parents' familism values and children's behavioral problems such that higher familism predicted more warmth and more warmth predicted less behavior problems. White, Roosa, Weaver, and Nair (2009) examined clusters of parenting behaviors and the association between cluster membership and familism values in a sample of first-generation (79%) Mexican-American mothers and their ten-year-old children. They found for every one-point increase in familism values, the odds of a mother belonging to the authoritative parenting group (i.e., high warmth and consistent discipline) increased by 24% and the odds of belonging to the inconsistent parenting group (i.e., low warmth, inconsistent discipline) decreased by 76%.

No researcher, to my knowledge, has examined the relations amongst familism and Latina adolescent mothers' harshness or warmth and whether harshness or warmth mediates the relation between familism and EC or NE. Li-Grining (2012) hypothesized that older Latina mothers' familism values may also promote more warmth, which then facilitates children's development of EC and NE. Mexican-American adolescent mothers report using more coping strategies that reflect familism values, such as talking with siblings about their problems and spending time at their parents' homes, than Anglo adolescent mothers (Codega, Pasley, & Kreutzer, 1990). Furthermore, using the same sample as my study, Killoren and colleagues (2016) found that prenatal familism values were positively correlated with Mexican-American adolescent mothers' parenting efficacy at nine months post-partum.

Li-Grining's (2012) hypothesis may also apply to Mexican-American adolescent mothers because of the outcomes associated with Mexican-American adolescents' familism values. Mexican-American adolescents who believed in the importance of familism were less likely to be depressed, abuse illicit substances, and have behavioral problems (Ayón, Marsiglia, & Bermudez-Parsai, 2010; Marsiglia, Parsai, & Kulis, 2009; Polo & López, 2009). Additionally, familism promotes Mexican-American adolescents' maturity of social competence, self-efficacy, cognitive control, and [lower] sensitivity to rewards (Kuperminc, Jurkovic, & Casey, 2009; Telzer, Fuligni, Lieberman, & Galván, 2013), all of which are skills that are needed to more effectively parent.

In summary, familism consistently and positively predicts older mothers' warmth; however, no researcher has examined familism with harshness. Additionally, other

findings suggest that Mexican-American adolescents' familism promotes positive parenting beliefs (e.g., Killoren et al., 2016) as well as adolescents' mental health and maturity (Marsiglia et al., 2009; Telzer et al., 2013). However, researchers have not examined the relations between familism and harshness or warmth in samples of Mexican-American adolescent mothers. The results of previous empirical examinations as well as theory support the study of familism as a promotive factor for Mexican-American adolescent mothers' parenting, but studies are needed to understand if the direct relation exists and whether mothers' familism values promotes warmth and suppresses harshness.

Harshness or warmth and EC or NE: The moderating role of mothers' familism. Scholars acknowledge that mothers' values likely modify the association between harshness or warmth and EC or NE (Super et al., 2008); however, no researcher has specifically examined variation in these associations by mothers' values. Temperamental difficultness, such as low EC and high NE, is thought to be a risk factor for parenting outcomes, such as child maltreatment (Belsky, 1993) and, as previously reviewed, evoke more harshness and less warmth (Putnam et al., 2002). In Mexican-American adolescent mothers the relation between difficult temperament and parenting may depend on mothers' level of familism values. Mothers who value familism are more likely to use warmth with their young children than mothers who do not value familism (Barnett et al., 2016; Gamble & Modry-Mandell, 2008). Thus, to facilitate closeness and harmony mothers who highly value familism may try to be more understanding of their

children's temperament and utilize more warmth and less or no harshness to improve low EC and high NE (Trommsdorff & Kornadt, 2003; Trommsdorff & Rothbaum, 2008).

Although researchers have not examined the moderating role of familism between Mexican-American children's EC and NE and their adolescent mothers' harshness or warmth, they have studied familism as a moderator between other risk factors and outcomes. Researchers have found that the association between risk factors and adolescents' developmental outcomes depends on adolescents' level of familism values, such that there was no association between risk and developmental outcomes for adolescents who highly valued familism (Germán, Gonzales, & Dumka, 2009; Marsiglia et al., 2009). Additionally, in adolescent Mexican-American mothers', from the same sample as the present study, high familism values weakened the association between low levels of discrimination and their own risk-taking behaviors, but did not weaken the association between high levels of discrimination and their own risk-taking behaviors (Umaña-Taylor, Updegraff, & Gonzales-Backen, 2011). Thus, adolescents' level of familism acted in a protective capacity against other risks and could act in a protective capacity against their children's low EC and high NE.

In summary, when adolescents value familism, it acts as a protective factor and helps to reduce the likelihood of poor outcomes in the face of risk and adversity. In this study, low EC and high NE can be thought of as child-level risk factors for poorer parenting (i.e., high harshness, low warmth). Mothers' familism is thought to act in a protective capacity in this study by reducing the likelihood that mothers will react harshly

and increasing the likelihood that they will react warmly with their low EC and high NE children.

Present Study

With the proposed study, I aim to fill the previously noted gaps in the literature on Mexican-American adolescent mothers' harshness and warmth and their children's development of EC and NE. With Research Question 1 (RQ1) I will contribute to scholars' understanding of Mexican-American three- to five-year-old children's EC and NE development by examining their adolescent mothers' harshness and warmth as a predictor of their EC and NE. Furthermore, I will investigate the effect of children's EC and NE on adolescent Mexican-American mothers' harshness and warmth. I will do this by examining whether Mexican-American adolescent mothers' harshness and warmth transacts with their three- to five-year old children's EC and NE and whether these transactions are like those found in previous studies of White and African-American mother-child dyads (e.g., Eisenberg et al., 2015; Lipscomb et al., 2011). In Research Questions 2 and 3 (RQ2 and RQ3), I will consider the role of Mexican-American adolescent mothers' familism as a protective factor. Specifically, in RQ2, I will examine whether mothers' familism predicts their harshness and warmth. In RQ3, I will look at whether mothers' familism modifies the association of EC or NE with mothers' harshness and warmth.

This study has three unique features that strengthen my ability to address these gaps in the literature. First, few researchers have examined harshness and warmth with children's EC and NE longitudinally and no researcher has examined these constructs in

samples of Mexican-American adolescent mothers. I will longitudinally examine Mexican-American adolescent mothers' harshness, warmth, EC, and NE across three years and three time points (i.e., three, four, five years of age). This will allow for strong tests of mediated, transactional relations between parenting and temperament. Second, the present study is drawn from a larger study where the researchers employed a within-group homogenous design. With this within-group homogenous design, I will examine the unique role of familism in Mexican-American adolescent mother-child dyads (Knight et al., 2009). Third, I included multiple methods of assessment in the present study. Multiple types of assessments were included to strengthen the conceptual and empirical contributions of this study. Mothers' perceptions of their children's EC and NE is central to the present investigation because, as previously reviewed, how mothers perceive their children is an important predictor of their parenting behavior. Thus, I included mothers' reports of their children's EC and NE in this study. I also include observed maternal harshness and warmth in this study to remove some error due to shared-method variance and social desirability bias. In particular, it is advantageous to use objective assessments of adolescent mothers' parenting because their developmental capacities may lead them to falsely report on their own behavior as idealistic and positive (Whitman et al., 2001).

RQ1

In RQ1 I will address, does children's EC or NE, as perceived by their Mexican-American adolescent mothers, transact with harshness and warmth? Meaning, does harshness and warmth mediate the EC or NE to EC or NE association and does EC or NE mediate the harshness and warmth to harshness and warmth association, over time? As

previously reviewed (see section *Parenting-Temperament Transactions in Non-Latino Samples*), theory and some research findings suggest that harshness and warmth transacts with EC and NE over time (Belsky, 1984; Eisenberg et al., 2015; Lipscomb et al., 2011; Putnam et al., 2002). Harshness or warmth transact with EC or NE because harshness indicates to children that mothers are not supportive and that reactivity and irritability are appropriate whereas warmth demonstrates mothers' investment in their children's well-being and also models appropriate and affectively positive responses to environmental stimuli (Halberstadt et al., 1999; Phillips & Shonkoff, 2000), while EC and NE drive desirable and undesirable behavior that may be more or less difficult for mothers to manage, respectively (Bates et al., 2012; Putnam et al., 2002). Therefore, harshness may negatively predict EC and positively predict NE whereas warmth may positively predict EC and negatively predict NE. Additionally, EC may negatively predict harshness and positively predict warmth while NE may positively predict harshness and negatively predict warmth.

Therefore, I hypothesize that harshness or warmth as well as EC or NE will act as mediators. Harshness or warmth will mediate the EC to EC association and EC will mediate the harshness to harshness or warmth to warmth association (see Figure 1 and 2). Specifically, while controlling for NE, 36-month EC is expected to negatively predict harshness and positively predict warmth at 48-months and 48-month harshness to negatively predict and warmth to positively predict 60-month EC. Additionally, 36-month harshness is expected to negatively predict while warmth positively predicts 48-month EC and 48-month EC is expected to negatively predict harshness and positively

predict warmth at 60-months. Similarly, harshness or warmth will also mediate the NE to NE association and NE will mediate the harshness to harshness or warmth to warmth association (see Figure 1 and 2). While controlling for EC, 36-month NE is expected to positively predict harshness and negatively predict warmth at 48-months and 48-month harshness to positively predict while warmth negatively predicts 60-month NE. Additionally, 36-month harshness is expected to positively predict while warmth is expected to negatively predict 48-month NE and 48-month NE is expected to positively predict harshness and negatively predict warmth at 60-months.

RQ2

In RQ2 I will address the question, does Mexican-American adolescent mothers' familism adherence predict their harshness and warmth (see Figure 3 and 4)? As was previously reviewed (see section *The Role of Familism Values in Transactions*), familism values are thought to be related to mothers' harshness and warmth (Harwood et al., 2002; Stein et al., 2014). Mothers who adhere to familism believe that interdependence and connectedness with their children and family members are important (Cabrera, 2012; Harwood et al., 2002). Therefore, they may use warmth to facilitate familism because warmth increases attachment by demonstrating to children that their mothers are invested in their success and well-being (Phillips & Shonkoff, 2000). Mothers who value familism may be more likely to exhibit higher warmth and lower harshness than those who do not. Furthermore, familism may be an important predictor of *adolescent* mothers' parenting. Researchers have not examined familism and adolescent mothers' parenting; however, adolescents' familism adherence is related to more positive adolescent behaviors (e.g.,

higher self-efficacy, cognitive control; Kuperminc, Jurkovic, & Casey, 2009; Telzer, Fuligni, Lieberman, & Galván, 2013). Based on this previous research, I hypothesize that familism will positively predict warmth and negatively predict harshness.

RQ3

In RQ3, I will address the question, does familism moderate the association between EC or NE and harshness or warmth (see Figure 5 and 6)? As I previously reviewed (see section *The Role of Familism in Transactions*), Mexican-American adolescents' familism adherence acts as a protective factor between risk and their own outcomes (Germán et al., 2009; Umaña-Taylor et al., 2011); thus, mothers' familism is also thought to act in a protective capacity between low EC or high NE and high harshness or low warmth. Furthermore, mothers who value familism may use warmth with their young children to reinforce more desirable behaviors like high EC and low NE that promote connectedness and may not use harshness because harshness models inappropriate negative affect, or irritation, that is seen as serving individual, rather than family goals (Barnett et al., 2016; Gamble & Modry-Mandell, 2008; Trommsdorff & Rothbaum, 2008). Thus, I hypothesize that mothers who highly value familism will have a stronger association between EC and warmth than mothers who do not value familism (Figure 7a). I also hypothesize that NE will negatively predict warmth for mothers who do not value familism, but no association for mothers who highly value familism (Figure 7b). Further, I hypothesize that mothers who highly value familism will have a weaker association between EC and harshness than mothers who do not value familism (Figure

8a). I also hypothesize that NE will positively predict harshness for mothers who do not value familism, but no association for mothers who highly value familism (Figure 8b).

Methods

Participants and Procedures

Research questions will be addressed using previously collected data from waves four (W4), five (W5), and six (W6), of a six-year longitudinal study of Mexican-American adolescent mothers and their children (n = 204; 58% male; Umaña-Taylor, Guimond, Updegraff, & Jahromi, 2013). Retention rates relative to the initial sample were as follows: 92% (n = 187) at W4, 87% at W5 (n = 178), and 85% at W6 (n = 173). Of the retained mothers, 91% participated in W4 (n = 170), 97% participated in W5 (n = 172), 100% participated in W6 (n = 173). Research assistants recruited mothers from local high schools and community agencies in the greater Phoenix metropolitan area. Mothers were eligible if they were 15- to 18-years-old, pregnant, single, identified as Mexican origin, and had an adult female family member willing to participate in the study. Researchers started collecting data during mothers' third trimester and then researchers conducted follow-up assessments on a yearly basis. On average, mothers were 16.24 years of age (SD = 0.99), when they started to participate. During W4, W5, and W6, mothers were 19.94 years of age (SD = 0.99), 20.94 years of age (SD = 1.01), and 21.95 (SD = 1.00), on average.

In addition to identifying as Mexican-American, 80% identified their race as White, 10% African American, 3% as American Indian or Alaska Native, 1% Asian, 1%

Hawaiian or Pacific Islander, and 5% refused to answer. Mothers were predominantly first generation (mothers' parents were born in Mexico or outside of the U.S.; 67%) and some were second generation or later (34%). Average family income, including wages, public assistance, food stamps, and other forms of income, was $24,715 (*SD* = $19,545), $24,774 (*SD* = $18,007), and $27,428 (*SD* = $19,521) at W4, W5, and W6, respectively. By W4, 13% of mothers had started community college, 28% completed 12th grade, 4% obtained a GED, 21% completed 11th grade, 9% completed 10th grade, 6% completed 9th grade, 8% completed 8th grade, 1% completed 7th grade, 9% did not participate in W4 (but participated in W5 and/or W6), and 2% had unknown education statuses.

Most mothers were in cohabitating relationships by W4 (W4 = 52%, W5 = 46%, W6 = 52%). In addition, some were married (W4 = 15%, W5 = 22%, W6 = 25% [1% were married but separated or not living together]), some were in non-cohabitating relationships (W4 = 33%, W5 = 30%, W6 = 21%) and a few were casually dating (W4 = 0%, W5 = 2%, W6 = 1%). Mothers predominantly lived with their children's maternal grandmother (W4 = 37%, W5 = 32%, W6 = 26%) or with their partner (i.e., boyfriend, husband, fiancé; W4 = 34%, W5 = 38%, W6 = 47%). At W4, most mothers lived with their children and at least one immediate (mother, father, grandparent, sibling) or extended (aunt, uncle, cousin, in-laws) family member (72%), some lived only with their children and partner (boyfriend, spouse, fiancé; 22%), and few lived only with their children (5%) or with their children and a non-family member (roommate, family friend; 2%).

Research assistants collected data on the focal study variables through two-and-half-hour in-home, semi-structured interviews and structured observations when the children were, on average, 36.20 months (*SD* = 0.45), 48.39 months (*SD* = 1.33), and 60.40 (*SD* = 0.50), for W4, W5, and W6, respectively. Interviews were conducted in English or Spanish based on mothers' language preferences. Most mothers completed their interviews in the same language across W4, W5, and W6. Sixty-five percent of mothers were interviewed in English and 30% were interviewed in Spanish, while 5% alternated between English and Spanish (*n* = 10). Mothers' harshness, warmth, children's EC and NE, and mothers' familism values were assessed at W4, W5, and W6. Mothers' harshness and warmth was observed through structured mother-child interactions, mothers reported on their children's EC and NE, and mothers reported on their own familism adherence.

Measures

All measures were available in English or Spanish. One research assistant translated the measures from English to Spanish and then a second research assistant back-translated the measures from Spanish to English. Mexican-origin individuals reviewed the final translated measures and the research team resolved any discrepancies (Knight et al., 2009).

Positive parenting: harshness and warmth. Research assistants observed harshness and indicators of mothers' warmth with their children during teaching tasks, free-play, and clean-up. Mothers' interactions with their children were videotaped and then research assistants coded mothers' harsh and warm behaviors. I did not include

behaviors research assistants coded during free play (i.e., positive affect, sensitivity, negativity, intrusiveness) or frequency of verbalizations during clean-up (i.e., direct commands, indirect commands, reprimand, positive incentives, reasoning, alternatives/distraction, bargaining) in the present study. Free play mother-child interaction codes were not included because free play is a different and less-stressful context than the teaching tasks and clean-up tasks. Children are more likely to exhibit undesirable behaviors (e.g., defiance) during teaching tasks and clean-up, thus these tasks are an optimal context to examine mothers' harshness and warmth in response to their children's undesirable behavior. Additionally, although the clean-up verbalizations of indirect commands, reprimands, positive incentives, and alternatives/distraction were good indicators of mothers' harshness and warmth, there was a low frequency of these verbalizations in this sample. Direct commands (i.e., statements specifying a desired child action) and bargaining (i.e., negotiations to gain compliance) conceptually did not clearly map onto the harshness and warmth constructs. Thus, the verbalization codes were also not included in the present study. In the present study I included motivational, technical, and emotional support codes from the teaching tasks and positive and negative affect from clean-up because each of these codes maps on to the conceptualization of harshness or warmth and demonstrated adequate variability in this sample. Specifically, the motivational, technical, and emotional support codes tap into the aspects of mothers' warmth such as encouragement, praise, and appropriate modeling. The positive affect as well as emotional support codes also capture mothers' warmth through positive facial and verbal expressions, physical affection, and comforting techniques. The negative affect

code was the only indicator used in this study to capture mothers' harshness and it taps into mothers' negative facial and verbal expressions and punitive parenting techniques but it does not capture some of the harsh behaviors mothers may employ to try to get their child to comply (e.g., physical and verbal control). Each of the observed parenting codes is described in more detail below.

Independent pairs of coders were trained to code mothers' behaviors at each wave. Training occurred for approximately two months, or until adequate inter-rater reliability was achieved (ICC > .75), after which coder drift reliability was assessed on a randomly chosen set of videos. A total of 15% of videos were coded to assess inter-rater reliability at each wave. ICCs were computed to assess reliability between the reliability coder (gold-standard coder) and the other coders; however, for some codes the reliability coder's codes had zero-variance (i.e., all the same code). For the codes where the reliability coder's codes had zero-variance, a percent agreement was computed and are reported in Table 1. ICCs are presented for all the other codes (see Table 1).

Teaching tasks. The teaching task was the same for W4 and W5 and different for W6. At W4 and W5, mothers were given Lego bricks and a diagram and a research assistant instructed mothers to teach their children how to build the pictured diagram. At W6, research assistants placed a box with a puzzle inside in it in front of the children. Mothers were instructed to help their children complete the puzzle; however, children were not able to see the puzzle, they were only able to feel the pieces. Mothers had five minutes to work on the task with their children.

During the teaching tasks, research assistants coded mothers' motivational support (1 = *minimal* to 5 = *high*), technical support (1 = *minimal* to 5 = *high*), and emotional support (1 = *minimal* to 5 = *high*; Hoffman, Crnic, & Baker, 2006; Maslin-Cole & Spieker, 1990). There was moderate to high coder reliability on motivational, technical, and emotional support (see Table 1 for ICCs). Motivational support was defined as the mother's ability to employ and maintain her child's enthusiasm for and engagement with the task. A mother was considered *highly* motivational if she a) was persistent in her efforts to keep her child focused and working toward the end goal; b) clearly, frequently, and sensitively provided her child with guidance on the steps necessary to complete the task; c) successfully refocused and gained compliance from her child using a positive tone of voice; d) exhibited genuine, enthusiastic, and appropriate praise; and e) modified the task, either making it more complex or simpler, so that it was in-line with her child's abilities. A mother was considered *minimally* motivational if she a) showed little persistence and follow through in her attempts to recruit and maintain her own and her child's interest in the task; b) communicated the goals of the task in an unclear and vague manner that left the child confused about her expectations of him or her; c) was ineffective at refocusing and gaining her child's compliance; d) lacked or inconsistently praised her child when he or she completed a portion of the task; and e) did not modify or provided an inappropriate modification of the task based on her child's abilities.

Technical support was defined as the mother's ability to understand her child's ability and accordingly structure and simplify the task so that he or she is able to

complete the task. *High* technical support was when a mother a) used effective and well-timed demonstrations with clear verbal explanations and prompts; b) was explicit and paced in explaining (e.g., verbal, gestures) the critical features of the task or problem facing the child; c) simplified or guided the child through the task in a manner that was appropriate to her child's ability; and d) used an organized and well-planned approach for helping her child complete the task. *Minimal* technical support was when a mother a) used ineffective and poorly timed demonstrations that lacked explanations; b) was unclear about the critical features of the task; c) either infrequently simplified the task for the child or she completed the task for her child; and d) did not organize or plan her approach for helping her child complete the task.

Emotional support was defined as the mother's ability to bolster her child's sense of accomplishment and efficacy thereby making the task positive and enjoyable for her child, even if her child's attempts to complete the task were incorrect. A mother who demonstrated *high* emotional support, a) accepted, supported, respected, and gave feedback on her child's ideas using a positive and sincere tone of voice; b) regularly and enthusiastically gave well-timed praise and encouragement; c) was attuned to her child's emotions and effectively reduced her child's frustration using empathy and understanding; d) shared positive affect with her child regularly throughout the task; e) exhibited enthusiasm for her child's success and enjoyed it when her child was successful; and f) contributed to her child's sense of accomplishment and mastery by responding in positive, consistent, and child-focused ways (e.g., "You did it!"). A mother who demonstrated *minimal* emotional support, a) showed little or no acceptance of her

child by intrusively and impatiently rejecting her child's attempts or appeared detached and uninterested; b) infrequently and apathetically praised her child; c) was unaware or insensitively responded to her child's emotions and failed to reduce her child's frustration; d) did not share positive affect with her child during the task; e) exhibited little interest or enjoyment in her child's success; and f) contributed minimally to her child's sense of accomplishment and mastery and failed to respond to her child's success or responded in critical, negating, or mocking ways.

Clean-up. A research assistant provided the mother and child with toys. After five minutes of free play with the toys, the research assistant said to the mother, "Now I would like you to ask your child to clean up the toys. Please do whatever you normally do to get him/her to clean up but please do not actually clean up the toys yourself." Research assistants coded mothers' positive affect (1 = *not at all positive* to 5 = *predominantly positive*) and negative affect (1 = *not at all negative* to 5 = *predominantly negative*) during clean-up (Braungart-Rieker, Garwood, Powers, & Notaro, 1998; Fish, Stifter, & Belsky, 1991). There was moderate to high coder reliability on positive and negative affect (see Table 1 for ICCs). Positive affect was defined as mothers' expressions of positive regard or affect, warmth, affection toward their children. Mothers were coded as predominantly positive when they spoke in a warm tone of voice, smiled and laughed with their children, appeared relaxed and at ease, were enthusiastic, praised their children, enjoyed being with their children, and remained attentive. Mothers were coded as not at all positive if they did not display positive regard (expressed or vocalized) for their children and if they did express positive emotions, they were inappropriate for

the situation. Negative affect was defined as mothers' expression of negative emotion (e.g., hostility) toward the child. Mothers were coded as predominantly negative if they expressed disapproval, appeared tense, used a negative voice when correcting their children, used sarcasm and cynicism, were abrupt, threatened the child, and punished the child without explanation. Mothers were coded as not at all negative if they did not express any negative affect (e.g., anger, distrust, frustration, impatience, disgust, general dislike). Although mothers' negative affect during clean-up only taps into part of the construct of harshness, it was used in the present study to represent mothers' harshness. Negative affect is henceforth referred to as "harshness".

EC and NE. Mothers rated (1 = *extremely false* to 7 = *extremely true*) their children's EC and NE at W4, W5, and W6 using the very short form of the Child Behavior Questionnaire (CBQ; Putnam & Rothbart, 2006). The very short form and original CBQ EC and NE subscales have been highly correlated, even when removing the common error variance between the two forms (Putnam & Rothbart, 2006). The original CBQ EC and NE subscales have demonstrated concurrent and predictive validity with parental reports of their children's behavioral problems, observations of children's emotionality, and social competence (Eisenberg et al., 2005; Eisenberg, Gershoff, et al., 2001; Rothbart, Ahadi, Hershey, & Fisher, 2001; Rydell, Berlin, & Bohlin, 2003).

Putnam and Rothbart (2006) confirmed that data from three separate samples of children, ranging in age from 36 to 96 months, fit the factor structure of the EC and NE subscales from the very short form of the CBQ. In all three samples the EC and NE subscales demonstrated adequate internal consistency ($\propto$s > .62), including one sample,

which was racially (i.e., higher percentage of African American children) and socioeconomically diverse (49% were living in poverty). However, Putnam and Rothbart (2006) also found that internal consistency was generally lower for African American and impoverished children than for White and higher SES children. The alphas for the EC and NE subscales in this study were lower than .70, thus I conducted item analyses for each subscale and wave to see if certain items were less correlated with the other items in this sample. Items with low inter-item correlations for every wave were removed one at a time until removing items no longer improved the subscale's alpha for every wave and did not lower the alpha for any particular wave. Initial alphas, removed items, and resulting alphas will be presented below.

EC. Originally 12 items that assessed EC were used (e.g., *When drawing or coloring in a book, shows strong concentration; Is good at following instructions*). The internal consistency amongst these 12 items was .70, .75, and .66 at W4, W5, and W6, respectively. Dropping the item *Approaches places s/he has been told are dangerous slowly and cautiously* improved the alpha for all waves (see Table 1 for alphas). The final EC subscale was an average of the remaining 11 items.

NE. Originally 12 items that assessed NE were used (e.g., *Tends to become sad if the family's plans do not work out; When angry about something, s/he tends to stay upset for ten minutes or longer*). The internal consistency amongst these 12 items was .69, .67, .66 at W4, W5, and W6, respectively. Dropping three items: *Hardly ever complains when ill with a cold, Is not afraid of the dark,* and *Is not very upset at minor*

cuts or bruises, improved the alpha for W4 and W6, but W5 alpha remained the same (see Table 1 for alphas). The final NE subscale was an average of the remaining 9 items.

Familism values. Mothers reported on their adherence to the values of familism (1 = *strongly disagree* to 5 = *strongly agree*) at W4, W5, and W6 using the Mexican-American Cultural Values Scale (MACVS; Knight et al., 2010). Knight and colleagues (2010) conducted focus groups with Mexican-American adults and adolescents to develop a measure of Mexican-American cultural values. The MACVS has demonstrated concurrent and predictive validity with measures of prosocial behavior, family cohesion, and social support in samples of Mexican-American adolescents (Calderón-Tena, Knight, & Carlo, 2011; Knight et al., 2010). In the present study, 16 items (e.g., *Parents should always teach their children that the family always comes first; It is always important to be united as a family*) from the overall scale were averaged to represent mothers' adherence to familism. The 16-item MACVS has demonstrated high internal consistency ($\propto$s > .84) in samples of Mexican-American adolescents (Calderón-Tena et al., 2011; Knight et al., 2010) as well as in the present study (see Table 1 for alphas).

Controls. In all analyses, I controlled for mother's age, income to needs ratio, perception of economic hardship, highest level of education attained, and living arrangement. Mothers reported on each of the previously mentioned controls at all waves and the variables were positively correlated across waves (see below for correlation coefficients). Although I recognize that these constructs change over time, I decided to use mothers' reports of the previously mentioned controls only from W4 to avoid multicollinearity and to simplify the models. I also controlled for mother's generation

status, preferred language for the interviews, and child's sex, which did not change over time for the vast majority of the sample.

Mothers' age. Mothers' age was calculated as the number of years from their date of birth to the date of their W4 interview.

Income to needs. Mothers' family income was computed as a sum of reported wages, public assistance, food stamps, support from the children's biological father, and any other income (M = $21,925.98, SD = $17,467.85). Mothers reported on their wages either by providing their annual salary or their hourly wage and number of hours worked per week. If mothers reported on their hourly wage and number of hours worked per week, annual salary was determined by multiplying hourly wage by number of hours worked per week by 52 (weeks per year). Mothers also reported on the number of people living in her home, including the target child (M = 4.85, SD = 2.71, min = 1, max = 13). An income to needs ratio was calculated by dividing mothers' annual salary by the number of people living in her home. Mothers' income to needs was positively correlated across W4 and W5 (r = .28, p = .001) and W5 and W6 (r = .30, p < .001). W4 income to needs was used in statistical models.

Economic hardship. Mothers' reported on their perceptions of stress associated with their economic circumstances using four subscales (i.e., Financial Strain, Inability to Make Ends Meet, Not Enough Money for Necessities, Economic Adjustments or Cutbacks) from the Economic Hardship measure (Barrera, Caples, & Tein, 2001). On the Financial Strain subscale (2 items), mothers indicated how often (1 = *almost never* to 5 = *almost always*), in the next three months, their family was likely to do without food,

proper housing, and basic necessities (e.g., *How often do you think that you or your family will experience bad times such as poor housing or not having enough food?)*. On the Inability to Make Ends Meet subscale (2 items), mothers indicated how much difficulty (1 = *none at all* to 5 = *a great deal*) they had over the last three months paying their bills and the amount of money with which their family had left after paying bills (1 = *more than enough money left* to 5 = *very short of money*) at the end of the last three months. On the Not Enough Money for Necessities subscale (4 items), mothers reported whether they thought (1 = *strongly disagree* to 5 = *strongly agree*) their family could afford adequate housing, clothing, furniture, or a car (e.g., *We had enough money to afford the kind of car we need.*). On the Economic Adjustments or Cutbacks Scale (9 items), mothers indicated whether (1 = *yes*, 2 = *no*) they had to get another job, receive government assistance, or ask relatives or friends for money or food to help their family get by in the last 3 months (e.g., *Has your family had to change food shopping or eating habits a lot to save money?*).

Subscale scores for Financial Strain, Inability to Make Ends Meet, and Not Enough Money for Necessities were created by taking an average of the subscale items. A subscale score for Economic Adjustments or Cutbacks was created by summing the subscale items. In a sample of urban families, including those with Mexican origin individuals, these subscales had high internal consistency, with reliability estimates (αs for continuous response scales, Kuder-Richardson for dichotomous response scales) greater than or equal to .70 (Barrera et al., 2001). In the present study, these subscales also demonstrated high internal consistency at W4, with reliabilities (αs for continuous

response scales, Kuder-Richardson for dichotomous response scales) greater than or equal to .73.

A composite of the four subscales was used in the present study. To acknowledge that each of the four subscales does not contribute equally to mothers' feelings of economic hardship, the following gamma loadings were used as weights to create the final composite: Financial Strain = .73, Inability to Make Ends Meet = .95, Not Enough Money for Necessities = .73, and Economic Adjustments = .76 (Barrera et al., 2001). Furthermore, using confirmatory factor analysis Barrera and colleagues (2001) found that the model with the four subscale indicators' loadings constrained to be equal fit the data significantly worse than the model that used the previously stated gamma loadings. The composite was created by first z-scoring each subscale score, then multiplying each subscale z-score by its respective weight, and finally taking a sum of the weighted subscale z-score scores. Mothers' reports of economic hardship were positively correlated from W4 to W5 ($r = .61$, $p < .001$) and W5 and W6 ($r = .59$, $p < .001$). Therefore, W4 economic hardship was used in analyses.

Education. Mothers reported their highest level of education (1 = *7th grade*, 2 = *8th grade*, 3 = *9th grade*, 4 = *10th grade*, 5 = *11th grade*, 6 = *12th grade or GED*, 7 = *1st year in community college*, 8 = *2nd year in community college*) at W4. Mothers' highest level of education was positively correlated from W4 to W5 ($r = .83$, $p < .001$) and W5 and W6 ($r = .85$, $p < .001$); therefore, W4 education was used.

Living arrangement. Mothers reported whether they were living with their child's grandmother and/or their child's biological father (0 = *mother did not live with*

grandmother or biological father, 1 = *mother lived with grandmother*, 2 = *mother lived with biological father,* 3 = *mother lived with both grandmother and biological father*) at W4. Most mothers maintained their same living arrangement from W4 to W5 (57%) and from W5 to W6 (66%). At W4, most mothers lived with their children's grandmother (41%), some did not live with their children's grandmother or biological father (27%), some lived with their children's biological father (23%), and few lived with both their children's grandmother and biological father (9%). Three dummy coded living arrangement variables were created: (a) not living with grandmother or biological father, (b) living with biological father, and (c) living with both grandmother and biological father, were included in the model. Living with grandmother was used as a reference group, meaning for all dummy coded variables 0 = living with grandmother and 1 = the specified living arrangement. The three dummy coded variables were used in hypothesis testing and are collectively referred to as "living arrangement."

Generation status. Mothers reported on their generation status (0 = *first generation, mother or father was born in Mexico,* 1 = *second generation or higher, at least one grandparent was born in Mexico*).

Language. As previously described, mothers completed their interview in the language of their preference (0 = *English,* 1 = *Spanish*). Most mothers completed their interview in the same language across interviews from W4 to W6; however, 10 mothers completed their interviews in both English and Spanish. Of the 10 mothers who completed their interviews in both English and Spanish, 5 completed most of their interviews from W4 to W6 (i.e., 2/3) in English and 5 completed most of their interviews

in Spanish. Language was recoded to the language mothers completed most of their interviews in for the 10 mothers who completed their interviews in English and Spanish.

Child sex. Within the first few weeks after mothers had their babies, interviewers called the mother who reported on the focal child's sex (0 = *female,* 1 = *male*).

Results

Descriptive Statistics

All descriptive statistics including means, standard deviations, ranges, normality (i.e., skew and kurtosis), frequencies, and correlations were produced using SPSS 24 (IBM Corp., 2016). First, means, standard deviations, and range of observed study variables were examined. Then, I assessed the univariate normality of all observed variables and identified outliers by examining the histograms and frequencies of z-scores from observed variables (Tabachnick & Fidell, 2013). Outliers were defined as those with z-scores outside of +/- 3.29. Any variables with outliers were carefully examined. The following observed variables had outliers with a z-score greater than 3.29: W4 clean-up positive affect; W4, W5, and W6 clean-up harshness; and W4 income to needs. The following observed variables had outliers with a z-score less than -3.29: W5 and W6 EC; W5 NE; and W5 familism. There was not a pattern in the data that could explain these outliers; therefore, outliers were modified by recoding the outlier to + or – (depending on the direction of the outlier) 3.29 standard deviations of the observed value. Once outliers were addressed, skewness and kurtosis estimates were examined to determine the normality of the observed variables. If an observed variable exhibited skewness outside the range of -2 to 2 or kurtosis outside of the range of -7 to 7, it was deemed non-normal

(Curran, West, & Finch, 1996). After outliers were handled, all observed variables were normally distributed and did not require transformation. Descriptive statistics for variables after treating outliers are presented in Table 1.

Next, I examined the relations amongst all study variables. First, I analyzed zero-order correlations between all continuous control variables and focal study variables (see Table 2). Mothers' age at W4 was positively related to W4 income to needs, W4 highest level of education, W4 motivational support and W4 technical support (marginal), negatively related to W5 positive affect (marginal), W5 familism (marginal), and W6 familism, and unrelated to the remaining continuous variables. W4 income to needs was negatively related to W4 economic hardship and positively related to W4 highest level of education, W5 emotional support (marginal), W5 positive affect (marginal), W6 technical support, W6 emotional support, and W6 positive affect (marginal), and unrelated to the remaining focal study variables. W4 economic hardship was positively related to W6 NE, negatively related to W4 highest level of education, W4 EC, W5 EC, and W6 EC (marginal), and unrelated to the remaining focal variables. Mothers' highest level of education at W4 was positively related to W4 motivational support, W4 technical support, W4 emotional support (marginal), W4 EC (marginal), W5 technical support, W5 emotional support, W5 EC, W6 motivational support, W6 technical support, and W6 emotional support, negatively related to W4 NE, and unrelated to the remaining focal variables. In summary, of the covariates that were related to the focal study variables most were related in the expected ways. Older mothers generally exhibited more support at W4 and mothers with better economic circumstances (higher income to needs, lower

perceived economic hardship, and more educated) exhibited more warmth (motivational, technical, emotional support and positive affect) and reported their children were higher in EC and lower in NE. Although there were no expectations for the associations between mothers' age and their familism adherence across time, it was interesting that older mothers reported lower familism adherence. There was one unexpected association; older mothers exhibited lower positive affect at W5.

Next, I used an ANOVA and *t*-tests to assess mean differences of focal study variables between groups for categorical controls (i.e., living arrangement, generation status, language of assessment, child sex). At W5, there were significant mean differences for NE based on mothers' living arrangements, $F(3) = 3.58$, $p = .016$. As a post-hoc follow up, Tukey's Honestly Significant Difference procedure was used to test all pairwise comparisons by mothers' living arrangements. Mothers who lived with their children's biological father reported higher NE than mothers who did not live with their children's grandmothers and biological fathers, $\Delta M = .58$, $p = .030$, 95% CI [.04, 1.13]; $M_{father} = 4.83$ ($SD = .88$), $M_{neither} = 4.25$ ($SD = .70$). There were not significant mean differences in the remaining focal variables by mothers' living arrangements. Thus, there were not mean differences in mothers' warmth or harshness, their reports of their children's EC, and their adherence to familism by their living arrangements. It was unexpected that mothers who lived with their children's biological father reported higher NE than mothers who did not live with their children's grandmothers and biological fathers.

At W6, first-generation mothers reported lower EC than second- or higher-generation mothers, $t(163) = -2.07$, $p = .040$, $\Delta M = -.22$, 95% CI [-.44, -.01]; $M_{1st} = 5.29$ ($SD = .64$), $M_{2nd} = 5.52$ ($SD = .67$). Also, unexpectedly, at W6, second- or higher-generation mothers reported higher familism values than first-generation mothers, $t(170) = -1.95$, $p = .053$, $\Delta M = -.12$, 95% CI [-.24, -.001]; $M_{1st} = 4.32$ ($SD = .38$), $M_{2nd} = 4.44$ ($SD = .39$). There were not significant mean differences in the remaining focal variables by mothers' generation status.

At W4, mothers who preferred to be interviewed in Spanish reported lower NE than mothers who preferred to be interviewed in English, $t(158) = 2.77$, $p = .006$, $\Delta M = .45$, 95% CI [.13, .78]; $M_{English} = 4.51$ ($SD = 1.00$), $M_{Spanish} = 4.06$ ($SD = .94$)). At W6, mothers who preferred to be interviewed in English exhibited higher motivational support (t [143] = 2.50, $p = .014$, $\Delta M = .45$, 95% CI [.09, .80]; $M_{English} = 2.88$ [$SD = .95$], $M_{Spanish} = 2.43$ [$SD = .90$]), technical support (t[85.70] = 2.33, $p = .022$, $\Delta M = .37$, 95% CI [.05, .69]; $M_{English} = 2.45$ [$SD = 1.04$], $M_{Spanish} = 2.08$ [$SD = .76$]) and emotional support (t[79.99] = 2.89, $p = .005$, $\Delta M = .49$, 95% CI [.15, .83]; $M_{English} = 2.57$ [$SD = 1.07$], $M_{Spanish} = 2.08$ [$SD = .83$]), and harshness (t[82.72] = 2.05, $p = .044$, $\Delta M = .07$, 95% CI [.003, .27]; $M_{English} = 1.31$ [$SD = .43$], $M_{Spanish} = 1.17$ [$SD = .32$]), than mothers who preferred to be interviewed in Spanish. Although there were no a priori hypotheses about mothers' parenting based on their language preferences, it is surprising that mothers who were higher in indicators of warmth were also higher in harshness. There were not significant mean differences in the remaining focal variables by mothers' language of assessment.

At W5, mothers with female children exhibited lower harshness than those with male children, $t(144) = -2.15$, $p = .033$, $\Delta M = -.20$, 95% CI [-.39, -.02]; $M_{female} = 1.35$ ($SD = .48$), $M_{male} = 1.55$ ($SD = .62$). At W6, mothers with female children reported higher NE than those with male children, $t(165) = 2.00$, $p = .047$, $\Delta M = .28$, 95% CI [.003, .55]; $M_{female} = 4.66$ ($SD = .82$), $M_{male} = 4.38$ ($SD = .93$). There were not significant mean differences in the remaining focal variables by child's sex.

Lastly, I examined correlations between all study variables within (see Table 3) and across time (see Table 4). The indicators of warmth: motivational support, technical support, emotional support, and positive affect, were all positively correlated within time at W4, W5, and W6. The positive association between the warmth indicators within-time provides statistical support for the creation of a warmth latent variable.

At W4, EC was positively related to motivational support (marginal), positive affect, and NE. Also, familism was positively related to harshness (marginal) and NE. At W5, harshness was negatively related to technical support (marginal), emotional support, and positive affect. Also, EC was positively related to emotional support (marginal), positive affect (marginal), NE, and familism. NE was also positively related to harshness. At W6, harshness was negatively related technical support and positive affect. Also, EC was positively related to motivational support, technical support (marginal), emotional support (marginal), and familism and NE was negatively related to technical support (marginal), emotional support (marginal), and positive affect. Familism was also positively related to emotional support. All remaining pairs of focal variables were unrelated within time. Thus, concurrent correlations were generally as expected but the

positive associations between EC and NE at W4 and W5 as well as the positive associations of familism with harshness and NE at W4 were unexpected.

From W4 to W5 and W5 to W6, variables were positively related from earlier waves to the corresponding variable at a later wave. Lag-1 rank-order stability ranged from $r = .20$ to $r = .66$, $ps < .05$. From W4 to W6, almost all variables were positively related from W4 to the corresponding variable at W6, except motivational support was marginally related and harshness was unrelated from W4 to W6. Lag-2 rank-order stability ranged from $r = .32$ to $r = .55$, $ps < .001$.

Also, from W4 to W5 and W5 to W6, motivational support, technical support, emotional support, and positive affect all positively related with one another. From W4 to W6, motivational support, technical support, emotional support, and positive affect mostly positively related with one another, except W4 positive affect was unrelated to W6 motivational support. Thus, longitudinal correlations among the indicators of warmth mostly related to one another across W4 to W6 and may indicate that latent factors predicting these variables may also exhibit stability across time.

Several other focal variables were related from W4 to W5, W5 to W6, and W4 to W6. W4 motivational support was positively related to W5 EC. Also, W4 harshness was negatively related to W5 technical support (marginal) and emotional support (marginal) and positively related to W5 NE (marginal). W4 EC was positively related to W5 NE and familism (marginal). W4 NE was positively related to W5 familism. W5 motivational support was negatively related to W6 NE. W5 technical support was negatively related to W6 harshness and NE and positively related to W6 EC (marginal). W5 emotional support

was negatively related to W6 NE (marginal) and positively related to W6 familism (marginal). W5 harshness was negatively related to W6 motivational support, technical support, and emotional support and positively related to W6 NE. W5 EC was positively related to technical support, emotional support, and familism. W5 familism was positively related to W6 emotional support (marginal) and EC. Thus, longitudinal correlations among warmth, harshness, EC, NE, and familism across W4 and W5 as well as W5 and W6 were mostly as expected; however, the positive association between W4 EC and W5 NE was not expected[1].

W4 technical support was negatively related to W6 harshness and positively related to W6 EC (marginal) and familism (marginal). W4 harshness was negatively related to W6 motivational support, technical support (marginal), and emotional support (marginal). W4 EC was positively related to W6 motivational support, technical support, and emotional support. W4 familism was positively related to W6 EC. All remaining pairs of focal variables were unrelated across time. Thus, longitudinal correlations among warmth, harshness, EC, and familism across W4 and W6 were as expected.

Attrition

To examine attrition effects, I compared the sample at W4 to the attrite sample by W5 and by W6 on controls and focal study variables. Participants were considered "dropped" if they did not participate in any subsequent waves. Specifically, any participant who did not participate in W5 and W6 was considered dropped at W5

[1] Post-hoc analyses using additional data from the larger study were conducted to clarify this relation. See Appendix C.

($n_{notattrite}$ = 178), and any participant who did not participate in W6 was considered dropped at W6 ($n_{notattrite}$ = 173). *T*-tests were used to assess mean-level differences between attrited and non-attrited participants on all continuous variables (e.g., EC) and chi-square statistics were used to examine frequency distributions differences for dichotomous variables (e.g., generation status). There was only one significant difference based on attrition status. Participants who did not attrite had mothers who reported higher W4 EC than those who did attrite at W6, $t(151) = 2.02$ $p = .050$, $\Delta M = .74$ 95% CI [.02, 1.46]; $M_{notattrite} = 5.05$ ($SD = .80$), $M_{attriteW6} = 4.31$ ($SD = 1.04$).

Measurement Model

The measurement model and all hypothesis testing were conducted in M*plus* version 7.10 (Muthén & Muthén, 2012). In all models conducted in M*plus*, missing data will be handled using a Full Information Maximum Likelihood estimator, which assumes that data are missing at random (Acock, 2005). Although the preferred method would be to examine measurement equivalence of the parent-reported measures (i.e., EC, NE, familism) across language and generation status, the sample sizes of the Spanish ($n = 56$) and second generation and higher ($n = 64$) groups were too small to examine measurement equivalence (Kline, 2016). Instead, language of assessment and generation status were included as controls.

A confirmatory factor analysis (CFA) was conducted where warmth latent factors predicted motivational support, technical support, emotional support, and positive affect at each wave (see Figure 9 for hypothesized CFA). A series of steps were taken to ensure that the measurement of warmth was invariant over time. At each step, model

comparisons were calculated using a chi-square difference test. CFA model fit was assessed using a chi-square difference test to compare nested models as well as chi-square model fit, RMSEA, SRMR, and CFI estimates. Because the CFI for longitudinal models is based on a null model that is not appropriate for longitudinal data (Little, 2013), the CFI was calculated by utilizing the chi-square model fit estimate of a null model with the means and variances of motivational support, technical support, emotional support, and positive affect constrained to be equal with their corresponding indicator across W4, W5, and W6 as well as the chi-square model fit of the estimated model in the CFI formula (Little, 2013). Adequate model fit was defined as a non-significant chi-square difference test (if applicable), non-significant chi-square model fit, RMSEA < .08, SRMR < .08, and CFI > .90. Modification indices were reviewed and theoretically plausible modifications were made one at a time.

For the baseline model CFA, covariances were specified between the warmth latent factors across waves and covariances were specified between the residuals of each observed indicator (i.e., motivational support, technical support, emotional support, positive affect) and its corresponding indicator across waves. Based on the chi-square test of model fit, the baseline model did not demonstrate good fit between the observed and reproduced covariance matrix and mean vector, $\chi^2(39) = 56.51$, $p = .034$; RMSEA = .05, 90% CI [.02, .08]; SRMR = .08; CFI = .98. Two modifications were made to the baseline model based on modification indices, (a) a covariance was added between W5 technical support and motivational support, and (b) a covariance was added between W6 emotional support and motivational support, because motivational support, technical support, and

emotional support were coded from the same task they were likely to be highly related to one another within time. The resulting model demonstrated good fit between the observed and reproduced covariance matrix and mean vector (see Table 5).

The next nested model was computed by constraining all loadings across corresponding indicators of the warmth latent factors. The chi-square difference test revealed that the fit of model with all loadings constrained was not significantly worse than the baseline model, and the model with all loadings constrained demonstrated good fit between the observed and reproduced covariance matrix and mean vector (see Table 5).

The final nested model was computed by constraining all loadings and intercepts across corresponding indicators of the warmth latent factors. The chi-square difference test revealed that the model with all intercepts constrained fit significantly worse than the baseline model ($\Delta\chi^2[8] = 37.42$, $p < .001$), and it did not fit the data very well ($\chi^2[51] = 87.09$, $p = .001$; RMSEA = .07, 90% CI [.04, .09]; SRMR = .10; CFI = .96). Based on large modification indices, intercepts were freed, in the following order: technical support, motivational support, and emotional support. It is plausible that the change in the teaching task from W4 and W5 (i.e., Legos) to W6 (i.e., puzzle) may partially explain why constraining these intercepts was problematic. The chi-square difference test revealed that the final resulting intercepts partially constrained model did not fit significantly worse than the model with just the loadings constrained, and the intercepts partially constrained model demonstrated good fit between the observed and reproduced covariance matrix and mean vector (see Table 5).

Controls were added to the CFA by regressing the observed indicators motivational support, technical support, emotional support, and positive affect at every wave on generation status and language of assessment. The model with generation status and language of assessment fit the data well (χ^2[45] = 53.67, p = .180; RMSEA = .03, 90% CI [.00, .07]; SRMR = .09; CFI = .99). Generation status significantly negatively predicted W4 positive affect and language of assessment significantly negatively predicted W6 motivational support and W6 emotional support, suggesting that the CFA may not be invariant across generation status or language of assessment. The intercept partially constrained CFA was used in the structural models testing the focal hypotheses for all research questions. Additionally, both generation status and language of assessment will be used as controls in hypothesis testing.

Hypothesis Testing

Cross-lagged panel models were estimated to assess all hypotheses. The advantage of using traditional cross-lagged panel models (CLPM) is that they control for stability of each construct in the model (Rogosa, 1980), which allows researchers to reduce the likelihood of a spurious correlation (Finkel, 1995). Although such modeling gets closer to meeting assumptions in order to infer causality, causality cannot be claimed. Researchers can also assess bidirectional associations between two sets of variables using CLPMs. Thus, the CLPM appears to be an appropriate choice for addressing H1a, H1b, H1c, and H1d; however, CLPMs yield estimates that reflect a blend of within- and between-person processes.

More recently, Hamaker, Kuiper, and Grasman (2015) argued that traditional CLPMs do not adequately account for stability that may be due to trait-like, time-invariant constructs, which potentially biases cross-lagged regression coefficient estimates. Therefore, the conclusions drawn from CLPMs where these trait-like, invariant constructs are present may be flawed. Scholars contend that temperament (i.e., EC, NE) can be trait-like (Bates et al., 2012; Rothbart & Bates, 2006). Furthermore, stability in parent-child relationships within dyads may be present due to mothers' personality characteristics and shared genetic variance between mothers and their children (Bates et al., 2012; Sameroff, 2009). Thus, the CLPM may not adequately estimate the cross-lagged coefficients if warmth, harshness, EC, and NE, are time-invariant.

To accommodate stability attributed to trait-like, time-invariant constructs, Hamaker and colleagues (2015) recommend computing a random intercept cross-lagged panel model (RI-CLPM). By including a random intercept, RI-CLPMs accounts for trait-like, time-invariant stability by partialling out the between-dyad variance and, thus, cross-lagged coefficients represent within-dyad relations (Hamaker et al., 2015). Therefore, hypotheses were assessed with RI-CLPMs and then compared to CLPMs.

RQ1. I hypothesized that W5 warmth would mediate the W4 EC to W6 EC association and W5 EC would mediate the W4 warmth to W6 warmth association (while controlling for NE; *henceforth* H1a). I also hypothesized that W5 warmth would mediate the W4 NE to W6 NE association and W5 NE would mediate the W4 warmth to W6 warmth association (while controlling for EC; *henceforth* H1b). I further hypothesized that W5 harshness would mediate the W4 EC to W6 EC association and W5 EC would

mediate the W4 harshness to W6 harshness association (while controlling for NE; *henceforth* H1c). I also hypothesized that W5 harshness would mediate the W4 NE to W6 NE association and W5 NE would mediate the W4 harshness to W6 harshness association (while controlling for EC; *henceforth* H1d). Two models were estimated, one with EC, NE, and warmth and one with EC, NE, and harshness.

RI-CLPMs were estimated by creating a random intercept for each construct and fixing the loadings of the corresponding variables across time to 1, specifying covariances between the random intercepts, and creating pseudo latent variables (single-indicator "latent" variables with the indicator loading fixed at 1 and residual variance fixed at zero) of all observed variables or of latent variables' residuals. Auto-regressive and cross-lagged paths were specified between the pseudo-latent variables rather than the actual variables. Neither the RI-CLPM with warmth nor the RI-CLPM with harshness would converge. RI-CLPMs were also estimated with EC and NE separately in an effort to simplify the models and aid convergence, but these models also would not converge. It is possible that the sample size was too small to estimate all of the parameters. Furthermore, there was very little variance in all the warmth pseudo-latent variables and in the W5 and W6 harshness pseudo-latent variables, which would have made it difficult to predict warmth or harshness from EC or NE. I proceeded with testing all hypotheses using CLPMs.

RQ1: H1a and H1b. H1a and H1b were assessed in the same CLPM. Auto-regressive paths were estimated between corresponding W4 and W5 and W5 and W6 EC, NE, and warmth variables. Cross-lagged paths were also estimated between W4 EC and

W5 warmth, W4 NE and W5 warmth, W4 warmth and W5 EC, W4 warmth and W5 NE, W5 EC and W6 warmth, W5 NE and W6 warmth, W5 warmth and W6 EC, W5 warmth and W6 NE, W4 EC and W6 warmth, W4 NE and W6 warmth, W4 warmth and W6 EC, and W4 warmth and W6 NE. Covariances were specified between EC, NE, and warmth within-time. The model was examined prior to adding in the covariates, and results did not substantially differ from results in the model with the covariates.

Covariates (i.e., mothers' age, income to needs, economic hardship, education, living arrangement, generation status, language, child sex) were added into the model by regressing EC, NE, and warmth at W4 onto each covariate. Regressions predicting W5 or W6 focal variables from covariates were added to the model one by one when modifications indices with estimates over 3.84 indicated specifying a relation between a covariate and a focal variable at W5 or W6. Income to needs was rescaled by dividing the observed value by 1000 so that the scale of the variable was closer to the scale of the other variables in the analyses. This rescaled variable was used in all hypothesis testing.

Chi-square model fit, RMSEA, SRMR, and CFI estimates were examined and adequate model fit was determined using the same criteria mentioned in the *Measurement Model* section. When the model did not fit the data well, modification indices were examined and theoretically sound modifications were made one by one starting with the modification index with the largest estimate. The processes for adding paths predicting focal variables at W5 or W6 from covariates and improving model fit by examining modification indices was also used in testing all subsequent hypotheses.

The final CLPM assessing H1a and H1b fit the data well (see Figure 11). In addition to the previously mentioned model specifications, the final H1a and H1b CLPM included auto-regressive paths from W4 EC to W6 EC and from W4 NE to W6 NE as well as regressions predicting W5 EC from economic hardship, W6 warmth from language of assessments, W6 NE from living arrangements, W6 EC from education, and W6 warmth from living arrangements (see Figure 11).

Unexpectedly, the covariances between EC and NE within W4, W5, and W6 were positive and significant. The covariance between warmth and NE at W6 was negative and marginally significant. All remaining specified covariances were not significant. Several covariates were related, mostly in the expected direction, to focal variables. Economic hardship marginally negatively predicted W4 EC and significantly negatively predicted W5 EC. Education significantly positively predicted W4 warmth and marginally negatively predicted W6 EC. Not living with grandmothers and biological fathers marginally predicted lower W6 warmth and living with both grandmothers and biological fathers marginally predicted higher W6 NE, compared to living with grandmothers. Assessments in Spanish significantly predicted lower W4 NE and lower W6 warmth, compared to assessments in English. All remaining specified paths predicting focal variables from covariates were not significant.

Parameter estimates were examined (see Table 6). Auto-regressive path estimates from W4 EC to W5 EC, W5 EC to W6 EC, W4 EC to W6 EC, W4 NE to W5 NE, W5 NE to W6 NE, W4 NE to W6 NE, W4 warmth to W5 warmth, and W5 warmth to W6 warmth were positive and significant, indicating that these constructs were stable in terms

of rank order from 36 to 60 months. Few of the specified cross-lagged paths were significant. W4 NE marginally negatively predicted W5 warmth, and W4 EC positively predicted W5 warmth. All remaining specified cross-lagged paths were not significant. Indirect paths from W4 EC to W6 EC, W4 NE to W6 NE, and W4 warmth to W6 warmth were not tested because the necessary cross-lagged paths were not significant. In summary, transactions between EC or NE and warmth were not found in this sample. Some child effects were found. Specifically, lower 36-month NE was marginally, and higher 36-month EC was significantly, related to higher 48-month warmth.

RQ1: H1c and H1d. H1c and H1d were assessed in the same CLPM. Auto-regressive paths were estimated between corresponding W4 and W5 and W5 and W6 EC, NE, and harshness variables. Cross-lagged paths were also estimated between W4 EC and W5 harshness, W4 NE and W5 harshness, W4 harshness and W5 EC, W4 harshness and W5 NE, W5 EC and W6 harshness, W5 NE and W6 harshness, W5 harshness and W6 EC, W5 harshness and W6 NE, W4 EC and W6 harshness, W4 NE and W6 harshness, W4 harshness and W6 EC, and W4 harshness and W6 NE. Covariances were specified between EC, NE, and harshness within time. Prior to adding in the covariates, the model was examined and it did not substantially differ from the model with the covariates. Covariates (i.e., mothers' age, income to needs, economic hardship, education, living arrangement, generation status, language, child sex) were added into the model by regressing EC, NE, and harshness at W4 onto each covariate.

The final CLPM assessing H1c and H1d fit the data well (see Figure 12). In addition to the previously mentioned model specifications, the final H1c and H1d CLPM

included auto-regressive paths from W4 EC to W6 EC and from W4 NE to W6 NE as well as regressions predicting W5 harshness from child sex, W5 EC from economic hardship, W6 NE from child sex, W5 NE from living arrangement, W6 EC from education, and W5 EC from education (see Figure 12).

Unexpectedly, the covariances between EC and NE were significant and positive within W4 and W6 and marginally significant and positive within W5. The covariance between harshness and NE was significant and positive within W5 and W6, but not significant within W4. All remaining specified covariances were not significant. Several covariates were related, mostly in the expected direction, to focal variables. Economic hardship negatively predicted W5 EC. Education marginally positively predicted W5 EC, but, then unexpectedly, marginally negatively predicted W6 EC. Education also significantly negatively predicted W4 harshness. Not living with grandmothers and biological fathers marginally predicted lower W5 NE and living with both grandmothers and biological fathers significantly predicted lower W5 NE, compared to living with grandmothers. Assessments in Spanish significantly predicted lower W4 NE, compared to assessments in English. Male child sex significantly predicted higher W5 harshness and lower W6 NE, compared to female child sex. All remaining specified paths predicting focal variables from covariates were not significant.

Parameter estimates were examined (see Table 7). Auto-regressive path estimates from W4 EC to W5 EC, W5 EC to W6 EC, W4 EC to W6 EC, W4 NE to W5 NE, W5 NE to W6 NE, W4 NE to W6 NE, W4 harshness to W5 harshness, and W5 harshness to W6 harshness were positive and significant, indicating that these constructs were stable

in terms of rank order from 36 to 60 months. Few of the specified cross-lagged paths were significant. W5 NE negatively predicted W6 harshness, but W5 harshness positively predicted W6 NE. All remaining specified cross-lagged paths were not significant. Indirect paths from W4 EC to W6 EC, W4 NE to W6 NE, and W4 harshness to W6 harshness were not tested because the necessary cross-lagged paths were not significant. In summary, transactions between EC or NE with harshness were not found. A bidirectional association between NE and harshness was found between 48 and 60 months where higher harshness at 48 months predicted higher NE at 60 months, but higher NE at 48 months predicted lower harshness at 60 months.

RQ2. I hypothesized that familism would positively predict warmth (*henceforth* H2a) and negatively predict harshness (*henceforth* H2b). Mothers' W4, W5, and W6 familism were added to the final H1a and H1b, and H1c and H1d models. In addition to the paths specified in the H1a and H1b and H1c and H1d models, auto-regressive paths were specified between W4 and W5, W5 and W6, and W4 and W6 familism as well as within-time paths predicting warmth (H1a and H1b) or harshness (H1c and H1d) from familism. Cross-lagged paths were also specified where W4 familism predicted W5 warmth or harshness, and W5 familism predicted W6 warmth or harshness. Prior to adding in the covariates, the models were examined and they did not substantially differ from the models with the covariates. Additional relations between covariates and focal W5 and W6 variables (in addition to those specified in H1 models) were specified when modification indices above 3.84 were listed.

RQ2: H2a. The final CLPM assessing H2a fit the data well (see Figure 13). In addition to the previously mentioned model specifications, the final H2a CLPM included a regression predicting W5 familism from living arrangements (see Figure 13).

Unexpectedly, the covariances between EC and NE at were significant and positive within W4, W5, and W6. The covariance between warmth and NE was marginally significant and negative within W6. All remaining specified covariances were not significant. Several covariates were related to focal variables. Economic hardship marginally negatively predicted W4 EC and negatively predicted W5 EC. Education significantly positively predicted W4 warmth, marginally negatively predicted W4 familism, and marginally negatively predicted W6 EC. Not living with grandmothers or biological fathers marginally predicted lower W4 familism and lower W6 warmth, compared to living with grandmothers. Living with biological fathers marginally predicted higher W5 familism, compared to living with grandmothers. Living with both grandmothers and biological fathers marginally predicted higher W6 NE, compared to living with grandmothers. Assessments in Spanish significantly predicted lower W4 NE and lower W6 warmth, compared to assessments in English. All remaining specified paths predicting focal variables from covariates were not significant.

Parameter estimates were examined (see Table 8). Auto-regressive path estimates from W4 EC to W5 EC, W5 EC to W6 EC, W4 EC to W6 EC, W4 NE to W5 NE, W5 NE to W6 NE, W4 NE to W6 NE, W4 warmth to W5 warmth, W5 warmth to W6 warmth, W4 familism to W5 familism, W5 familism to W6 familism, and W4 familism to W6 familism were positive and significant, indicating that these constructs were stable

in terms of rank order from 36 to 60 months. Within-time paths from familism to warmth at W4, W5, and W6 were not significant. One of the specified cross-lagged paths was significant. W4 NE negatively predicted W5 warmth. In summary, familism did not predict warmth. One child effect was found where lower NE at 36 months predicted higher warmth at 48 months, while accounting for familism at 36 and 48 months.

RQ2: H2b. The final CLPM assessing H2b fit the data well (see Figure 14). In addition to the previously mentioned model specifications, the final H2b CLPM included regressions predicting W5 familism from living arrangement and predicting W6 EC from generation status (see Figure 14).

Unexpectedly, the covariances between EC and NE were significant and positive within W4 and W6 and marginally significant and positive within W5. The covariance between harshness and NE was significant and positive within W5 and W6, but not significant within W4. All remaining specified covariances were not significant. Several covariates were related to focal variables. Economic hardship negatively predicted W5 EC. Education marginally positively predicted W5 EC, but then marginally negatively predicted W6 EC. Education also significantly negatively predicted W4 harshness and marginally negatively predicted W4 familism. Not living with grandmothers or biological fathers marginally predicted lower W4 familism and lower W5 NE, compared to living with grandmothers. Living with biological fathers marginally predicted higher W5 familism, compared to living with grandmothers. Living with both grandmothers and biological fathers significantly predicted lower W5 NE, compared to living with grandmothers. Second generation or higher significantly predicted higher W6 EC,

compared to first generation. Assessments in Spanish significantly predicted lower W4 NE, compared to assessments in English. Male child sex significantly predicted lower W6 NE and significantly predicted more W5 harshness, compared to female child sex. All remaining specified paths predicting focal variables from covariates were not significant.

Parameter estimates were examined (see Table 9). Auto-regressive path estimates from W4 EC to W5 EC, W5 EC to W6 EC, W4 EC to W6 EC, W4 NE to W5 NE, W5 NE to W6 NE, W4 NE to W6 NE, W4 harshness to W5 harshness, W5 harshness to W6 harshness, W4 familism to W5 familism, W5 familism to W6 familism, and W4 familism to W6 familism were positive and significant, indicating that these constructs were stable in terms of rank order from 36 to 60 months. Within-time paths from familism to warmth at W4, W5, and W6 were not significant. Few of the specified cross-lagged paths were significant. W5 NE negatively predicted W6 harshness, W5 harshness positively predicted W6 NE, and W4 familism marginally negatively predicted W5 harshness. All remaining specified cross-lagged paths were not significant. Although the path from W4 familism to W5 harshness was only marginally significant, the indirect path from W4 familism to W6 NE was tested using a bootstrapping procedure with 5000 bootstrap resamples and 10000 iterations, which circumvents the problem of indirect effects' non-normal distributions. The indirect path from W4 familism to W6 NE was not significant.

In summary, higher familism at 36 months was marginally related to lower harshness at 48 months and lower harshness at 48 months was related to lower NE at 60 months. However, the indirect effect from 36-month familism to 60-month NE was not

significant. Also, like in model H1d, higher NE at 48 months was related to lower harshness at 60 months.

RQ3. I hypothesized that EC would positively predict warmth for both mothers who highly valued familism and who did not value familism. I specifically hypothesized that mothers who highly valued familism would have a strong association between EC and warmth, whereas mothers who did not value familism would have a modest association between EC and warmth (Figure 7a). I also hypothesized that NE would negatively predict warmth for mothers who did not value familism, but that the association would not be significant for mothers who highly valued familism (Figure 7b). I further hypothesized that EC would negatively predict harshness for both mothers who highly valued familism and who did not value familism, but that the association would strong for mothers who did not value familism and modest for mothers who highly valued familism (Figure 8a). Also, I hypothesized that NE would positively predict harshness for both mothers who highly valued familism and who did not value familism. I specifically hypothesized that mothers who did not value familism would have a strong association between NE and harshness, whereas mothers who highly valued familism would have a modest association (Figure 8b).

To assess these hypotheses, interaction terms were created by, first, grand-mean centering the temperament predictor (i.e., EC, NE) and familism and then multiplying the predictor and familism. Continuous covariates were also grand-mean centered. Four models were specified to reduce the number of parameters estimated. In addition to the auto-regressive and cross-lagged paths specified in previous models, each of the four

models also included two paths with the interaction terms. Model H3a included the interactions between W4 EC and familism and W4 NE and familism predicting W5 warmth. Model H3b included the interactions between W5 EC and familism and W5 NE and familism predicting W6 warmth. Model H3c included the interactions between W4 EC and familism and W4 NE and familism predicting W5 harshness. Model H3d included the interactions between W5 EC and familism and W5 NE and familism predicting W6 harshness.

Models also included covariances between each interaction term and the corresponding temperament predictor (e.g., W4 EC*familism with W4 EC), each interaction term and the familism predictor (e.g., W4 EC*familism with W4 familism), each interaction term and the warmth or harshness predictor (e.g., W4EC*familism with W4 warmth), and between the two interaction terms (e.g., W4 EC*familism with W4 NE*familism). For significant interaction terms, simple slopes were estimated by computing the regression coefficient for warmth or harshness regressed on each predictor, EC and NE, at the mean of familism, and at one standard deviation above and below the mean of familism (Aiken & West, 1991).

Prior to adding in the covariates, the models were examined and they did not substantially differ from the models with the covariates. For models H3a and H3c the focal predictors at W4 were regressed on covariates and for models H3b and H3d the focal predictors at W5 were regressed on the covariates. The regressions predicting W5 or W6 focal variables from covariates added in previous models were also included in the H3a, H3b, H3c, and H3d models. Additional regressions predicting W5 or W6 focal

variables from covariates were specified if modification indices larger than 3.84 were listed.

RQ3: H3a. The final CLPM assessing H3a fit the data well and parameter estimates were examined (see Table 10). Unexpectedly, the covariances between EC and NE were significant and positive within W4 and W5. The W4 EC*familism interaction term had positive and significant covariances with W4 EC and the W4 NE*familism interaction term. The W4 NE*familism interaction term had a positive and significant covariance with W4 familism. All remaining specified covariances were not significant. Several covariates were related to focal variables. Economic hardship significantly negatively predicted W5 EC. Education significantly positively predicted W4 warmth. Not living with grandmothers or biological fathers marginally predicted lower W4 EC and significantly predicted lower W4 familism, compared to living with grandmothers. Living with biological fathers marginally predicted lower W4 familism, but marginally predicted higher W5 familism, compared to living with grandmothers. Assessments in Spanish significantly predicted lower W4 NE and lower W4 EC, compared to assessments in English. All remaining specified paths predicting focal variables from covariates were not significant.

Auto-regressive path estimates from W4 EC to W5 EC, W4 NE to W5 NE, W4 warmth to W5 warmth, and W4 familism to W5 familism were positive and significant, indicating that these constructs were stable in rank order from 36 to 48 months. One of the specified cross-lagged paths was marginally significant, W4 NE marginally negatively predicted W5 warmth. All remaining specified cross-lagged paths were not

significant. The interaction terms did not significantly predict warmth. In summary, familism did not moderate the association between 36-month EC or NE and 48-month warmth. One child effect was found where lower NE at 36 months was marginally related to higher warmth at 48 months.

RQ3: H3b. In addition to the previously mentioned model specifications, the final H3b CLPM included a regression predicting W6 EC from generation status. The final CLPM assessing H3b fit the data well according to the RMSEA, SRMR, and CFI estimates (see Table 11). The chi-square model fit estimate was significant, thus there may be some problems with model specification. Remaining modification indices were not theoretically or statistically supported; therefore, the final model estimates should be reviewed with the assumption that the specified model may not be appropriate for the data.

Unexpectedly, the covariances between EC and NE were significant and positive within W5 and W6. The W5 EC*familism interaction term had a marginally positive covariance with W5 NE*familism interaction term. The W5 NE*familism interaction term had a positive and significant covariance with W5 NE. All remaining specified covariances were not significant.

Several covariates were related to focal variables. Economic hardship significantly negatively predicted W5 EC. Education significantly positively predicted W5 EC, but marginally positively predicted W6 EC. Also, Education significantly positively predicted W5 warmth. Not living with grandmothers and biological fathers significantly predicted lower W5 NE, compared to living with grandmothers. Living with

grandmothers and biological fathers marginally predicted lower W5 NE, but marginally predicted higher W6 NE, compared to living with grandmothers. Second generation and higher significantly predicted higher W6 EC, compared to first generation. Assessments in Spanish significantly predicted lower W5 NE and lower W6 warmth, compared to assessments in English. Male child sex significantly predicted lower W5 NE and lower W5 EC, compared to female child sex. All remaining specified paths predicting focal variables from covariates were not significant.

Parameter estimates were examined. Auto-regressive path estimates from W5 EC to W6 EC, W5 NE to W6 NE, W5 warmth to W6 warmth, and W5 familism to W6 familism were positive and significant, indicating that these constructs were stable in rank order from 48 to 60 months. One of the specified cross-lagged paths was significant, W5 EC significantly positively predicted W6 warmth. All remaining specified cross-lagged paths were not significant. The interaction terms did not significantly predict warmth. In summary, familism did not moderate the association between 48-month EC or NE and 60-month warmth. One child effect was found where higher EC at 48 months was marginally related to higher warmth at 60 months.

RQ3: H3c. The final CLPM assessing H3c fit the data well and parameter estimates were examined (see Table 12). Unexpectedly, the covariances between EC and NE were significant and positive within W4 and marginally significant and positive within W5. There was also a positive significant covariance between W5 NE and W5 harshness. The W4 EC*familism interaction term had positive and significant covariances with W4 EC and the W4 NE*familism interaction term. The W4

NE*familism interaction term had a marginally negative covariance with W4 harshness and a negative and significant covariance with W4 familism. All remaining specified covariances were not significant.

Several covariates were related to focal variables. Economic hardship significantly negatively predicted W5 EC. Education marginally negatively predicted W4 harshness and marginally positively predicted W5 EC. Not living with grandmothers or biological fathers marginally predicted lower W4 EC, significantly predicted lower W4 familism, and marginally predicted lower W5 NE, compared to living with grandmothers. Living with biological fathers marginally predicted lower W4 familism, but marginally predicted higher W5 familism, compared to living with grandmothers. Living with grandmothers and biological fathers significantly predicted lower W5 NE, compared to living with grandmothers. Assessments in Spanish significantly predicted lower W4 NE and lower W4 EC, compared to assessments in English. Male child sex significantly predicted higher W5 harshness, compared to female child sex. All remaining specified paths predicting focal variables from covariates were not significant.

Auto-regressive path estimates from W4 EC to W5 EC, W4 NE to W5 NE, W4 harshness to W5 harshness, and W4 familism to W5 familism were positive and significant, indicating that these constructs were stable in rank order from 36 to 48 months. One of the specified cross-lagged paths was marginally significant, W4 familism marginally negatively predicted W5 harshness. All remaining specified cross-lagged paths were not significant. The interaction terms did not significantly predict harshness. In summary, familism did not moderate the association between 36-month EC or NE and

48-month harshness. However, higher familism at 36 months was marginally related to lower harshness at 48 months.

RQ3: H3d. The final CLPM assessing H3d fit the data well and parameter estimates were examined (see Table 13). The covariances between EC and NE were marginal and positive within W5 and W6. At W5 and W6 NE and harshness had a significant positive covariances. The W5 EC*familism interaction term had a marginally positive covariance with W5 NE*familism interaction term. The W5 NE*familism interaction term had a positive and significant covariance with W5 NE. All remaining specified covariances were not significant.

Several covariates were related to focal variables. Economic hardship significantly negatively predicted W5 EC. Education significantly positively predicted W5 EC. Not living with grandmothers and biological fathers significantly predicted lower W5 NE, compared to living with grandmothers. Living with grandmothers and biological fathers marginally predicted lower W5 NE, compared to living with grandmothers. Second generation and higher significantly predicted higher W6 EC, compared to first generation. Assessments in Spanish significantly predicted lower W5 NE, compared to assessments in English. Male child sex significantly predicted lower W5 EC, lower W5 NE, higher W5 harshness, and lower W6 NE. All remaining specified paths predicting focal variables from covariates were not significant.

Auto-regressive path estimates from W5 EC to W6 EC, W5 NE to W6 NE, W5 harshness to W6 harshness, and W5 familism to W6 familism were positive and significant, indicating that these constructs were stable in rank order from 48 to 60

months. One of the specified cross-lagged paths was significant, W5 harshness significantly positively predicted W6 NE. All remaining specified cross-lagged paths were not significant. The W5 EC*familism interaction term marginally positively predicted W6 harshness; however, the simple slopes were not significant. The W5 NE*familism interaction term negatively significantly predicted W6 harshness. The simple slope results did not support hypothesis H3d. The high familism simple slope was negative and significant and the low familism simple slope was not significant, indicating that the negative relation between W4 NE and W5 harshness was only present when mothers' familism was high (see Figure 15).

In summary, familism moderated the association between 48-month NE and 60-month harshness. Higher NE at 48 months only was related to lower harshness at 60 months for mothers who highly valued familism. However, familism did not moderate the association between 48-month EC and 60-month harshness. One parent effect was also found. Higher harshness at 48 months was related to higher NE at 60 months.

Discussion

Adolescent mothers' children are at-risk for maladaptive outcomes because their mothers are typically from low SES backgrounds and may lack the developmental competencies to effectively parent (Contreras et al., 2002; Whitman et al., 2001). Although adolescent mothers' preschoolers are thought to be at-risk for poorer temperament development (Borkowski et al., 2002), the predictors of their temperament development are not well understood and are even less well understood in Latino samples. Mexican-American mothers' familism values may act as a protective factor in

the context of adolescent parenthood and promote children's resilience (Contreras et al., 2002; Harwood et al., 2002). In the present study, familism values were expected to contribute to variability in adolescent mothers' preschoolers' temperament development by way of their parenting. Through the lens of transactional (Chen et al., 2012) and cultural (García Coll et al., 1996) theory, I studied how Mexican-American preschoolers' of adolescent mothers temperament developed by examining the relations amongst parenting, temperament, and familism over time. Although it was expected that parenting and temperament would transactionally relate to one another over time and that familism would play a role in this relation, evidence of transactions was not found. Furthermore, only in some cases did familism predict or modify associations between parenting and temperament. The following results are discussed below: (a) the relations between harshness and NE over time and the role of familism in those relations, (b) evidence of child-effects and relative lack of parent-effects across all models, (c) lack of transactions across time, (d) concurrent and longitudinal relations between familism and parenting, and (e) the positive association between EC and NE.

The Relations between Harshness and NE Over Time: The Role of Familism Values

In line with theory (Bates et al., 2012; Putnam et al., 2002; Rothbart & Bates, 2006) and as hypothesized, across all models mothers who were harsher at 48 months reported their children were higher in NE at 60 months. These findings are similar to those of other researchers who found harshness positively predicted NE over two time points (Chang & Shaw, 2016; Crockenberg, 1987; Scaramella et al., 2008). When mothers exhibit harshness they are over-controlling and verbalize and express emotions

that demonstrate irritation and frustration in response to their children's behavior, which indicates to their children that harsh behaviors are acceptable in response to other people and environmental stressors (Kopp, 1989; Trommsdorff & Rothbaum, 2008). In this study, the measure of harshness was limited to mothers' negative affect, meaning their tone and content of verbalizations expressed impatience, frustration, anger, and general dislike for their children, and did not take into account other behaviors associated with harshness like punitive punishment or physical control. Thus, in this particular study, mothers' modeling of negative affect may be the reason their children also negatively react to their environment with negative emotional expressions.

Additionally, in this study mothers reported on their children's NE. These results suggest that mothers' who exhibited harshness were also apt to perceive their children as high in NE. Mothers who exhibit harshness may generally be more affectively negative (not just in interactions with their children) and consequently may also perceive their children as negative (Belsky & Jaffee, 2006). These results also might suggest that adolescent mothers perceive their children as difficult (Brooks-Gunn & Chase-Lansdale, 1991; Brooks-Gunn & Furstenberg, 1986; Field et al., 1980), but this may be contingent on whether they themselves also act in negative ways.

Even though these results are not surprising, the results of this study contribute to the understanding of the longitudinal relation between harshness and NE. First, these results indicate that, like across infancy and toddlerhood (Chang & Shaw, 2016; Crockenberg, 1987; Scaramella et al., 2008), harshness also increases the likelihood of NE across preschool. Second, these results were found within a sample of at-risk

Mexican-American mothers and are similar to the results of previous examinations with at-risk White and African-American mothers (Chang & Shaw, 2016; Crockenberg, 1987; Scaramella et al., 2008). Together these results suggest that irrespective of racial-ethnic background, harshness predicts children's NE in at-risk contexts. Third, prior to this study, scholars had very little evidence of the predictors of Latino children's NE development. These results enhance the understanding of Mexican-American adolescent mothers' children by indicating that harshness may be an important environmental predictor of their NE development.

Preventive parenting programs, such as home visiting, that target at-risk and adolescent mothers are often implemented prenatally through children's second birthday (e.g., The Nurse-Family Partnership, Olds, 2006). My results indicate that interventionists may have another opportunity to further reduce the risks of adolescent motherhood on children's outcomes later in childhood. Although causality cannot be inferred, it is possible that by reducing harshness, interventionists may also reduce NE. These types of interventions may be especially useful for adolescent mothers who did not have the opportunity to engage in programs early in their children's development.

When familism was added to the model, high familism values at 36 months were marginally related to low harshness at 48 months. Some researchers have examined within-time relations between mothers' familism and warmth with their young children (Barnett et al., 2016; Gamble & Modry-Mandell, 2008), but researchers have not studied concurrent or longitudinal relations between familism and harshness. Although the results were marginal, they suggest that there is a trend of familism negatively predicting

harshness. Values drive mothers' socialization goals and, therefore, their parenting behavior (Super & Harkness, 1986). In cultures where mothers believe in the importance of maintaining close familial ties, hostility and irritation are viewed as disruptive to familial harmony (Dunsmore & Halberstadt, 2009; Trommsdorff & Rothbaum, 2008). Thus, mothers who believe in familism may exhibit less harshness as a way to maintain closeness within their family.

Also, when considering familism in the context of adolescence, valuing familism has been linked to Mexican-American adolescents' behaviors such as better cognitive control (Telzer et al., 2013) and lower depression (Polo & López, 2009). It is possible that Mexican-American adolescent mothers who have better cognitive control and better mental health may be more capable of regulating their own behavior, thereby exhibiting low harshness. Therefore, familism values may also be indirectly related to Mexican-American adolescent mothers' harshness, but studies are needed where researchers examine the mechanisms through which Mexican-American adolescent mothers' values relate to their parenting practices with their young children. In addition to cognitive and mental health, there may be other mediating factors such as social, emotional, and logistical support from family members (Contreras et al., 2002; Grau et al., 2009), that may also explain how mothers' familism relates to harshness.

Unexpectedly, mothers who reported their children were high in NE at 48 months also exhibited low harshness at 60 months and this result was found across all models. Although these results are antithetical, they are consistent with other researchers' examinations of NE and harshness. The three groups of researchers who examined NE

and harshness longitudinally over two time points in samples of low-SES, young mothers either found that NE did not predict harshness, or that NE negatively predicted harshness (Chang & Shaw, 2016; Crockenberg, 1987; Scaramella et al., 2008). These researchers, however, examined NE and harshness when children were in infancy and toddlerhood. Early in childhood mothers may be less inclined to exhibit harshness when their children exhibit NE because during infancy mothers' may feel like their children have less control over their own behavior and during toddlerhood may feel empathy for their children as they start to exert their own independence (Chang & Shaw, 2016; Teti & Huang, 2005). If children continue to be difficult to manage and exhibit high NE in preschool, mothers may not be able to maintain positive attitudes toward their children (Chang & Shaw, 2016). Although some scholars speculate that parents of diverse backgrounds hold varying beliefs that children attain certain skills at different periods in development (some later, some earlier; Dunsmore & Halberstadt, 2009), Latina mothers have been found to believe that preschoolers, relative to infants and toddlers, have control of their own behaviors (Halgunseth et al., 2006). There are other values, however, that may explain why mothers who report their children are high in NE are less harsh a year later.

The negative association from 48-month NE to 60-month harshness may be weaker or stronger depending on whether mothers value familism. When the interaction term between NE and familism at 48 months was added to the model, the interaction significantly predicted mothers' harshness at 60 months. Mothers' who reported their children were higher in NE at 48 months also exhibited low harshness at 60 months, but only for mothers who reported high familism values. There was no relation between 48-

month NE and 60-month harshness when mothers reported low familism values. Although these results were not quite as expected, they still suggest that familism values buffer mothers' harsh reactions to children's NE.

Mothers' values are also thought to relate to how they respond to their children's emotional expressions (Super & Harkness, 1986; Trommsdorff & Rothbaum, 2008). Scholars suggest that when family harmony and connectedness is valued, mothers may blunt or not express emotion in response to their children's NE as a means for modeling the behavior they desire (Dunsmore & Halberstadt, 2009; Trommsdorff & Rothbaum, 2008). Given that the measure of harshness in this study was really only a measure of mothers' negative affect, it is plausible that what this result is indicating is that mothers who highly value familism may not express negative emotions (irritation) in response to their children's NE.

Given that familism negatively predicted harshness and buffered against harshness when children were perceived as high in NE, familism may be an important value for reducing or preventing Mexican-American adolescent mothers' harshness with their high NE preschoolers. Scholars often site parents' values and parenting behaviors as predictors of adolescents' familism values (Hernández & Bámaca-Colbert, 2016; Stein et al., 2014), but less is understood about other predictors of adolescents' familism and whether familism is something that can be fostered through intervention. Additional studies are needed to identify modifiable predictors of Mexican-American adolescent mothers' familism values.

One limitation to consider when reviewing these results is that mothers' reports of their familism values in this sample was high and the range of familism was restricted (see Table 1 for the possible and observed range of values). This sample is similar to previous samples of Mexican-American adolescents with respect to their reports of their familism values. Although they did not report observed ranges, researchers find high means and small standard deviations for adolescents' reports of familism values (Ayón et al., 2010; Germán et al., 2009; Marsiglia et al., 2009).

This means that mothers who reported *very* high familism were those whose perceptions of 48-month NE negatively predicted exhibited 60-month harshness, whereas those whose reports were closer to the median of the response scale had no relation between NE and harshness. Also, these results do not provide evidence of what the relation between NE and harshness might look like when adolescent mothers' familism is truly low. For mothers who are low on familism, it might be reasonable to expect to that preschoolers high in NE might elicit more harshness from their mothers. Although, these expectations are based entirely on theory (Bates et al., 2012; Kiff et al., 2011; Putnam et al., 2002) because even in White samples, where familism values might be lower than in Latino samples, the longitudinal evidence on the relation between NE and harshness is non-existent. Additional research is needed with samples of mothers who exhibit a wider range of familism to be able to test whether familism moderates the NE to harshness relation over time.

Child Effects Versus Parent Effects

One of the goals of this study was to examine transactions between parenting and temperament and it was hypothesized that there would be evidence of these transactions in a sample of Mexican-American adolescent mother-child dyads. Although the data did not support this hypothesis, there are a few interesting patterns of results that warrant further discussion. Other than the previously discussed finding that mothers' harshness at 48 months predicted children's NE at 60 months, there were no other parent effects found. Meaning, warmth did not predict NE or EC and harshness did not predict EC across time. More child effects were found. Specifically, when mothers perceived their children as high in EC at 36 months, mothers exhibited high warmth at 48 months (model 1a). Also, when mothers perceived their children as high in NE at 36 months, mothers exhibited low warmth at 48 months (model 2b) and, as was previously reviewed, when mothers perceived their children as high in NE at 48 months they exhibited low harshness at 60 months (all models with harshness).

Mothers' perceptions of their children's EC at 36-months positively predicting their observed warmth at 48-months supports scholars' theories that children who are higher in EC are likely to evoke mothers' warmth (Bates et al., 2012; Putnam et al., 2002). When mothers believe their children are in control of their emotions, able to inhibit an inappropriate response, and attend to particular environmental stimuli it is likely easier for mothers to show affection, support, and respond to children with warmth. However, these results do not correspond to previous empirical examinations. Researchers who examined whether EC predicted warmth longitudinally generally found that EC did not predict warmth (Eisenberg, Spinrad, Eggum, et al., 2010; Popp et al.,

2008; Spinrad et al., 2007; Taylor et al., 2013), but these studies were conducted with the same sample of mostly White, middle-SES, older mothers. Only one group of researchers, using a large and more representative sample (but still low percentages of racial-ethnic minorities, single mothers, and mothers with less than high school diploma), found that EC predicted warmth (Belsky et al., 2007); however, warmth in this study also included inverse coded harshness. Unlike previous examinations (Belsky et al., 2007; Eisenberg, Spinrad, Eggum, et al., 2010; Popp et al., 2008; Spinrad et al., 2007; Taylor et al., 2013), the sample in this study was low-SES, adolescent mothers. Mothers' perceptions of their children as well-regulated may be particularly important in the context of adolescent parenthood. With so many other economic and social stressors (e.g., different lifestyle from peers, conflicts with children's father), children's abilities to self-regulate may be a welcomed relief for adolescent mothers and, thus, increase the likelihood that mothers will act warmly with children who they view as "good."

Mothers who reported their 36-month-olds were higher in NE exhibited low warmth at 48 months, which is interesting by comparison to the result where NE predicted low harshness. Although NE predicting warmth and harshness were found across two different waves, the results might indicate that this sample of mothers was simply less likely to react at all (absence of warmth and harshness) to their children's NE. Warmth in this particular study is not simply mothers' positive affect toward her child, it is also whether mothers' respond appropriately to their children, scaffold and reinforce their children's behavior during tasks based on their children's competencies, maintain their children's enthusiasm in a task, and display understanding and empathy for their

children's frustration or stress. So, mothers are responding to their children's NE with little to no affect, but they are also not supporting or responding to their children with other warm parenting behaviors. Lack of a harsh or warm response to children's NE may be culturally appropriate (Trommsdorff & Rothbaum, 2008) and researchers have found evidence of Mexican-American mothers' lack of responses to their children's non-compliance (Livas-Dlott et al., 2010; Lugo-Candelas et al., 2015). However, lack of a warm response may be detrimental to children's development of adaptive NE as researchers have found that when Latina mothers label and discuss their children's NE (e.g., emotional support) their children are capable of identifying others' and understanding their own emotions (Perez Rivera & Dunsmore, 2011). Thus, it may be important for interventionists and researchers to think about how to give mothers culturally appropriate strategies for warmly reacting (rather than not reacting at all) to their children's NE. For example, giving mothers' the tools to help their children label negative emotions as well as discussing when those emotions are considered appropriate, may reduce undesirable behaviors in inappropriate settings.

Throughout this discussion of child effects, there is an underlying assumption about what mothers' might find desirable or undesirable. Some measures (Child Behavior Checklist, for example) account for mothers' perceptions of desirable and undesirable behavior by asking whether the stated behavior and mothers' assessment of each behavior is problematic. Very little is understood about what child temperaments Latino parents find desirable or undesirable, but this information may be especially pertinent in helping scholars understand these child effects. In the future, when researchers examine

temperament and parenting, they might consider conducting a pilot study such as a qualitative investigation of what temperaments Latina mothers find desirable or a quantitative examination with current parent-reported measures of temperament that also include follow-up questions on whether they find the reported behaviors desirable. Then researchers can use findings from these pilot studies to inform their primary study.

The prominence of child effects suggests that in Mexican-American adolescent mother-child dyads, children's temperament may be influence parenting, but that parenting may not mean as much for children's temperament development. If temperament is predicting parenting, then mothers may need more support in managing certain temperament-driven behaviors. Interventionists have developed many parenting programs for children with behavioral problems (e.g., conduct disorders, hyperactivity; National Academies of Science, Engineering, and Medicine, 2016) and although there have been calls for interventions that help mothers' effectively respond to their children's temperament (Putnam et al., 2002), few programs have been developed. These types of programs are especially needed when there is a mismatch between children's temperament and parents' expectations for children's temperament, which may be the case with adolescent mothers (Borkowski et al., 2002; Whitman et al., 2001). Some interventionists have successfully promoted at-risk children's outcomes by giving their parents the tools to enact parenting behaviors that are more suited for their children's temperament (McClowry et al., 2009; O'Connor, Cappella, McCormick, & McClowry, 2014). Thus, it may be useful for researchers to examine how these temperament-based

parenting programs work in samples of adolescent mothers and whether they are particularly effective at preventing children's maladaptive outcomes.

Alternatively, the relatively few parent effects found in this sample suggests there may be factors other than parenting that are influencing children's EC and NE. Scholars contend that temperament is innate and is at least partially determined by genetics (Sameroff, 2009; Saudino & Wang, 2012). In this particular study, I was not able to partial out shared genetic variance and it is possible that the shared genetic traits of mothers and their children in this study may account for a larger proportion of the variance in children's EC and NE than parenting. The way to quantitatively identify the heritability of these temperamental characteristics is to examine these behaviors in twin and adoptive samples (Saudino & Wang, 2012), however, obtaining large enough samples of adolescent mothers and their twin children may be difficult. Also, adoption rates amongst racial-ethnic minority adolescent mothers (African American and Latina) are low (Moore & Brooks-Gunn, 2002). Thus, these types of studies may not be as feasible with samples of Latina adolescent mothers.

Another way that researchers can study the overlap between Latina adolescent mothers' and their children's characteristics is to measure mothers' and children's temperament. In studies of children of adolescent parents, it may be important to consider certain temperament-relevant personality characteristics of mothers. For example, researchers found that adolescent mothers were more aggressive and impulsive than their female peers who were not mothers (Miller-Johnson et al., 1999; Winters, Botzet, Fahnhorst, Baumel, & Lee, 2008). Therefore, adolescent mothers' children may be

predisposed to be lower in EC and higher in NE because of their mothers' aggressive and impulsive personality. While controlling for the host of other environmental factors that are known to be related to adolescent mothers' children's outcomes (e.g., SES), researchers might consider examining adolescent mothers' temperament in models of parenting and children's temperament to gain a better understanding of parent-child processes in this context.

Contextual factors other than parenting may also contribute to children's EC and NE. Adolescent mothers and Latinos, more generally, tend to live in multigenerational households (Contreras et al., 2002). Nearly a third of mothers in this sample lived with their children's grandmother and most mothers lived with their children and another family member. Thus, in addition to innate genetic factors, children's EC and NE could be partially explained by other people and relationships amongst other people in the children's environment. Although it is unlikely that all family members take an active role in parenting, they may still model behaviors that children mimic and incorporate into their own behaviors (Feinberg, 2003). In this study, there is some evidence that might suggest that co-parenting arrangements may be related to children's EC and NE.

I examined mean differences in children's EC and NE by mothers' living arrangements that were considered to be common co-parenting circumstances in these families. Mothers who lived with their children's biological father at 36 months, reported higher mean NE at 48 months than mothers who did not live with their children's grandmother or biological father; however, there were no mean differences in children's EC by mothers' living arrangements. The mean differences in NE could suggest

something about the co-parenting relationship between the mother and biological father. In another study, with the same sample as the present study, Jahromi, Zeiders, Updegraff, Umaña-Taylor, and Bayless (2017) found that co-parenting conflict between mothers and their children's biological fathers at 36 months, but not co-parenting conflict with grandmothers, was related to children's EC at 48 months, but they did not examine children's NE. In this study, mothers' parenting at 36 months did not predict children's EC or NE at 48 months, but given the results of Jahromi and colleagues (2017) study as well as some evidence in this study, it may be that co-parenting relationships are also meaningful in understanding children of adolescent Mexican-American mothers EC and NE.

It is also important to reiterate that in this study, mothers reported on their children's EC and NE, thus the measures of EC and NE are mothers' *perceptions* of their children's temperament. As was previously reviewed, mothers' values (Trommsdorff & Rothbaum, 2008) and developmental capacities (Borkowski et al., 2002) influence their perceptions of their children's behavior. In this study, there is some evidence that mothers' values are related to their perceptions of their children's EC and NE. First, there were some positive relations between familism values and EC within and across time. Second, there were mean differences in children's NE by mothers' language of assessment, where mothers' who chose to be interviewed in Spanish also reported their children were lower in NE at 36 months than mothers who chose to be interviewed in English. Although language preference is not a true measure of mothers' values, it is often considered a proxy for cultural orientation (Cuéllar, Arnold, & Maldonado, 1995),

which has been associated with values. Scholars speculate that mothers' values predict their perceptions of their children, but the evidence supporting this notion, especially as it pertains to children's temperament is sparse. In Harwood and colleagues' (Harwood, Miller, & Irizarry, 1995; Harwood, Schoelmerich, Ventura-Cook, Schulze, & Wilson, 1996; Leyendecker, Lamb, Harwood, & Schölmerich, 2002) qualitative and ethnographic studies of Puerto Rican and White mothers, they found mothers' perceptions of infants' desirable and undesirable behavior in the Strange Situation were associated and aligned with their values of respect and independence. In future studies, researchers need to build on Harwood and colleagues' (1995, 1996; Leyendecker et al., 2002) research in order for scholars to truly understand what other values (e.g., familism) are related to mothers' perceptions of their children and whether their perceptions of their children's temperament change across different periods of child development.

There may be other norms and expectations that also predict mothers' perceptions of their children's EC and NE. For example, mothers may have expectations for their children's temperament based on the sex of their children. The research findings on children's sex predicting their temperament are very mixed (Rothbart & Bates, 2006), but the relations that are found tend to be due in part to parental perceptions of what temperamental characteristics are acceptable for males versus females (Putnam et al., 2002). In this study, mothers reported 60-month-old male children were lower in NE than female children, but there were not any differences in mothers' perceptions of children's EC by their sex. Some researchers have also found differences in longitudinal parent-child relations based on children's sex (Belsky et al., 1991; Cha, 2016). Scholars

acknowledge that there is variation in Latino parents' beliefs about gender-roles, but that traditional gender views may be more likely when parents have few socioeconomic resources and are less well educated (Umaña-Taylor & Updegraff, 2013), as is with adolescent mothers. Additional research is needed to clarify what Latina adolescent mothers' gendered beliefs are that are related to their perceptions of their children's temperament.

Finally, there may be *other* parenting behaviors that were not measured, or perhaps could have been measured better, that may predict children's EC and NE. First, the measure of harshness in this study only included mothers' negative affect toward their children. Other dimensions of harsh parenting such as mothers' hostile control, that includes their use of punitive punishment and physical intervention, are typically incorporated into measures of harshness (e.g., Crockenberg, 1987; Kennedy, Rubin, Hastings, & Maisel, 2004; Lipscomb et al., 2011). Lack of hostile control in the measure of harshness may partially explain why harshness did not predict children's EC. Mothers who use hostile control model over-reactivity, especially an inability to inhibit a hostile response to their children's behavior and, thus, could be related to their children's development of EC. Second, mothers' harshness and warmth were observed during clean-up and a structured task. These portions of the mother-child interaction were selected specifically because they could elicit child behaviors that are more difficult for mothers to manage, thus allowing an opportunity to view how mothers respond to their children's difficult behavior. However, it may be that in these situations mothers may

have few opportunities to exhibit warmth. Mothers may be warm in other non-structured situations, like daily routines and family rituals.

Third, mothers' harshness and warmth were only measured using observations. Observations were used in this study to reduce shared method variance but also because the other measures of parenting in the larger study captured constructs like mothers' developmental competence and efficacy, not harshness and warmth. One of the potential flaws with these observed measures of harshness and warmth is that mothers were being video recorded while research staff was in their house, which could have affected their behavior. Also, these behaviors were observed during one 10-minute session. This is a very short amount of time relative to the amount of time children typically spend in interactions with their mothers. To combat some of the weaknesses in observed measures, researchers might consider collecting other reported measures of harshness and warmth. With adolescent mothers, it may be especially useful to have other close family members report on mothers' harsh and warm parenting practices with their children. Finally, it may also be important to consider mothers' perceptions of their own harshness and warmth. These measures also have problems, such as reporter-bias, but when used in combination with observations may give a complete picture of mothers' harshness and warmth.

Finally, an aspect of parenting that researchers studying Latino families consistently argue is important to consider, is parental control (*control*). Control refers to mothers use of non-intrusive and non-punitive physical and verbal behaviors that restrict children's behavior. Scholars contend that Latina mothers use control in combination with warmth to keep children close and connected thereby facilitating familism

(Domenech-Rodríguez et al., 2009; Halgunseth et al., 2006; Harwood et al., 2002; Ispa et al., 2004). Control was not measured in the larger study, thus the relations between control and children's EC and NE could not be examined. Some researchers have found that control was associated with more non-compliance and child negativity (Ispa et al., 2004; Livas-Dlott et al., 2010), suggesting that control may be an aspect of Latina mothers' parenting that predicts children's EC and NE. In future studies of parenting, temperament, and values in Latina adolescent mothers researchers should consider including control. No researcher, to my knowledge, has looked at control as a predictor of Latino children's EC or NE and, furthermore, no researcher has considered the ways which control and warmth may work together to predict Latino children's outcomes. A person-centered approach to understanding profiles of mothers' parenting behavior may be especially warranted in these samples. If mothers hold values, such as familism, they may employ certain combinations of parenting practices and a person-centered approach would allow researchers to examine whether mothers' values contribute to certain profiles of parenting. Similarly, person-centered approaches may be a nuanced way for researchers to understand what parenting practices are most optimal for Latino children.

Transactions between Parenting and Temperament Over Time

One of the primary goals of this study was to examine the longitudinal relations between harshness or warmth with EC or NE over three time points. Based on transactional theory (Chen et al., 2012; Sameroff, 2009), it was hypothesized that harshness or warmth would transact with EC or NE over time; however, evidence of transactions was not found. In truth, there are few researchers who actually examined

transactions between parenting and temperament over time and only one group of researchers found evidence of transactions between warmth and attentional control (Belsky et al., 2007; Eisenberg, Spinrad, Eggum, et al., 2010; Spinrad et al., 2007; Taylor et al., 2013). Furthermore, longitudinal studies of parenting and temperament do not tell a consistent story of whether parenting predicts temperament or temperament predicts parenting or whether the relations are bidirectional. So, perhaps it is not entirely surprising that transactions between harshness or warmth and EC or NE were not found.

The results of this study and the lack of concordance across other longitudinal examinations might suggest that researchers need different approaches for studying these constructs. The process of how parenting and temperament bidirectionally influence each other may be better explained when researchers use other methodological and analytical approaches. As in this study, when parenting and temperament were examined longitudinally, researchers collected data at intervals of one year of more. It is possible that the time between intervals is too long and the longitudinal relations between parenting and temperament are more contingent (Scaramella et al., 2008). There are analytic methods that be used to assess contingent mother and child behaviors. For example, using observational data, researchers can use micro-behavioral coding to look at parenting in response to children's temperament and children's temperament in response to parenting. Another solution is to analyze cross-lags using RI-CLPMs. RI-CLPMs allow researchers to examine within-dyad processes by partialling out between-dyad variance (Hamaker et al., 2015). To be able to partial out between-dyad variance, researchers must include random intercepts as well as pseudo-latent variables in their

panel model. One of the limitations of the present study was that sample was too small to be able to estimate all of the parameters of necessary for a RI-CLPM. Without the inclusion of a random intercept, it is difficult to know whether the results of this study are a function of between- or within-dyad processes. Each of these approaches has the advantage of being able to examine how parenting and temperament influence one another within dyads. In the future, when researchers consider testing transactional theory as it pertains to parenting and temperament, they should try to utilize one of these approaches so that scholars can start to understand whether bidirectional associations between parenting and temperament exist within dyads.

Another reason the literature is so inconsistent and lacking evidence is that transactional theory, as it has been applied to parenting and temperament, may be inaccurate. Transactional theory started as a way to describe the bidirectional influences between a person (characteristics, personality) and their environment and then later was applied or discussed in terms of parenting and temperament. Although there is acknowledgment that unidirectional analyses (regressions controlling for one earlier time point) do not tell the whole story (e.g., Belsky & Jaffee 2006), the idea that transactions between parenting and temperament exist is mostly based on unidirectional findings (e.g., Bates et al., 2012). Advanced statistical procedures (e.g., panel models) are now available that allow researchers to test this theory and additional replications are needed. The results of the present study do not support parenting-temperament transactional theory and indicate that transactions between parenting and temperament may not be present in samples of Mexican-American adolescent mothers and their preschool children.

Familism and Parenting

The role of familism in parenting and temperament relations mostly did not turn out as expected. Results indicated that familism typically did not predict parenting or moderate the association between temperament and parenting. In this study, I focused on normative familism, or when mothers *believe* in serving the family above oneself, remaining connected with family members, and behaving in ways that promote the family; however, there may be discrepancies between mothers' reports of their beliefs and their actions that support those beliefs. Furthermore, although the familism questionnaire used in this study is valid and reliably measures Mexican-American adolescent mothers' familism values, it is not specific to mothers' familism values in the context of how they socialize their children. Finally, mothers' values do not exist in isolation. Scholars have hypothesized that other values, such as *respeto* and *bien educado*, are also related to Latina mothers' parenting (Halgunseth et al., 2006; Harwood et al., 2002). Although theory stipulates that mothers' values drive their parenting behavior (LeVine, 1977; Ogbu, 1981), there is little understanding of the mechanism through which values relate to parenting behavior.

There are several initiatives that researchers can take to move the field forward in understanding the relations between mothers' familism values and their parenting behavior. First, researchers need to develop methods for observing mothers' behavioral familism. By having both observed and reported measures of familism, scholars can start to understand whether it is familistic beliefs or actions that have a stronger relation to parenting. Second, parent-report measures of mothers' familism values in the context of

parenting and socialization need to be developed. For example, items might address whether mothers believe their children should act in service of family goals or whether mothers believe they are behaving in ways that foster their children's sense of connectedness with family members. Lastly, additional studies are needed where researchers examine multiple values as they relate to mothers' parenting. Profile analyses of mothers' values might be useful for identifying clusters of values that are related to more positive parenting practices.

Relations between EC and NE

Although there were no hypotheses about the relations between EC and NE in this sample, theory and evidence consistently indicate that children who are higher in EC also tend to be lower in NE (for review see Rothbart & Bates, 2006). However, in this study, EC and NE were consistently positively associated with one another. The very short form of the CBQ was used to measure mothers' perceptions of their children's EC and NE in this study. In their validation study, Putnam and Rothbart (2006) found that EC and NE were unrelated in one sample and negatively related in another sample. Similarly, discrepant results were found when researchers used the longer version of the CBQ. EC and NE subscales were negatively correlated when children were three-years-old and were uncorrelated when children were four- or five-years-old (Rothbart et al., 2001). Also, when the CBQ was used in a sample of Chinese participants, EC and NE were uncorrelated (Ahadi, Rothbart, & Ye, 1993). A positive correlation was not found between EC and NE in any of these samples, however, given the lack of correlations or small negative correlations (rs > -.10) more investigations into the relations amongst

CBQ measured EC and NE are warranted. If EC and NE are thought to be negatively related and scholars have found these negative relations using other measures, there may be reasons to believe that the CBQ does not always adequately capture children's EC and NE.

In this sample, the EC and NE subscales were inconsistently reliable across 36, 48, and 60 months and, as such, some items needed to be dropped from both scales to improve the internal consistency. The positive correlation between EC and NE as well as inadequate internal consistency of the subscales might indicate that the very short form of the CBQ is not an appropriate measure of children's temperament in this sample.

A few post-hoc analyses were conducted to clarify the positive relation between EC and NE in this sample. Other measures of children's EC and NE were available in the larger study but were not used in hypothesis testing in the present study. Grandmothers also reported on children's EC and NE using the very short form of the CBQ and, during the home visit, researchers conducted assessments of children's EC and video recorded children's NE during clean-up. Some might question the reliability of adolescent mothers' reports of their children's behavior because of their tendencies to have unrealistic expectations for their children and rate their children as being generally difficult (Brooks-Gunn & Chase-Lansdale, 1991; Jahromi et al., 2014; Whitman et al., 2001). However, in this sample, it is not simply that adolescent mothers are poor reporters of their children's temperament. Grandmothers' reports of EC and NE were also either positively correlated or were uncorrelated in this sample. However, correlations amongst observed EC and NE followed the expected pattern with EC and NE being

mostly negatively correlated across time. Correlations amongst CBQ EC and NE *items* were also examined. Across time, the positive correlation between EC and NE attenuates and this may be because at 36 months there are no negative correlations amongst EC and NE items whereas at 48 months there are negative correlations amongst two sets of items, and at 60 months there are negative correlations between five sets of items.

Finally, correlations between EC and NE were examined by language of assessment. At the composite level, EC and NE were positively correlated at 36 months and uncorrelated at 60 months for both Spanish- and English-speaking mothers. At 48 months, however, EC and NE were positively correlated for Spanish-speaking mothers and uncorrelated for English-speaking mothers. Accordingly, when correlations amongst the items were inspected, there were positive correlations amongst the items in both groups, but there were only significant negative correlations in the English group.

There are a few reasons why the short form of the CBQ may not work as expected in this sample. First, researchers have not tested measurement equivalence across Spanish and English versions of the CBQ. Due to a smaller number of Spanish-speaking mothers, equivalence could not be tested using the present study's sample. Although the primary investigators of the larger study took the appropriate steps when translating the CBQ into Spanish, it is still possible that the Spanish and English versions are not invariant. Second, researchers have not conducted qualitative studies with the goal of learning how Latino parents understand and define children's temperament. The CBQ is a widely used temperament questionnaire and when researchers use the same measures across studies, the results are easier to compare; however, there may be some items in the current

measure that are not appropriate or applicable to all parents. Qualitative studies are needed to better understand what behaviors Latino parents think are meaningful and represent temperament constructs as scholars define them.

Strengths and Limitations

This study has many strengths that support the validity of the results. Many of the recommendations made by García Coll and colleagues (1996) to improve scholars' understanding of racial-ethnic minority children's normative development are addressed in this study. Namely, Mexican-American mothers' parenting, their children's temperament, and their familism values were examined longitudinally over the course of three years. By using CLPMs, I was able to control for stability in parenting, temperament, and familism and, thus, stringently test whether and how parenting, temperament, and familism are related to one another longitudinally. Also, I included a number of controls, including living arrangements, socioeconomic stress, education, generation status, and language, that help account for the multitude of contextual factors framing Mexican-American adolescent mothers' and their children's experiences. Each of the controls in my study were related in some way to parenting, temperament, and/or familism and have been consistently noted by scholars as important to consider when trying to understand parent-child relationships and child development in the context of culture and adolescent parenthood (Contreras et al., 2002; Dunsmore & Halberstadt, 2009; García Coll et al., 1996; Harwood et al., 2002; Moore & Brooks-Gunn, 2002; Umaña-Taylor & Updegraff, 2013; Whitman et al., 2001).

Also, I studied parenting, temperament, and familism in a relatively homogeneous group of Mexican-American adolescent mothers. Developmentalists often use convenience sampling with heterogeneous groups of participants that can lead to biased estimates and conclusions about differences between subpopulations (Jager et al., 2017). Scholars argue that within-group designs, where researchers sample participants from a homogeneous demographic group, allow researchers to study processes within a specific cultural context and derive results that can be more accurately and precisely generalized to the subpopulation of interest (Jager et al., 2017; Knight et al., 2009). Therefore, the results of this study should be more generalizable to Mexican-American, single (at the time of pregnancy), adolescent mothers with one supportive female family member (typically grandmothers) than previous examinations with more heterogeneous samples of mothers.

The limitation to within-group homogeneous designs is that the results are not generalizable to a larger population (Jager et al., 2017). The results of this study are generalizable to Mexican-American adolescent mothers who have the support of an adult female family member but are unlikely to be generalizable to Mexican-American adolescent mothers who do not have the support of an adult female family member. In some ways, this criterion also may contribute to the limited range and high familism in this sample. Mothers may have benefitted from being connected with and gaining support from their own mothers (or another female family member) during their early parenting years or adolescents who continue to have a positive relationship with another female family member may have been raised to value familism. It is also plausible that some

mothers' support only comes from male family members or partners. Although some scholars have posited that Latino males tend to engage in gender-stereotyped household roles and play a smaller role in parenting (and thus the support of their adolescent pregnant child) than their female partners, the evidence supporting this idea is mixed (Umaña-Taylor & Updegraff, 2013). Grandfathers or other male family members could also provide a source of support that could also meaningfully contribute to adolescent mothers' parenting as well as their familism.

There are a few other limitations that should be considered when reviewing the results of this study. First, mothers were adolescents when the study started, but may not have been adolescents when their children were 36 to 60 months. Mothers in this study were still relatively young, with an average age of 20 when their children were 36-months-old, still, some mothers may have developed adult-like cognitive capacities and formalized their identity. Some scholars maintain that adolescent mothers face challenges meeting their own developmental needs because they needed to focus on the needs of their rapidly developing child (Moore & Brooks-Gunn, 2002; Whitman et al., 2001); thus, although mothers were no longer adolescents in this study they still may not possess the developmental capacities of mothers who had their children when they were older.

Second, researchers asked mothers to report on their income in one of two ways. Mothers could report their annual salary *or* they could report their hourly wage and number of hours worked per week, no mother reported both. Annual income needed to be calculated for all mothers in order to compute the income-to-needs ratio. Mothers who reported their hourly wage and number of hours worked per week had higher annual

incomes than mothers who just reported annual salary. Mothers who work for hourly wages may not always work the same number of hours per week and even if mothers were working a consistent number of hours per week when the data was collected, the chances of that changing at some point throughout the year are high. This method of collecting mothers' income is reasonable and takes the burden off of the mother to try to calculate either their hourly wage, if they are salaried, or their annual income, if they work hourly; however, this method introduces error into the variability of an annual income estimate and may overestimate hourly working mothers' actual annual income. In the future, researchers might consider asking parents to report either annual salary or hourly wage and hours worked per week or report both so that the measurement could be made equivalent across participants.

Third, the way generation was calculated and used in this study may be different than in other studies. Mothers' generation in this study was determined by their biological parents' and grandparents' place of birth. If mothers were born in Mexico, they were considered first generation. If mothers had one biological parent and/or grandparent born in the US, they were considered second (or higher) generation. The way generation status truly relates to other variables of interest in this study largely depends on whether increasing generation status is related to family members' cultural orientation (acculturation, enculturation, bicultural). In this study, generation status was used as a proxy for cultural orientation, but it is recognized that this is not the best practice. Generation status does not account for the number of times family members move back and forth between the US and Mexico or for the types of communities (e.g., ethnic

enclaves) families live in and, thus, families' exposure to and engagement in certain cultural practices. Although the measure of cultural orientation used in the larger study has been widely used in Latino samples, it has also been criticized for using language use and proficiency as a proxy for cultural orientation (Grau et al., 2009). It can also be difficult to identify participants who consider themselves bicultural using this measure. Thus, this measure was not used in the present study. In the future, researchers should consider using a more comprehensive measure of mothers' cultural orientation and utilizing these measures in their studies of parent-child relationships.

Conclusion

In conclusion, the results of this study inform the understanding of the ways parenting, temperament, and familism longitudinally relate to each other in Mexican-American adolescent mother-child dyads and point to several important avenues for future research and intervention initiatives. First, transactions between parenting and temperament may not occur in Mexican-American adolescent mother-child dyads. Transactions may not occur because parenting-temperament relations may be more driven by children's temperament than mothers' parenting. Parenting practices other than warmth and harshness (as they are conceptualized in this study) and other factors (e.g., genes, co-parents) need to be explored as predictors of Mexican-American children's EC and NE. Next, Mexican-American adolescent mothers' familism values contributed to parenting and the temperament-parenting relation, but only in some cases. Measures need to be developed that allow scholars to quantitatively study mothers' value-driven socialization goals as well as profiles of these goals to be able to better assess how

mothers' values relate to their parenting behavior and children's development. Finally, several methodological investigations need to occur in order for scholars to adequately understand parenting and temperament in Mexican-American adolescent mother-child dyads and in Latino families more generally. Namely, qualitative examinations of mothers' views on desirable and undesirable temperament, quantitative assessments of measurement equivalence in current measures of temperament, and multi-method and person-centered approaches to parenting strategies, including parental control.

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APPENDIX

A TABLES

Table 1

Descriptive Statistics for all Continuous Study Variables

				Reliability		Range					
	N	*M*	*SD*	α	ICC	Observed		Potential		Skew	Kurtosis
Observed Parenting											
Teaching Task											
Motivational Support											
W4	135	3.18	1.01	-	.80	1.00	5.00	1.00	5.00	-.28	-.72
W5	146	3.01	.93	-	.65	1.00	5.00	1.00	5.00	-.34	-.02
W6	145	2.77	.96	-	**.71**	1.00	5.00	1.00	5.00	-.04	-.32
Technical Support											
W4	135	2.87	1.10	-	.79	1.00	5.00	1.00	5.00	-.20	-.74
W5	146	2.57	.96	-	.66	1.00	5.00	1.00	5.00	.02	-.75
W6	145	2.36	.99	-	**.61**	1.00	5.00	1.00	5.00	.70	.40
Emotional Support											
W4	135	2.72	1.00	-	.78	1.00	5.00	1.00	5.00	.01	-.51
W5	146	2.46	.94	-	.69	1.00	5.00	1.00	5.00	.17	-.63
W6	145	2.45	1.03	-	.70	1.00	5.00	1.00	5.00	.47	-.14
Clean-Up											
Positive Affect											
W4	135	2.43	.64	-	.70	1.00	4.62	1.00	5.00	.57	1.27
W5	146	2.45	.56	-	.65	1.00	4.00	1.00	5.00	-.06	-.62
W6	146	2.42	.58	-	.62	.80	4.00	1.00	5.00	-.38	-.31
Harshness											
W4	135	1.39	.54	-	.62	.60	3.20	1.00	5.00	1.63	2.62
W5	146	1.46	.57	-	.74	1.00	3.35	1.00	5.00	1.31	1.22
W6	146	1.28	.41	-	.55	.80	2.73	1.00	5.00	1.42	1.27

Note. W = wave. Bolded ICC values are % agreement instead, see Method section for a description of why a % agreement was used instead of an ICC.

Table 1 (continued)

Descriptive Statistics for all Continuous Study Variables

				Reliability		Range					
	N	*M*	*SD*	α	ICC	Observed		Potential		Skew	Kurtosis
Temperament											
EC*											
W4	161	5.03	.80	.71	-	2.70	7.00	1.00	7.00	-.38	.30
W5	170	5.29	.72	.76	-	2.89	7.00	1.00	7.00	-.19	.08
W6	165	5.37	.66	.68	-	3.19	7.00	1.00	7.00	-.22	.26
NE*											
W4	160	4.36	1.00	.76	-	1.44	6.67	1.00	7.00	-.44	.02
W5	169	4.52	.88	.67	-	1.60	6.67	1.00	7.00	-.44	.70
W6	167	4.50	.89	.69	-	1.63	6.33	1.00	7.00	-.50	.36
Familism											
W4	169	4.39	.37	.78	-	3.31	5.00	1.00	5.00	-.47	-.27
W5	173	4.36	.41	.81	-	3.01	5.00	1.00	5.00	-.68	.29
W6	172	4.36	.39	.81	-	3.31	5.00	1.00	5.00	-.53	-.42
W4 continuous controls											
Mother's age	204	19.94	.99	-	-	18.08	22.17	-	-	.10	-.78
Income to needs ratio	157	4403.17	3593.93	-	-	.00	17701.78	-	-	1.50	2.70
Economic hardship	170	.00	2.39	-	-	-4.20	7.17	-	-	.44	-.19
Education	168	5.15	1.55	-	-	1.00	8.00	1.00	8.00	-.72	-.02

Note. W = wave. EC = effortful control. NE = negative emotionality. * Variables where items were dropped to improve scale reliability, see Method section for description of items that were dropped.

Table 2

Correlations Between Continuous Covariates and Focal Study Variables

	1.	2.	3.	4.
Continuous Covariates				
1. Mother's age	-			
2. Income to needs ratio	.19*	-		
3. Economic hardship	-.06	-.23**	-	
4. Mother's education	.28***	.26***	-.22**	-
Observed Parenting				
Teaching Task				
Motivational Support				
W4	.22*	.10	.01	.34***
W5	-.08	.13	-.04	.13
W6	-.04	.04	.12	.18*
Technical Support				
W4	.15+	.08	-.04	.24**
W5	.01	.13	-.08	.17*
W6	.06	.23**	-.11	.23**
Emotional Support				
W4	.08	.03	.02	.15+
W5	.02	.16+	-.06	.23**
W6	.06	.25**	-.02	.24**
Clean-Up				
Positive Affect				
W4	.04	.07	-.07	.12
W5	-.16+	.14+	.11	.05
W6	-.04	.15+	-.01	.02
Negative Affect				
W4	-.06	.06	.01	-.17*
W5	-.02	.04	-.09	-.08
W6	.07	.07	-.01	.05
Temperament				
EC				
W4	.04	.09	-.16*	.14+
W5	-.01	.10	-.22**	.17*
W6	-.04	.07	-.13+	-.05
NE				
W4	-.02	-.07	.05	.01
W5	.02	.04	.11	-.01
W6	-.09	-.02	.17*	-.06
Familism				
W4	-.10	.01	-.02	-.07
W5	-.15+	-.03	-.02	-.05
W6	-.15*	.04	-.05	.00

Note. W = wave. EC = effortful control. NE = negative emotionality. *** $p < .001$. ** $p < .01$. * $p < .05$. + < .10.

Table 3

Correlations Within Time for all Focal Study Variables

W4	1.	2.	3.	4.	5.	6.	7.	8.
1. TT: Motivational support	-							
2. TT: Technical support	.72***	-						
3. TT: Emotional support	.71***	.70***	-					
4. CU: Positive affect	.32***	.39***	.46***	-				
5. CU: Harshness	-.12	-.02	-.07	-.12	-			
6. EC	.14	.13	.15+	.19*	-.01	-		
7. NE	.04	.02	.11	.09	.08	.34***	-	
8. Familism	.08	.05	-.02	-.04	.15+	.12	.15+	-
W5	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**
1. TT: Motivational support	-							
2. TT: Technical support	.72***	-						
3. TT: Emotional support	.71***	.69***	-					
4. CU: Positive affect	.21*	.27***	.34***	-				
5. CU: Harshness	-.13	-.14+	-.18*	-.19*	-			
6. EC	.11	.13	.16+	.15+	.07	-		
7. NE	-.14	-.09	-.09	-.09	.18*	.17*	-	
8. Familism	.04	-.05	.00	-.05	-.03	.14+	.07	-
W6	**1.**	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**	**8.**
1. TT: Motivational support	-							
2. TT: Technical support	.59***	-						
3. TT: Emotional support	.69***	.67***	-					
4. CU: Positive affect	.20*	.32***	.35***	-				
5. CU: Harshness	-.11	-.16*	-.08	-.31***	-			
6. EC	.20*	.14+	.15+	-.09	-.05	-		
7. NE	-.07	-.14+	-.15+	-.26**	.10	.13	-	
8. Familism	.08	.01	.18*	.02	-.04	.18*	.06	-

Note. TT = teaching task. CU = clean-up. EC = effortful control. NE = negative emotionality. *** $p < .001$. ** $p < .01$. * $p < .05$. + < .10.

Table 4

Correlations Across Time for all Focal Variables

		W5							
		1.	2.	3.	4.	5.	6.	7.	8.
W4	1. TT: Motivational support	.40***	.43***	.49***	.25**	-.10	.19*	.03	.02
	2. TT: Technical support	.35***	.40***	.46***	.28**	-.02	.15	.04	.14
	3. TT: Emotional support	.33***	.40***	.38***	.33***	-.10	.08	.01	-.01
	4. CU: Positive affect	.22*	.24**	.29***	.53***	-.06	.13	.00	-.01
	5. CU: Harshness	-.14	-.16+	-.17+	.05	.37***	.01	.15+	.11
	6. EC	.12	.14	.07	.05	-.02	.48***	.19*	.15+
	7. NE	-.07	-.07	-.12	.02	.06	.04	.60***	.21*
	8. Familism	-.01	-.03	.07	.01	-.11	.07	.13	.48***
		W6							
		1.	2.	3.	4.	5.	6.	7.	8.
W4	1. TT: Motivational support	.17+	.31***	.28**	.15+	-.14	.14	-.01	.13
	2. TT: Technical support	.17+	.32***	.28**	.19*	-.20*	.17+	-.03	.17+
	3. TT: Emotional support	.24**	.44***	.32***	.22*	-.12	.08	-.07	.08
	4. CU: Positive affect	.15	.35***	.26**	.41***	-.01	-.02	-.06	.07
	5. CU: Harshness	-.21*	-.15+	-.17+	.00	.14	.05	.08	.07
	6. EC	.20*	.27**	.28***	.14	-.05	.38***	.02	.13
	7. NE	.12	.06	.10	.03	-.04	.02	.45***	.09
	8. Familism	.08	.01	.14	.01	-.01	.16*	.09	.55***
		1.	2.	3.	4.	5.	6.	7.	8.
W5	1. TT: Motivational support	.20*	.33***	.27**	.16+	-.14	.13	-.17*	.07
	2. TT: Technical support	.22*	.40***	.28***	.15+	-.21*	.16+	-.18*	.01
	3. TT: Emotional support	.30***	.40***	.43***	.24**	-.10	.08	-.15+	.15+
	4. CU: Positive affect	.21*	.35***	.40***	.41***	-.10	.07	-.13	.08
	5. CU: Harshness	-.25**	-.17*	-.31***	-.14	.30***	.08	.28***	-.08
	6. EC	.12	.21*	.23**	.05	.00	.46***	.03	.16*
	7. NE	-.07	.00	-.11	-.06	-.11	.03	.56***	.07
	8. Familism	.04	-.01	.14+	.07	-.04	.16*	.08	.66***

Note. TT = teaching task. CU = clean-up. EC = effortful control. NE = negative emotionality. *** $p < .001$. ** $p < .01$. * $p < .05$. + < .10.

Table 5

Confirmatory Factor Analysis of Warmth Variables

	Chi-Square Model Fit							Chi-Square Difference		
Model	*df*	χ^2	*p*	RMSEA	90% CI	SRMR	CFI	Δdf	$\Delta\chi^2$	*p*
Baseline	37	41.02	.299	.03	[.00, .06]	.06	.995			
Loadings constrained	43	49.67	.225	.03	[.00, .06]	.07	.992	6	8.65	.194
Intercepts partially constrained	45	5.42	.268	.03	[.00, .06]	.07	.994	2	.75	.687

Note. N for study is 204, but 39 of participants are missing all warmth latent variable indicators across all waves. Final N for CFA is 165.

Table 6

Estimates from Cross-Lagged Panel Model Assessing H1a and H1b

Outcome	W4 NE		W4 EC		W4 Warmth	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.04 (.07)	.05 (.09)	.00 (.01)	.01 (.05)
Income to needs	-.03 (.03)	-.10 (.09)	.00 (.02)	.01 (.09)	.00 (.01)	.05 (.09)
Economic hardship	.01 (.04)	.03 (.08)	-.05 (.03)$^{+}$	-.14 (.08)$^{+}$	.00 (.01)	.03 (.09)
Education	-.07 (.07)	-.10 (.09)	.04 (.05)	.07 (.09)	.05 (.02)*	.29 (.10)**
LA: Neither~	-.28 (.21)	-.28 (.21)	-.23 (.17)	-.29 (.21)	-.01 (.05)	-.05 (.23)
LA: Bio-dad~	.20 (.22)	.20 (.21)	.17 (.17)	.21 (.21)	-.05 (.05)	-.21 (.23)
LA: Both~	-.04 (.29)	-.04 (.29)	-.03 (.23)	-.04 (.28)	-.11 (.07)	-.50 (.31)
Generation status	-.22 (.18)	-.22 (.18)	.08 (.14)	.10 (.18)	-.04 (.05)	-.17 (.20)
Language	-.78 (.22)***	-.78 (.20)***	-.27 (.17)	-.34 (.21)	.02 (.05)	.10 (.24)
Child Sex	-.22 (.17)	-.22 (.16)	-.17 (.13)	-.22 (.16)	.00 (.04)	.01 (.18)
W4 NE			**.26 (.06)*****	**.36 (.07)*****	**.02 (.02)**	**.09 (.09)**
W4 EC	**.26 (.06)*****	**.36 (.07)*****			**.02 (.02)**	**.15 (.09)**
W4 Warmth	**.02 (.02)**	**.09 (.09)**	**.02 (.02)**	**.15 (.09)**		
Outcome	W5 NE		W5 EC		W5 Warmth	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.06 (.02)*	-.19 (.07)**		
W4 NE	.51 (.06)***	.58 (.06)***			-.03 (.02)$^{+}$	-.15 (.08)$^{+}$
W4 EC			.40 (.07)***	.43 (.07)***	.05 (.02)*	.18 (.08)*
W4 Warmth	.19 (.31)	.05 (.08)	.30 (.28)	.09 (.08)	.56 (.08)***	.64 (.07)***
W5 NE			**.08 (.04)***	**.19 (.08)***	**-.01 (.01)**	**-.10 (.11)**
W5 EC	**.08 (.04)***	**.19 (.08)***			**.00 (.01)**	**.02 (.11)**
W5 Warmth	**.07 (.03)***	**.21 (.09)***	**.04 (.03)**	**.11 (.09)**		
Outcome	W6 NE		W6 EC		W6 Warmth	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.06 (.04)$^{+}$	-.13 (.08)$^{+}$		
LA: Neither~	-.02 (.14)	-.02 (.16)			-.08 (.04)$^{+}$	-.38 (.20)$^{+}$
LA: Bio-dad~	-.03 (.15)	-.03 (.17)			.00 (.04)	.01 (.21)
LA: Both~	.39 (.20)$^{+}$	.45 (.23)*			-.01 (.06)	-.04 (.29)
Language					-.10 (.04)*	-.47 (.18)**
W4 NE	.14 (.07)*	.16 (.08)*			.02 (.02)	.12 (.11)
W4 EC			.17 (.07)*	.20 (.08)*	.00 (.03)	.02 (.10)
W4 Warmth	.17 (.45)	.04 (.12)	-.13 (.38)	-.04 (.13)		
W5 NE	.52 (.08)***	.52 (.08)***			-.03 (.03)	-.14 (.10)
W5 EC			.34 (.08)***	.37 (.08)***	.03 (.02)	.12 (.09)
W5 Warmth	-.45 (.51)	-.10 (.12)	.27 (.42)	.08 (.12)	.54 (.10)***	.53 (.08)***
W6 NE			**.07 (.03)***	**.18 (.08)***	**-.02 (.01)$^{+}$**	**-.23 (.11)***
W6 EC	**.07 (.03)***	**.18 (.08)***			**.01 (.01)**	**.10 (.11)**
W6 Warmth	**-.02 (.01)$^{+}$**	**-.23 (.11)***	**.01 (.01)**	**.10 (.11)**		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. ~ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 7

Estimates from Cross-Lagged Panel Model Assessing H1c and H1d

Outcome	W4 NE		W4 EC		W4 Harshness	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.04 (.07)	.05 (.09)	.00 (.05)	-.01 (.09)
Income to needs	-.03 (.03)	-.10 (.09)	.00 (.02)	.01 (.09)	.01 (.01)	.09 (.09)
Economic hardship	.01 (.04)	.03 (.08)	-.05 (.03)	-.14 (.08)	.02 (.02)	.08 (.09)
Education	-.07 (.07)	-.09 (.09)	.04 (.05)	.07 (.09)	-.08 (.04)*	-.22 (.10)*
LA: Neither~	-.28 (.21)	-.27 (.21)	-.23 (.17)	-.29 (.21)	-.01 (.12)	-.02 (.22)
LA: Bio-dad~	.18 (.22)	.18 (.21)	.17 (.17)	.22 (.21)	.11 (.12)	.20 (.22)
LA: Both~	-.05 (.29)	-.04 (.29)	-.03 (.23)	-.03 (.28)	-.10 (.16)	-.19 (.30)
Generation status	-.21 (.18)	-.21 (.18)	.08 (.14)	.11 (.18)	.11 (.10)	.21 (.19)
Language	-.78 (.22)***	-.77 (.20)***	-.26 (.17)	-.33 (.21)	-.11 (.12)	-.22 (.23)
Child Sex	-.23 (.17)	-.23 (.16)	-.18 (.13)	-.22 (.16)	.11 (.09)	.21 (.17)
W4 NE			**.26 (.06)*****	**.36 (.07)*****	**.04 (.04)**	**.08 (.09)**
W4 EC	**.26 (.06)*****	**.36 (.07)*****			**-.01 (.03)**	**-.03 (.09)**
W4 Harshness	**.04 (.04)**	**.08 (.09)**	**-.01 (.03)**	**-.03 (.09)**		
Outcome	W5 NE		W5 EC		W5 Harshness	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.05 (.02)*	-.17 (.07)*		
Education			.07 (.04)$^{+}$	.13 (.07)$^{+}$		
LA: Neither~	-.26 (.14)$^{+}$	-.30 (.16)$^{+}$				
LA: Bio-dad~	.05 (.15)	.06 (.17)				
LA: Both~	-.41 (.20)*	-.47 (.23)*				
Child Sex					.25 (.09)**	.44 (.15)**
W4 NE	.48 (.06)***	.56 (.06)***			.03 (.05)	.06 (.08)
W4 EC			.40 (.07)***	.44 (.07)***	-.03 (.06)	-.04 (.08)
W4 Harshness	.14 (.12)	.09 (.07)	.07 (.10)	.05 (.08)	.35 (.09)***	.32 (.08)***
W5 NE			**.07 (.04)$^{+}$**	**.17 (.09)***	**.07 (.03)***	**.21 (.09)***
W5 EC	**.07 (.04)$^{+}$**	**.17 (.09)***			**.04 (.03)**	**.11 (.09)**
W5 Harshness	**.07 (.03)***	**.21 (.09)***	**.04 (.03)**	**.11 (.09)**		
Outcome	W6 NE		W6 EC		W6 Harshness	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.06 (.04)$^{+}$	-.13 (.08)$^{+}$		
Child Sex	-.25 (.12)*	-.29 (.13)*				
W4 NE	.17 (.07)*	.20 (.08)*			.05 (.04)	.12 (.11)
W4 EC			.18 (.07)*	.38 (.08)***	-.05 (.05)	-.10 (.11)
W4 Harshness	-.04 (.13)	-.03 (.08)	-.05 (.11)	.07 (.08)		
W5 NE	.43 (.08)***	.43 (.08)***			-.11 (.05)*	-.25 (.11)*
W5 EC			.35 (.08)***	.21 (.08)*	.03 (.05)	.06 (.09)
W5 Harshness	.30 (.11)**	.20 (.08)**	.08 (.10)	-.04 (.09)	.22 (.06)***	.33 (.08)***
W6 NE			**.07 (.03)***	**.18 (.08)***	**.06 (.02)****	**.23 (.08)****
W6 EC	**.07 (.03)***	**.18 (.08)***			**-.01 (.02)**	**-.06 (.09)**
W6 Harshness	**.06 (.02)****	**.23 (.08)****	**-.01 (.02)**	**-.06 (.09)**		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. ~ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 8

Estimates from Cross-Lagged Panel Model Assessing H2a

Outcome	W4 NE		W4 EC		W4 Warmth		W4 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.04 (.07)	.05 (.09)	.00 (.02)	.01 (.07)	-.02 (.03)	-.07 (.09)
Income to needs	-.03 (.03)	-.10 (.09)	.00 (.02)	.01 (.09)	.00 (.01)	.04 (.09)	.01 (.01)	.09 (.09)
Economic hardship	.01 (.04)	.03 (.08)	-.05 (.03)$^{+}$	-.14 (.08)$^{+}$	.00 (.01)	.03 (.09)	-.01 (.01)	-.04 (.08)
Education	-.07 (.07)	-.10 (.09)	.04 (.05)	.08 (.09)	.05 (.02)**	.30 (.10)**	-.04 (.02)$^{+}$	-.17 (.09)$^{+}$
LA: Neither$^{\sim}$	-.28 (.21)	-.28 (.21)	-.23 (.17)	-.28 (.21)	-.01 (.05)	-.03 (.23)	-.15 (.08)$^{+}$	-.40 (.21)$^{+}$
LA: Bio-dad$^{\sim}$	.20 (.22)	.20 (.21)	.17 (.17)	.22 (.21)	-.04 (.05)	-.18 (.23)	-.13 (.08)	-.35 (.21)
LA: Both$^{\sim}$	-.04 (.29)	-.04 (.29)	-.02 (.23)	-.03 (.28)	-.12 (.07)	-.51 (.31)	.00 (.11)	.00 (.28)
Generation status	-.22 (.18)	-.22 (.18)	.08 (.14)	.10 (.18)	-.04 (.05)	-.18 (.20)	.08 (.07)	.21 (.18)
Language	-.78 (.22)***	-.77 (.20)***	-.26 (.17)	-.33 (.21)	.02 (.06)	.10 (.24)	-.03 (.08)	-.08 (.21)
Child Sex	-.22 (.17)	-.22 (.16)	-.17 (.13)	-.21 (.16)	.00 (.04)	.01 (.18)	-.04 (.06)	-.10 (.17)
W4 NE			**.26 (.06)*****	**.36 (.07)*****	**.02 (.02)**	**.09 (.09)**		
W4 EC	**.26 (.06)*****	**.36 (.07)*****			**.03 (.02)**	**.16 (.09)**$^{+}$		
W4 Warmth	**.02 (.02)**	**.09 (.09)**	**.03 (.02)**	**.16 (.09)**$^{+}$				
W4 Familism					.03 (.05)	.05 (.08)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 8 (continued)

Estimates from Cross-Lagged Panel Model Assessing H2a

Outcome	W5 NE		W5 EC		W5 Warmth		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.06 (.02)**	-.19 (.07)**				
LA: Neither$^{\sim}$							.10 (.08)	.23 (.18)
LA: Bio-dad$^{\sim}$							.14 (.08)$^{+}$	.35 (.18)$^{+}$
LA: Both$^{\sim}$							-.02 (.10)	-.06 (.26)
W4 NE	.51 (.06)***	.58 (.06)***			-.04 (.02)*	-.18 (.09)*		
W4 EC			.40 (.07)***	.43 (.07)***	.03 (.02)	.12 (.09)		
W4 Warmth	.20 (.30)	.05 (.08)	.31 (.28)	.09 (.08)	.57 (.08)***	.64 (.07)***		
W4 Familism					.05 (.04)	.10 (.08)	.56 (.08)***	.50 (.06)***
W5 NE			**.08 (.04)***	**.19 (.08)***	**-.01 (.01)**	**-.11 (.11)**		
W5 EC	**.08 (.04)***	**.19 (.08)***			**.00 (.01)**	**.01 (.11)**		
W5 Warmth	**-.01 (.01)**	**-.11 (.11)**	**.00 (.01)**	**.01 (.11)**				
W5 Familism					-.01 (.04)	-.02 (.09)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 8 (continued)

Estimates from Cross-Lagged Panel Model Assessing H2a

Outcome	W6 NE		W6 EC		W6 Warmth		W6 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.06 (.04)$^{+}$	-.13 (.08)$^{+}$				
LA: Neither$^{\sim}$	-.03 (.14)	-.03 (.16)			-.07 (.04)$^{+}$	-.35 (.20)$^{+}$		
LA: Bio-dad$^{\sim}$	-.03 (.15)	-.04 (.17)			.00 (.04)	.00 (.21)		
LA: Both$^{\sim}$	.38 (.20)$^{+}$	.44 (.23)$^{+}$			-.01 (.06)	-.04 (.29)		
Language					-.09 (.04)*	-.43 (.18)*		
W4 NE	.14 (.07)*	.16 (.08)*			.03 (.02)	.13 (.11)		
W4 EC			.17 (.07)*	.20 (.08)*	.01 (.03)	.05 (.10)		
W4 Warmth	.14 (.45)	.04 (.12)	-.16 (.37)	-.06 (.13)				
W4 Familism							.33 (.07)***	.31 (.07)***
W5 NE	.51 (.08)***	.51 (.08)***			-.02 (.03)	-.10 (.11)		
W5 EC			.34 (.08)***	.38 (.08)***	.05 (.03)$^{+}$	.17 (.09)$^{+}$		
W5 Warmth	-.42 (.51)	-.10 (.12)	.30 (.41)	.09 (.12)	.54 (.10)***	.52 (.08)***		
W5 Familism					.01 (.05)	.01 (.10)	.47 (.07)***	.50 (.06)***
W6 NE			**.07 (.03)***	**.18 (.08)***	**-.02 (.01)$^{+}$**	**-.22 (.11)***		
W6 EC	**.07 (.03)***	**.18 (.08)***			**.01 (.01)**	**.11 (.11)**		
W6 Warmth	**-.02 (.01)$^{+}$**	**-.22 (.11)***	**.01 (.01)**	**.11 (.11)**				
W6 Familism					-.03 (.06)	-.06 (.10)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 9

Estimates from Cross-Lagged Panel Model Assessing H2b

Outcome	W4 NE		W4 EC		W4 Harshness		W4 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.04 (.07)	.05 (.09)	-.01 (.05)	-.01 (.09)	-.02 (.03)	-.07 (.09)
Income to needs	-.03 (.03)	-.10 (.09)	.00 (.02)	.01 (.09)	.01 (.01)	.09 (.09)	.01 (.01)	.09 (.09)
Economic hardship	.01 (.04)	.03 (.08)	-.05 (.03)	-.13 (.08)	.02 (.02)	.08 (.09)	-.01 (.01)	-.04 (.08)
Education	-.07 (.07)	-.09 (.09)	.04 (.05)	.07 (.09)	-.08 (.04)*	-.21 (.10)*	-.04 (.02)$^{+}$	-.17 (.09)$^{+}$
LA: Neither$^{\sim}$	-.28 (.21)	-.27 (.21)	-.23 (.17)	-.29 (.21)	.00 (.12)	-.01 (.22)	-.15 (.08)$^{+}$	-.40 (.21)$^{+}$
LA: Bio-dad$^{\sim}$	.18 (.22)	.18 (.21)	.17 (.17)	.22 (.21)	.11 (.12)	.21 (.22)	-.13 (.08)	-.35 (.21)
LA: Both$^{\sim}$	-.05 (.29)	-.05 (.29)	-.03 (.23)	-.03 (.28)	-.10 (.16)	-.19 (.30)	.00 (.11)	.00 (.28)
Generation status	-.21 (.18)	-.21 (.18)	.08 (.14)	.11 (.18)	.11 (.10)	.21 (.19)	.08 (.07)	.21 (.18)
Language	-.78 (.22)***	-.77 (.20)***	-.26 (.17)	-.32 (.21)	-.10 (.12)	-.19 (.23)	-.03 (.08)	-.08 (.21)
Child Sex	-.23 (.17)	-.23 (.16)	-.18 (.13)	-.22 (.16)	.11 (.09)	.21 (.17)	-.04 (.06)	-.10 (.17)
W4 NE			**.26 (.06)*****	**.36 (.07)*****	**.04 (.04)**	**.08 (.09)**		
W4 EC	**.26 (.06)*****	**.36 (.07)*****			**-.01 (.03)**	**-.04 (.09)**		
W4 Harshness	**.04 (.04)**	**.08 (.09)**	**-.01 (.03)**	**-.04 (.09)**				
W4 Familism					.09 (.12)	.07 (.09)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 9 (continued)

Estimates from Cross-Lagged Panel Model Assessing H2b

Outcome	W5 NE		W5 EC		W5 Harshness		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.05 (.02)*	-.16 (.07)*				
Education			.07 (.04)$^{+}$	.13 (.07)$^{+}$				
LA: Neither$^{\sim}$	-.25 (.14)$^{+}$	-.29 (.16)$^{+}$					.10 (.08)	.23 (.18)
LA: Bio-dad$^{\sim}$	.06 (.15)	.07 (.17)					.14 (.08)$^{+}$	.35 (.18)$^{+}$
LA: Both$^{\sim}$	-.42 (.20)*	-.48 (.23)*					-.02 (.11)	-.06 (.26)
Child Sex					.26 (.09)**	.44 (.15)**		
W4 NE	.48 (.06)***	.56 (.06)***			.04 (.05)	.07 (.08)		
W4 EC			.40 (.07)***	.44 (.07)***	-.03 (.06)	-.04 (.08)		
W4 Harshness	.14 (.12)	.08 (.07)	.07 (.10)	.05 (.08)	.36 (.09)***	.33 (.08)***		
W4 Familism					-.24 (.13)$^{+}$	-.16 (.09)$^{+}$	.56 (.08)***	.50 (.06)***
W5 NE			**.07 (.04)**$^{+}$	**.17 (.09)***	**.08 (.03)***	**.22 (.09)****		
W5 EC	**.07 (.04)**$^{+}$	**.17 (.09)***			**.04 (.03)**	**.12 (.09)**		
W5 Harshness	**.08 (.03)***	**.22 (.09)****	**.04 (.03)**	**.12 (.09)**				
W5 Familism					.03 (.13)	.02 (.09)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 9 (continued)

Estimates from Cross-Lagged Panel Model Assessing H2b

Outcome	W6 NE		W6 EC		W6 Harshness		W6 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.07 (.04)*	-.15 (.08)*				
Generation status			.22 (.10)*	.32 (.15)*				
Child Sex	-.25 (.12)*	-.29 (.14)*						
W4 NE	.17 (.07)*	.20 (.08)*			.05 (.04)	.14 (.11)		
W4 EC	-.04 (.13)	-.03 (.08)	.16 (.07)*	.19 (.08)*	-.05 (.05)	-.09 (.11)		
W4 Harshness			-.10 (.11)	-.08 (.09)				
W4 Familism							.33 (.07)***	.31 (.07)***
W5 NE	.43 (.08)***	.43 (.08)***			-.12 (.05)*	-.26 (.11)*		
W5 EC			.35 (.08)***	.38 (.08)***	.04 (.05)	.07 (.09)		
W5 Harshness	.29 (.11)**	.20 (.08)**	.10 (.09)	.08 (.08)	.22 (.06)***	.33 (.08)***		
W5 Familism					-.09 (.10)	-.10 (.11)	.47 (.06)***	.50 (.06)***
W6 NE			**.07 (.03)***	**.17 (.08)***	**.06 (.02)****	**.24 (.08)****		
W6 EC	**.07 (.03)***	**.17 (.08)***			**-.01 (.02)**	**-.06 (.09)**		
W6 Harshness	**.06 (.02)****	**.24 (.08)****	**-.01 (.02)**	**-.06 (.09)**				
W6 Familism					.03 (.11)	.03 (.11)		

Note. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. ~ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 10

Estimates from Cross-Lagged Panel Model Assessing H3a

Outcome	W4 NE		W4 EC		W4 Warmth		W4 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.06 (.07)	.07 (.08)	.01 (.02)	.04 (.10)	-.04 (.03)	-.09 (.08)
Income to needs	-.03 (.03)	-.10 (.09)	.01 (.02)	.03 (.09)	.00 (.01)	.03 (.09)	.01 (.01)	.09 (.08)
Economic hardship	.01 (.04)	.03 (.08)	-.04 (.03)	-.11 (.08)	.00 (.01)	.02 (.09)	-.01 (.01)	-.04 (.08)
Education	-.07 (.07)	-.09 (.09)	.01 (.05)	.03 (.09)	.05 (.02)**	.31 (.10)**	-.04 (.02)	-.15 (.09)
LA: Neither$^{\sim}$	-.28 (.21)	-.28 (.21)	-.28 (.16)$^{+}$	-.35 (.20)$^{+}$	-.02 (.05)	-.06 (.23)	-.17 (.08)*	-.45 (.20)*
LA: Bio-dad$^{\sim}$	.19 (.22)	.19 (.21)	.21 (.16)	.27 (.21)	-.04 (.06)	-.16 (.23)	-.13 (.08)$^{+}$	-.34 (.20)$^{+}$
LA: Both$^{\sim}$	-.04 (.29)	-.04 (.29)	.02 (.22)	.03 (.27)	-.12 (.08)	-.51 (.31)$^{+}$	-.01 (.10)	-.04 (.27)
Generation status	-.21 (.18)	-.21 (.18)	.07 (.14)	.08 (.17)	-.03 (.05)	-.13 (.20)	.11 (.07)	.28 (.17)$^{+}$
Language	-.77 (.22)***	-.77 (.20)***	-.35 (.17)*	-.43 (.20)*	.03 (.06)	.11 (.24)	-.03 (.08)	-.08 (.21)
Child Sex	-.22 (.17)	-.22 (.16)	-.15 (.13)	-.19 (.16)	.01 (.04)	.02 (.18)	-.03 (.06)	-.08 (.16)
W4 NE			**.24 (.06)*****	**.34 (.07)*****	**.02 (.02)**	**.08 (.09)**		
W4 EC	**.24 (.06)*****	**.34 (.07)*****			**.03 (.02)**	**.16 (.09)**$^{+}$		
W4 Warmth	**.02 (.02)**	**.08 (.09)**	**.03 (.02)**	**.16 (.09)**$^{+}$				
W4 Familism					.06 (.06)	.10 (.09)		
W4 NE * W4 Familism	**-.01 (.03)**	**-.02 (.07)**			**-.01 (.01)**	**-.15 (.09)**$^{+}$	**-.04 (.01)****	**-.27 (.08)*****
W4 EC * W4 Familism			**.05 (.02)****	**.24 (.07)*****	**-.01 (.01)**	**-.07 (.10)**	**-.01 (.01)**	**-.08 (.08)**

Outcome	W4 NE * W4 Familism	
Predictor	*b* (SE)	*B* (SE)
W4 EC * W4 Familism	**.05 (.01)*****	**.44 (.07)*****

Note. Model fit: χ^2 (201) = 210.57, p = 0.308. RMSEA = 0.02, 90% CI [0.00, 0.04]. CFI = 0.99. SRMR = 0.05. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 10 (continued)

Estimates from Cross-Lagged Panel Model Assessing H3a

Outcome	W5 NE		W5 EC		W5 Warmth		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.06 (.02)**	-.19 (.07)**				
LA: Neither$^{\sim}$							.10 (.08)	.24 (.18)
LA: Bio-dad$^{\sim}$							.13 (.08)$^{+}$	.33 (.19)$^{+}$
LA: Both$^{\sim}$							-.02 (.10)	-.06 (.25)
W4 NE	.52 (.06)***	.59 (.05)***			-.03 (.02)$^{+}$	-.17 (.09)*		
W4 EC			.40 (.07)***	.43 (.07)***	.00 (.02)	.01 (.09)		
W4 Warmth	.10 (.29)	.03 (.08)	.30 (.27)	.10 (.08)	.61 (.08)***	.69 (.07)***		
W4 Familism					.01 (.05)	.03 (.08)	.56 (.08)***	.51 (.06)***
W5 NE			**.08 (.04)***	**.18 (.08)***	**-.01 (.01)**	**-.10 (.11)**		
W5 EC	**.08 (.04)***	**.18 (.08)***			**.00 (.01)**	**.02 (.11)**		
W5 Warmth	**-.01 (.01)**	**-.10 (.11)**	**.00 (.01)**	**.02 (.11)**				
W5 Familism					.00 (.01)	.00 (.03)		
W4 NE * W4 Familism					.07 (.05)	.15 (.09)$^{+}$		
W4 EC * W4 Familism					.11 (.07)	.15 (.09)		

Note. Model fit: χ^2 (201) = 210.57, p = 0.308. RMSEA = 0.02, 90% CI [0.00, 0.04]. CFI = 0.99. SRMR = 0.05. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 11

Estimates from Cross-Lagged Panel Model Assessing H3b

Outcome	W5 NE		W5 EC		W5 Warmth		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.10 (.07)	.11 (.09)	-.03 (.06)	-.03 (.09)	-.01 (.02)	-.08 (.10)	-.04 (.04)	-.09 (.09)
Income to needs	-.01 (.02)	-.02 (.09)	.01 (.02)	.03 (.09)	.01 (.01)	.14 (.10)	-.01 (.01)	-.11 (.09)
Economic hardship	.03 (.03)	.07 (.08)	-.07 (.03)**	-.22 (.08)**	.00 (.01)	-.05 (.09)	.00 (.02)	.02 (.09)
Education	-.01 (.06)	-.02 (.09)	.11 (.05)*	.21 (.09)*	.03 (.01)*	.26 (.10)*	-.02 (.03)	-.06 (.10)
LA: Neither$^{\sim}$	-.35 (.18)*	-.40 (.20)*	.04 (.15)	.06 (.21)	.00 (.04)	.02 (.23)	.05 (.09)	.13 (.21)
LA: Bio-dad$^{\sim}$	.26 (.19)	.30 (.21)	.17 (.16)	.23 (.21)	-.05 (.04)	-.29 (.25)	.13 (.09)	.32 (.22)
LA: Both$^{\sim}$	-.43 (.24)$^{+}$	-.50 (.28)$^{+}$	-.12 (.21)	-.16 (.28)	-.06 (.06)	-.33 (.32)	.04 (.12)	.09 (.29)
Generation status	-.15 (.16)	-.17 (.18)	.02 (.13)	.03 (.18)	-.02 (.04)	-.09 (.20)	.05 (.08)	.13 (.19)
Language	-.40 (.19)*	-.46 (.21)*	-.03 (.16)	-.04 (.22)	.03 (.04)	.20 (.25)	-.14 (.09)	-.33 (.22)
Child Sex	-.31 (.14)*	-.36 (.16)*	-.24 (.12)*	-.33 (.16)*	-.03 (.03)	-.17 (.19)	.00 (.07)	.00 (.17)
W5 NE			**.09 (.05)$^{+}$**	**.16 (.08)***	**-.01 (.01)**	**-.10 (.09)**		
W5 EC	**.09 (.05)$^{+}$**	**.16 (.08)***			**.01 (.01)**	**.11 (.09)**		
W5 Warmth	**-.01 (.01)**	**-.10 (.09)**	**.01 (.01)**	**.11 (.09)**				
W5 Familism					.00 (.04)	.01 (.09)		
W5 NE * W5 Familism	**.05 (.02)***	**.18 (.08)***			**.00 (.01)**	**.05 (.10)**	**.02 (.01)**	**.11 (.09)**
W5 EC * W5 Familism			**-.01 (.02)**	**-.03 (.08)**	**.00 (.01)**	**-.03 (.09)**	**-.01 (.01)**	**-.12 (.09)**

Outcome	W5 NE * W5 Familism	
Predictor	*b* (SE)	*B* (SE)
W5 EC * W5 Familism	**.02 (.01)$^{+}$**	**.16 (.08)$^{+}$**

Note. Model fit: χ^2 (195) = 238.49, p = 0.018. RMSEA = 0.04, 90% CI [0.02, 0.06]. CFI = 0.95. SRMR = 0.06. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 11 (continued)

Estimates from Cross-Lagged Panel Model Assessing H3b

Outcome	W6 NE		W6 EC		W6 Warmth		W6 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.07 (.04)$^{+}$	-.15 (.08)$^{+}$				
LA: Neither$^{\sim}$	-.03 (.14)	-.03 (.17)			-.06 (.04)	-.32 (.20)		
LA: Bio-dad$^{\sim}$	-.04 (.15)	-.04 (.17)			.01 (.04)	.03 (.22)		
LA: Both$^{\sim}$	.38 (.21)$^{+}$	.44 (.24)$^{+}$			.00 (.05)	.01 (.30)		
Generation status			.21 (.10)*	.32 (.15)*				
Language					-.08 (.04)*	-.45 (.19)*		
W5 NE	.61 (.07)***	.62 (.06)***			-.01 (.02)	-.03 (.09)		
W5 EC			.41 (.07)***	.45 (.07)***	.05 (.02)*	.22 (.08)**		
W5 Warmth	-.42 (.38)	-.08 (.07)	.32 (.34)	.08 (.09)	.49 (.10)***	.47 (.09)***		
W5 Familism					.02 (.04)	.05 (.09)	.62 (.06)***	.65 (.05)***
W6 NE			**.07 (.03)**$^{+}$	**.17 (.08)***	**-.02 (.01)**	**-.18 (.11)**		
W6 EC	**.07 (.03)**$^{+}$	**.17 (.08)***			**.01 (.01)**	**.10 (.11)**		
W6 Warmth	**-.02 (.01)**	**-.18 (.11)**	**.01 (.01)**	**.10 (.11)**				
W6 Familism					-.01 (.01)	-.01 (.03)		
W5 NE * W5 Familism					.03 (.05)	.06 (.09)		
W5 EC * W5 Familism					.00 (.05)	.00 (.08)		

Note. Model fit: χ^2 (195) = 238.49, p = 0.018. RMSEA = 0.04, 90% CI [0.02, 0.06]. CFI = 0.95. SRMR = 0.06. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 12

Estimates from Cross-Lagged Panel Model Assessing H3c

Outcome	W4 NE		W4 EC		W4 Harshness		W4 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.05 (.09)	.05 (.09)	.06 (.07)	.07 (.08)	-.02 (.05)	-.03 (.09)	-.04 (.03)	-.10 (.08)
Income to needs	-.03 (.03)	-.10 (.09)	.01 (.02)	.03 (.09)	.01 (.01)	.08 (.09)	.01 (.01)	.09 (.09)
Economic hardship	.01 (.04)	.03 (.08)	-.04 (.03)	-.11 (.08)	.01 (.02)	.06 (.09)	-.01 (.01)	-.04 (.08)
Education	-.06 (.07)	-.09 (.09)	.01 (.05)	.02 (.09)	-.07 (.04)$^{+}$	-.19 (.10)$^{+}$	-.04 (.02)	-.15 (.09)
LA: Neither$^{\sim}$	-.27 (.21)	-.27 (.21)	-.29 (.16)$^{+}$	-.36 (.20)$^{+}$	-.01 (.12)	-.02 (.22)	-.16 (.08)*	-.44 (.20)*
LA: Bio-dad$^{\sim}$	.18 (.22)	.18 (.21)	.21 (.16)	.27 (.20)	.10 (.12)	.20 (.22)	-.13 (.08)$^{+}$	-.34 (.20)$^{+}$
LA: Both$^{\sim}$	-.04 (.29)	-.04 (.29)	.02 (.22)	.02 (.27)	-.11 (.16)	-.21 (.30)	-.01 (.10)	-.03 (.27)
Generation status	-.21 (.18)	-.21 (.18)	.07 (.14)	.08 (.17)	.16 (.10)	.29 (.19)	.11 (.07)	.28 (.17)
Language	-.77 (.22)***	-.77 (.20)***	-.34 (.17)*	-.43 (.20)*	-.08 (.12)	-.14 (.23)	-.03 (.08)	-.08 (.21)
Child Sex	-.22 (.17)	-.22 (.16)	-.15 (.13)	-.19 (.16)	.11 (.09)	.21 (.17)	-.03 (.06)	-.08 (.16)
W4 NE			**.24 (.06)*****	**.34 (.07)*****	**.04 (.04)**	**.08 (.09)**		
W4 EC	**.24 (.06)*****	**.34 (.07)*****			**-.01 (.03)**	**-.03 (.09)**		
W4 Harshness	**.04 (.04)**	**.08 (.09)**	**-.01 (.03)**	**-.03 (.09)**				
W4 Familism					.11 (.12)	.08 (.09)		
W4 NE * W4 Familism	**-.01 (.03)**	**-.02 (.07)**			**-.03 (.02)**$^{+}$	**-.15 (.09)**$^{+}$	**-.04 (.01)****	**-.26 (.08)*****
W4 EC * W4 Familism			**.05 (.02)****	**.24 (.07)*****	**-.01 (.01)**	**-.10 (.09)**	**-.01 (.01)**	**-.08 (.08)**

Outcome	W4 NE * W4 Familism	
Predictor	*b* (SE)	*B* (SE)
W4 EC * W4 Familism	**.05 (.01)*****	**.44 (.07)*****

Note. Model fit: χ^2 (70) = 69.78, p = 0.485. RMSEA = 0.00, 90% CI [0.00, 0.05]. CFI = 1.00. SRMR = 0.04. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** p < .001. ** p < .01. * p < .05. $^{+}$ p < .10.

Table 12 (continued)

Estimates from Cross-Lagged Panel Model Assessing H3c

Outcome	W5 NE		W5 EC		W5 Harshness		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Economic hardship			-.05 (.02)*	-.17 (.07)*				
Education			.07 (.04)$^{+}$	.13 (.07)$^{+}$				
LA: Neither$^{\sim}$	-.26 (.14)$^{+}$	-.30 (.16)$^{+}$					.10 (.08)	.24 (.18)
LA: Bio-dad$^{\sim}$	.05 (.15)	.06 (.17)					.13 (.08)$^{+}$	.33 (.19)$^{+}$
LA: Both$^{\sim}$	-.43 (.20)*	-.49 (.23)*					-.02 (.10)	-.06 (.26)
Child Sex					.24 (.09)**	.42 (.15)**		
W4 NE	.49 (.06)***	.56 (.06)***			.04 (.05)	.07 (.09)		
W4 EC			.41 (.07)***	.44 (.07)***	.00 (.06)	.00 (.09)		
W4 Harshness	.12 (.12)	.07 (.07)	.07 (.11)	.05 (.08)	.35 (.09)***	.32 (.08)***		
W4 Familism					-.26 (.14)$^{+}$	-.17 (.09)$^{+}$	.56 (.08)***	.51 (.06)***
W5 NE			**.07 (.04)**$^{+}$	**.17 (.09)**$^{+}$	**.08 (.03)***	**.23 (.09)****		
W5 EC	**.07 (.04)**$^{+}$	**.17 (.09)**$^{+}$			**.04 (.03)**	**.12 (.09)**		
W5 Harshness	**.08 (.03)***	**.23 (.09)****	**.04 (.03)**	**.12 (.09)**				
W5 Familism					.04 (.13)	.03 (.09)		
W4 NE * W4 Familism					.07 (.11)	.05 (.09)		
W4 EC * W4 Familism					-.26 (.18)	-.13 (.09)		

Note. Model fit: χ^2 (70) = 69.78, p = 0.485. RMSEA = 0.00, 90% CI [0.00, 0.05]. CFI = 1.00. SRMR = 0.04. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** p < .001. ** p < .01. * p < .05. $^{+}$ p < .10.

Table 13

Estimates from Cross-Lagged Panel Model Assessing H3d

Outcome	W5 NE		W5 EC		W5 Harshness		W5 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Mother's age	.10 (.07)	.11 (.09)	-.03 (.06)	-.04 (.09)	.01 (.05)	.02 (.09)	-.04 (.04)	-.10 (.09)
Income to needs	-.01 (.02)	-.03 (.09)	.01 (.02)	.03 (.09)	.01 (.02)	.05 (.10)	-.01 (.01)	-.11 (.09)
Economic hardship	.03 (.03)	.07 (.08)	-.07 (.03)**	-.22 (.08)**	-.02 (.02)	-.08 (.09)	.00 (.02)	.03 (.09)
Education	-.02 (.06)	-.03 (.09)	.11 (.05)*	.21 (.09)*	-.06 (.04)	-.15 (.10)	-.02 (.03)	-.05 (.10)
LA: Neither$^{\sim}$	-.36 (.18)*	-.41 (.20)*	.04 (.15)	.05 (.21)	-.03 (.13)	-.04 (.22)	.05 (.09)	.13 (.21)
LA: Bio-dad$^{\sim}$	.25 (.19)	.29 (.21)	.17 (.16)	.23 (.21)	.11 (.13)	.20 (.23)	.13 (.09)	.32 (.22)
LA: Both$^{\sim}$	-.44 (.24)$^{+}$	-.50 (.28)$^{+}$	-.13 (.21)	-.17 (.28)	.19 (.17)	.34 (.30)	.04 (.12)	.09 (.29)
Generation status	-.15 (.16)	-.17 (.18)	.02 (.13)	.03 (.18)	-.16 (.11)	-.29 (.19)	.05 (.08)	.13 (.19)
Language	-.40 (.19)*	-.46 (.21)*	-.03 (.16)	-.04 (.22)	-.22 (.13)	-.38 (.23)	-.14 (.09)	-.33 (.22)
Child Sex	-.31 (.14)*	-.36 (.16)*	-.24 (.12)*	-.32 (.16)*	.22 (.10)*	.39 (.17)*	.00 (.07)	.00 (.17)
W5 NE			**.09 (.05)$^{+}$**	**.16 (.08)***	**.10 (.04)***	**.22 (.08)****		
W5 EC	**.09 (.05)$^{+}$**	**.16 (.08)***			**.04 (.03)**	**.10 (.09)**		
W5 Harshness	**.10 (.04)***	**.22 (.08)****	**.04 (.03)**	**.10 (.09)**				
W5 Familism					-.09 (.12)	-.06 (.08)		
W5 NE * W5 Familism	**.05 (.02)***	**.18 (.08)***			**-.01 (.02)**	**-.04 (.09)**	**.02 (.01)**	**.11 (.09)**
W5 EC * W5 Familism			**-.01 (.02)**	**-.03 (.08)**	**.01 (.01)**	**.03 (.09)**	**-.02 (.01)**	**-.13 (.09)**

Outcome	W5 NE * W5 Familism	
Predictor	*b* (SE)	*B* (SE)
W5 EC * W5 Familism	**.02 (.01)$^{+}$**	**.16 (.08)***

Note. Model fit: χ^2 (76) = 69.92, p = 0.675. RMSEA = 0.00, 90% CI [0.00, 0.04]. CFI = 1.00. SRMR = 0.05. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. $^{\sim}$ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

Table 13 (continued)

Estimates from Cross-Lagged Panel Model Assessing H3d

Outcome	W6 NE		W6 EC		W6 Harshness		W6 Familism	
Predictor	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)	*b* (SE)	*B* (SE)
Education			-.06 (.04)	-.12 (.08)				
Generation status			.22 (.10)*	.33 (.15)*				
Child Sex	-.24 (.12)*	-.28 (.13)*						
W5 NE	.54 (.07)***	.55 (.06)***			-.07 (.04)$^{+}$	-.14 (.08)$^{+}$		
W5 EC			.42 (.07)***	.47 (.07)***	.01 (.04)	.01 (.08)		
W5 Harshness	.27 (.11)**	.18 (.07)**	.05 (.09)	.04 (.07)	.22 (.06)***	.32 (.08)***		
W5 Familism					-.02 (.10)	-.02 (.10)	.62 (.06)***	.65 (.05)***
W6 NE			**.06 (.03)$^{+}$**	**.16 (.08)$^{+}$**	**.06 (.02)****	**.25 (.09)****		
W6 EC	**.06 (.03)$^{+}$**	**.16 (.08)$^{+}$**			**-.02 (.02)**	**-.09 (.09)**		
W6 Harshness	**.06 (.02)****	**.25 (.09)****	**-.02 (.02)**	**-.09 (.09)**				
W6 Familism					.02 (.10)	.02 (.10)		
W5 NE * W5 Familism					-.27 (.10)**	-.24 (.08)**		
W5 EC * W5 Familism					.20 (.11)$^{+}$	.15 (.08)$^{+}$		

Note. Model fit: χ^2 (76) = 69.92, p = 0.675. RMSEA = 0.00, 90% CI [0.00, 0.04]. CFI = 1.00. SRMR = 0.05. NE = negative emotionality. EC = effortful control. LA: Neither = mother not living with grandmother or biological father; LA: Bio-dad = mother living with biological father; LA: Both = mother living with grandmother and biological father. ~ Compared to living with just grandmother. Generation status coded 0 = first generation, 1 = second generation or higher. Language coded 0 = English, 1 = Spanish. Child Sex coded 0 = female, 1 = male. Covariances are in bold. Hypothesized paths are underlined. If a row is not visible or cell is empty, the relation was not estimated. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $p < .10$.

APPENDIX

B FIGURES

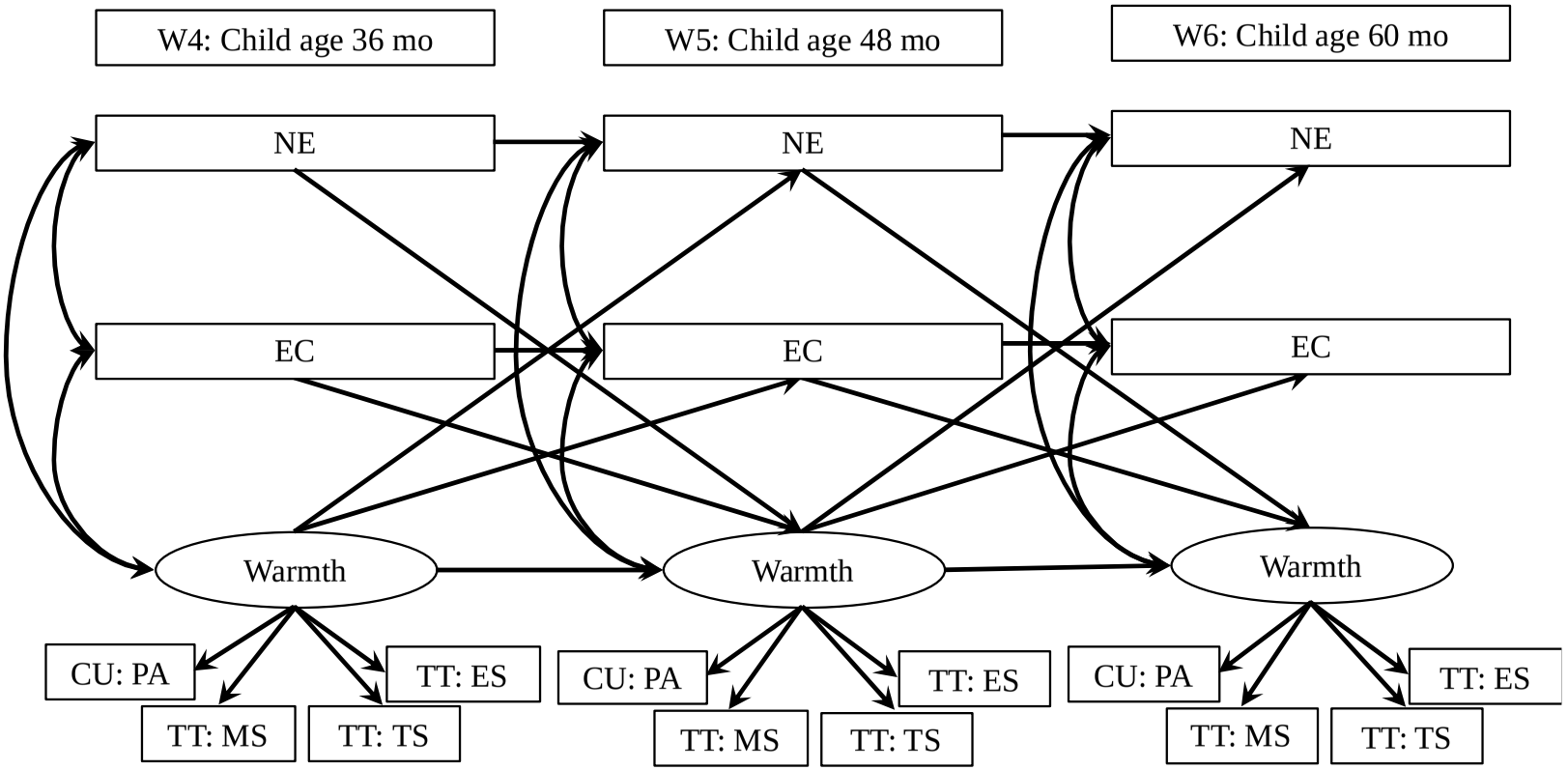

Figure 1. Hypothesized temperament-warmth transactional model. EC = effortful control. NE = negative emotionality. CU = clean-up. TT = teaching task. PA = positive affect. MS = motivational support. TS = technical support. ES = emotional support.

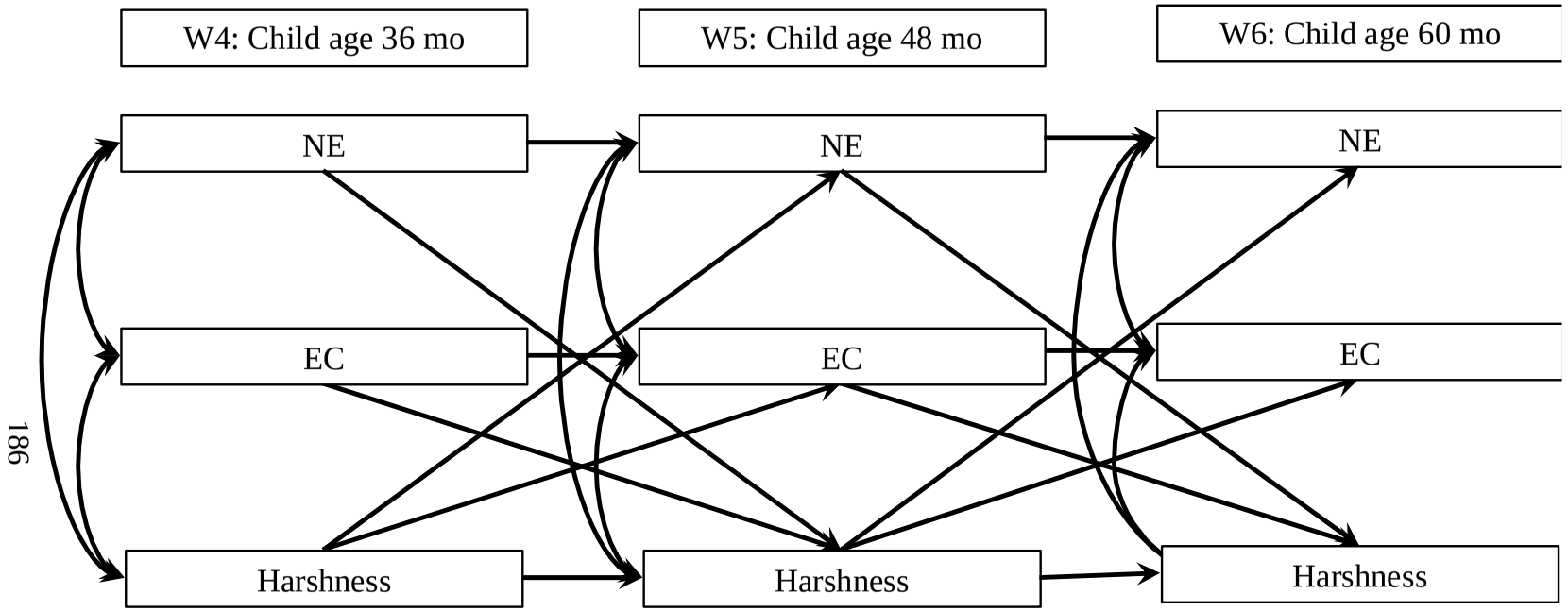

Figure 2. Hypothesized temperament-harshness transactional model. EC = effortful control. NE = negative emotionality.

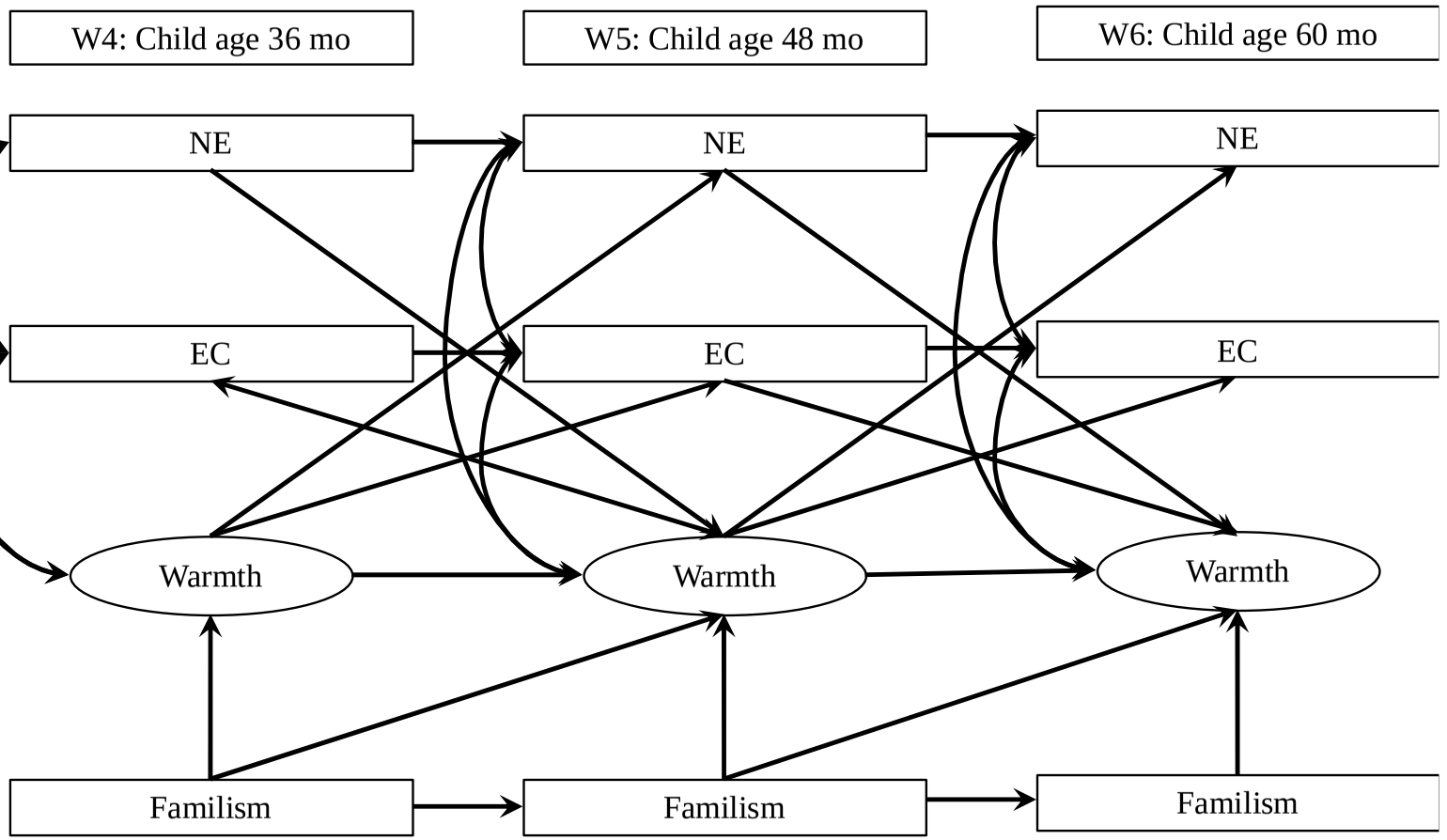

Figure 3. Hypothesized model with familism predicting warmth and temperament-warmth transactions. EC = effortful control. NE = negative emotionality.

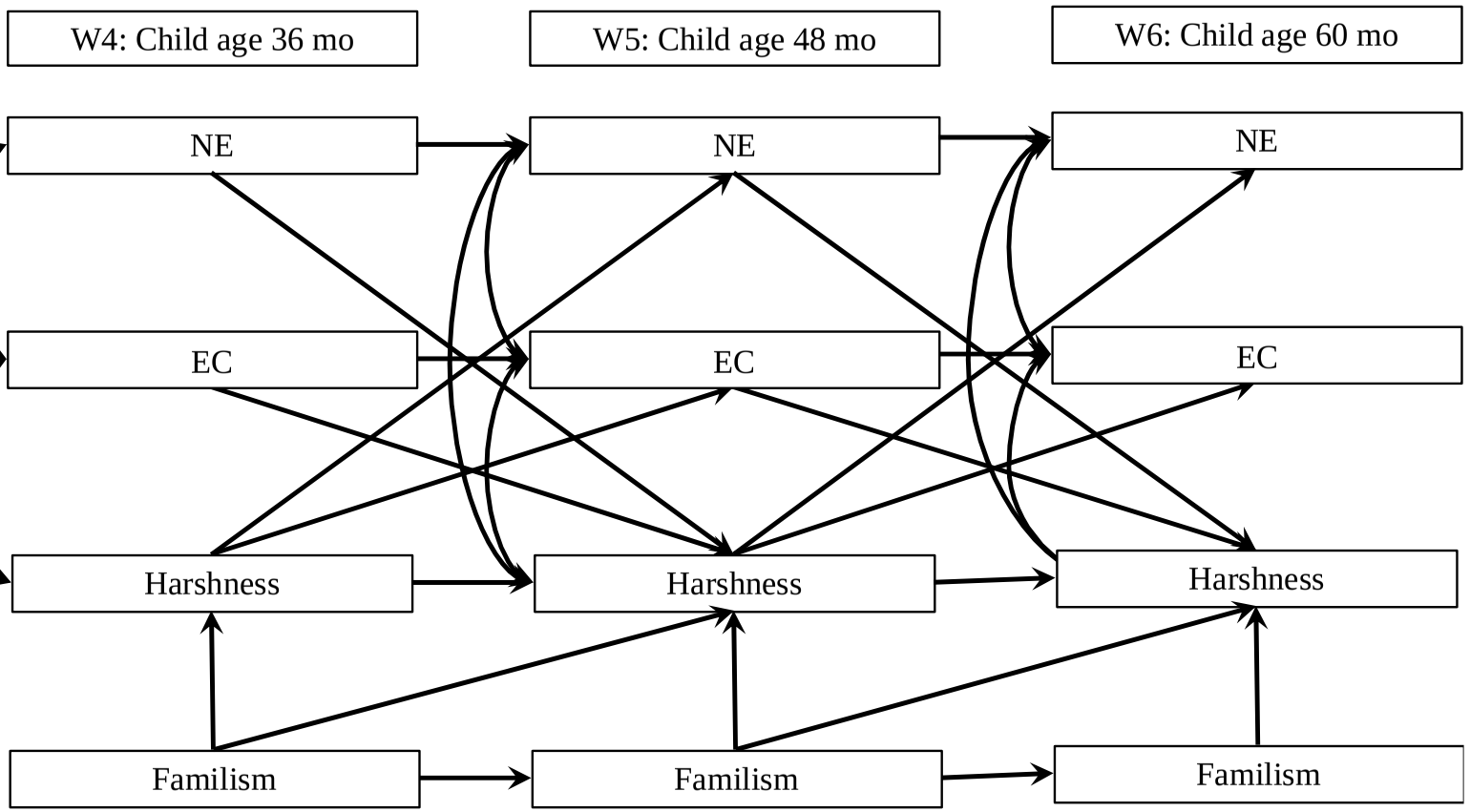

Figure 4. Hypothesized model with familism predicting harshness and temperament-harshness transactions. EC = effortful control. NE = negative emotionality.

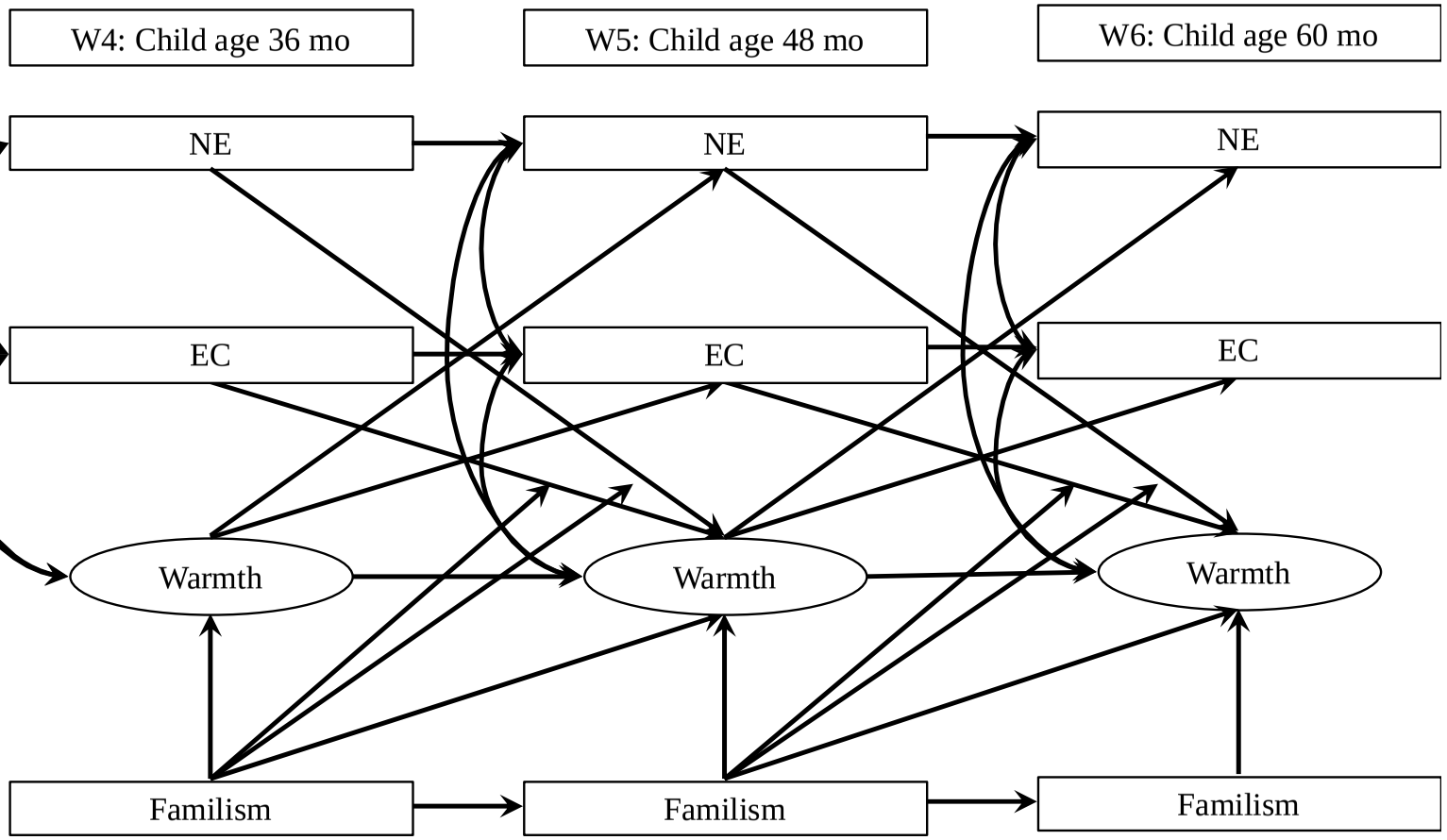

Figure 5. Hypothesized model with familism moderating the association between temperament and warmth. EC = effortful control. NE = negative emotionality.

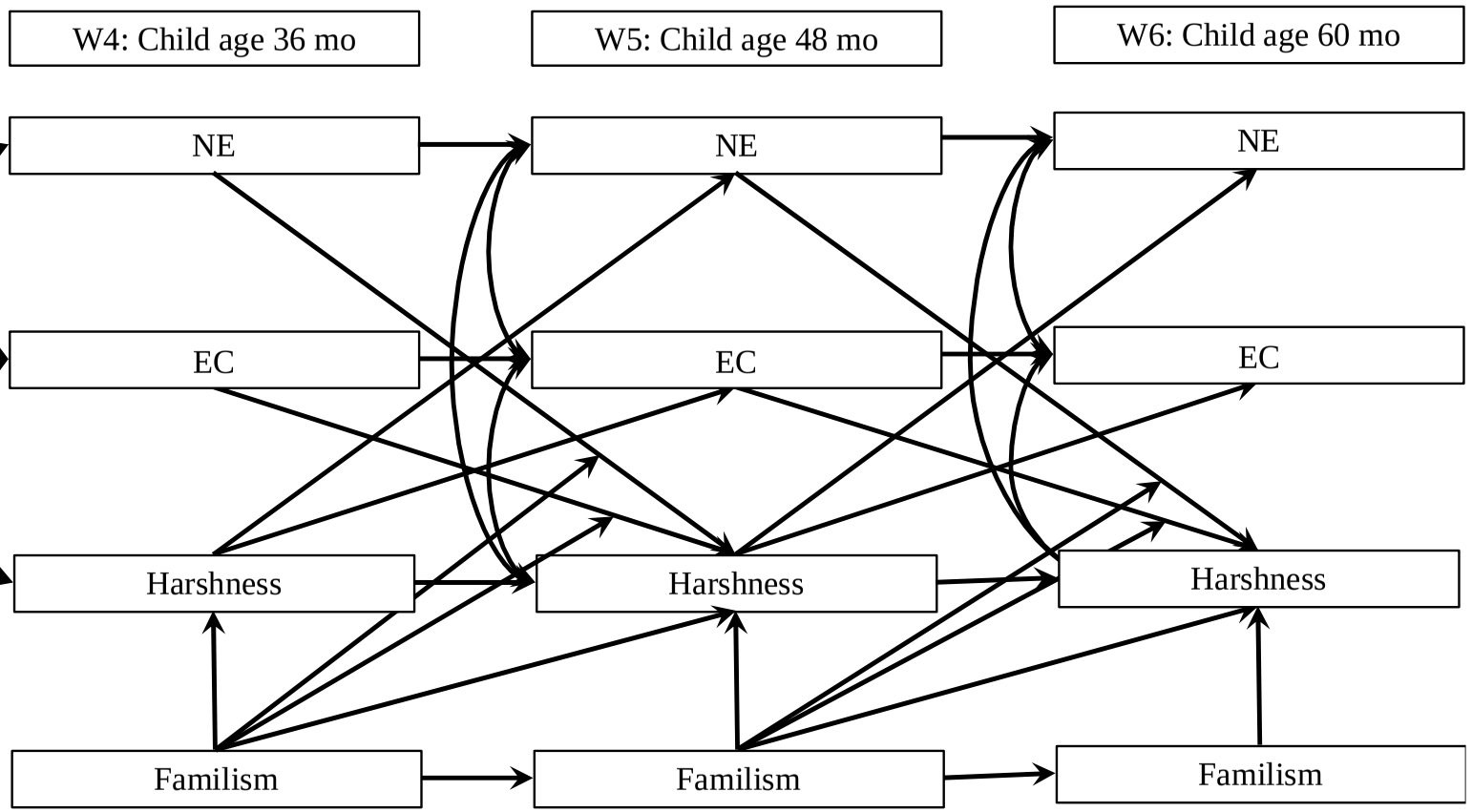

Figure 6. Hypothesized model with familism moderating the association between temperament and harshness. EC = effortful control. NE = negative emotionality.

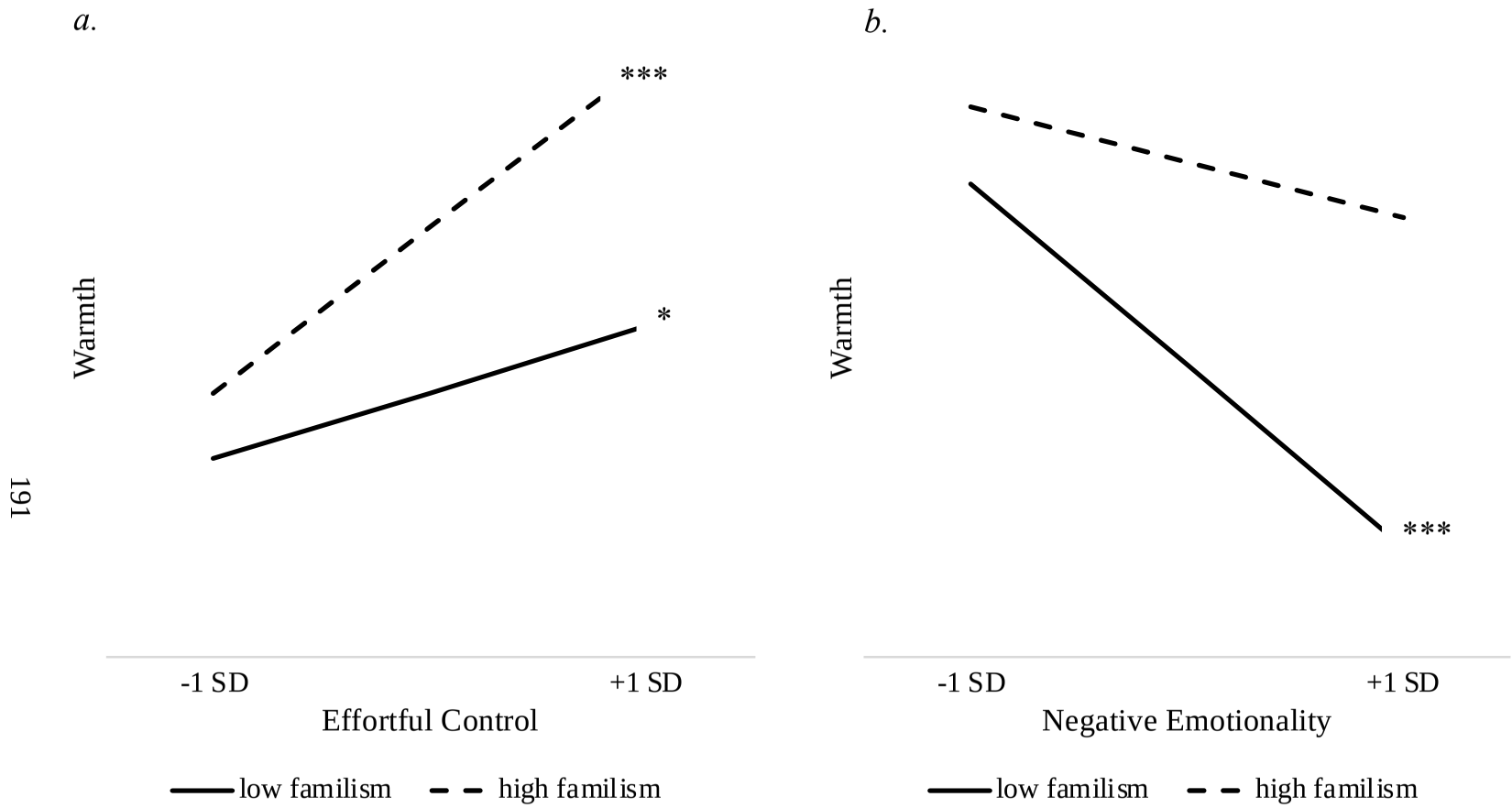

Figure 7. Hypothesized moderating role of familism between effortful control or negative emotionality and warmth.

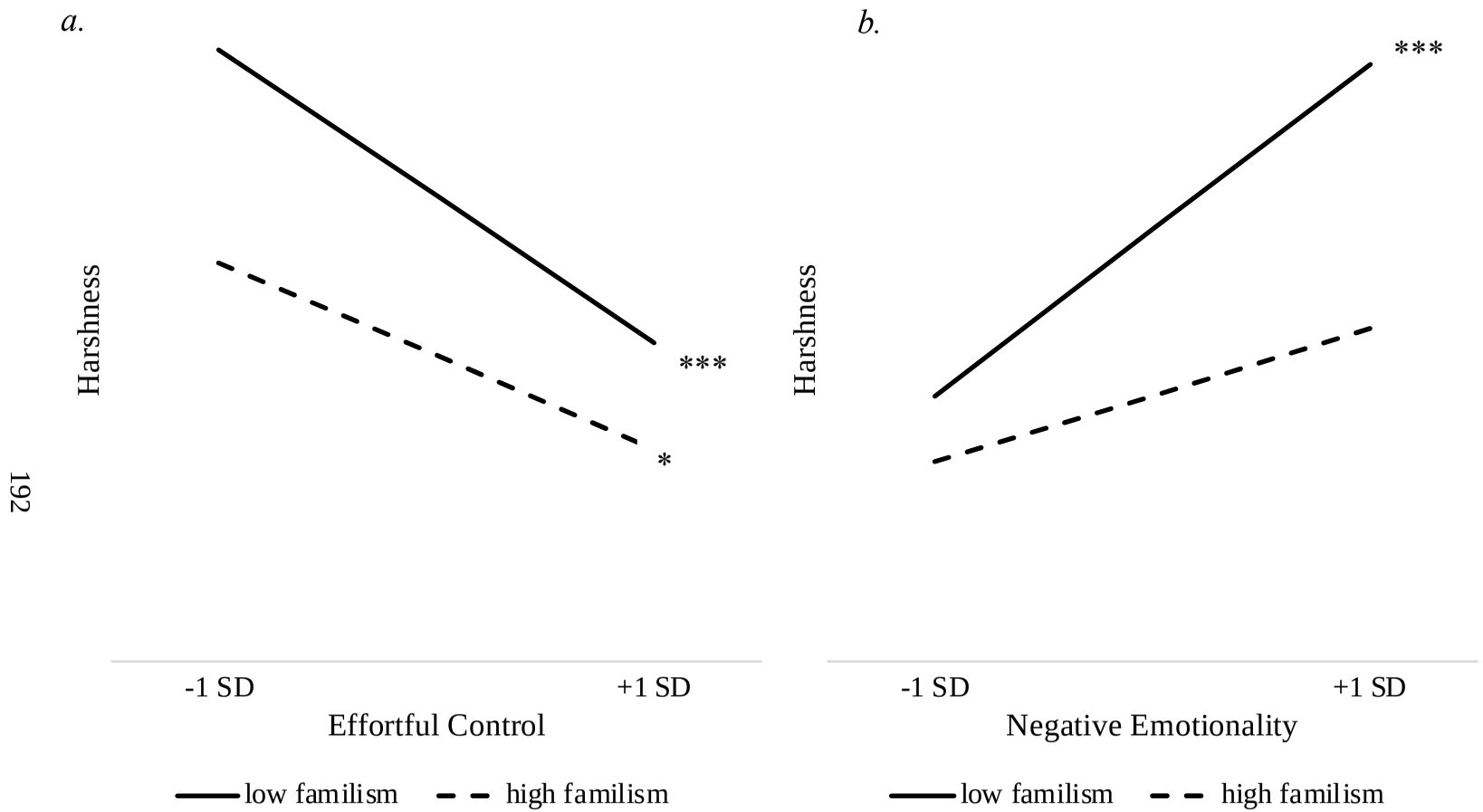

Figure 8. Hypothesized moderating role of familism between effortful control or negative emotionality and harshness.

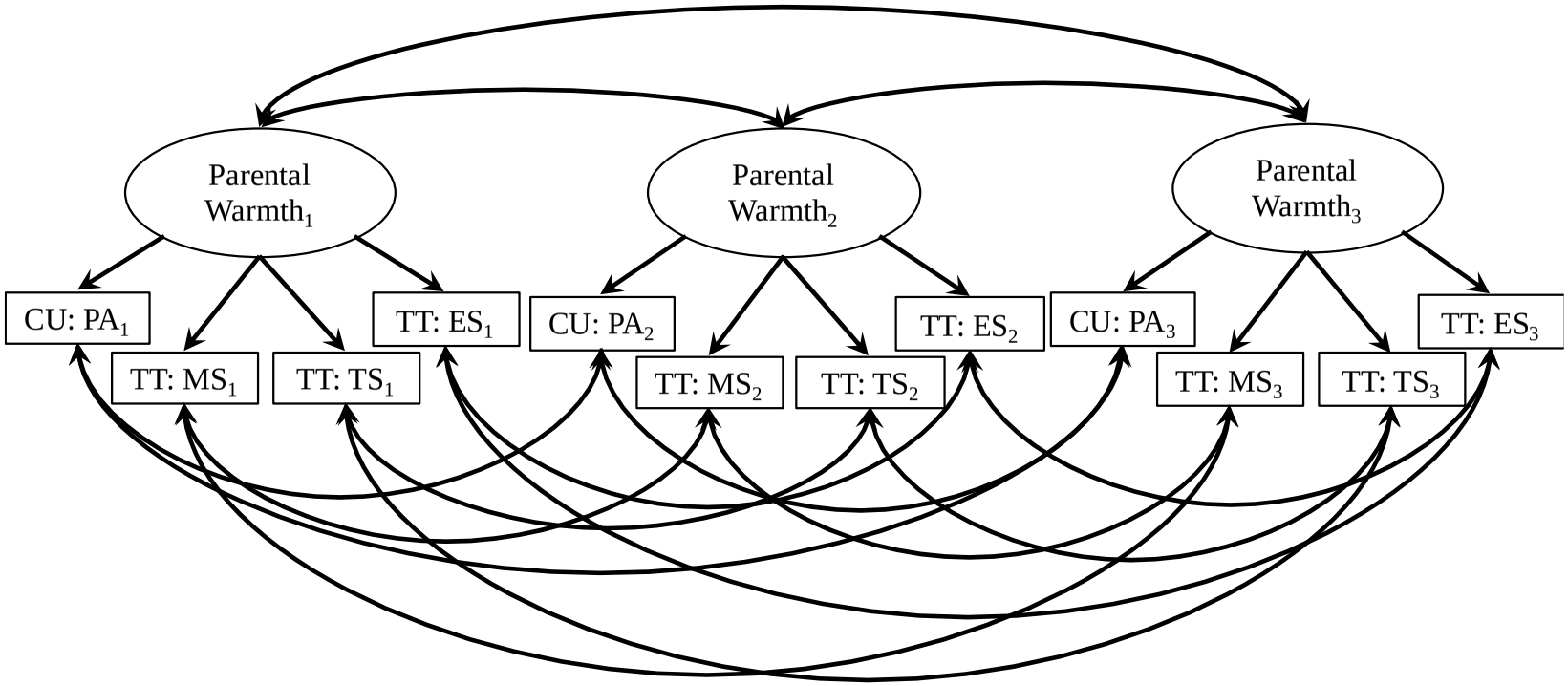

Figure 9. Hypothesized measurement model for parental warmth. 1 = W4 36-months. 2 = W5 48-months. 3 = W6 60-months. CU = Clean up. TT = Teaching task. PA = Positive affect. MS = Motivational support. TS = Technical support. ES = Emotional support.

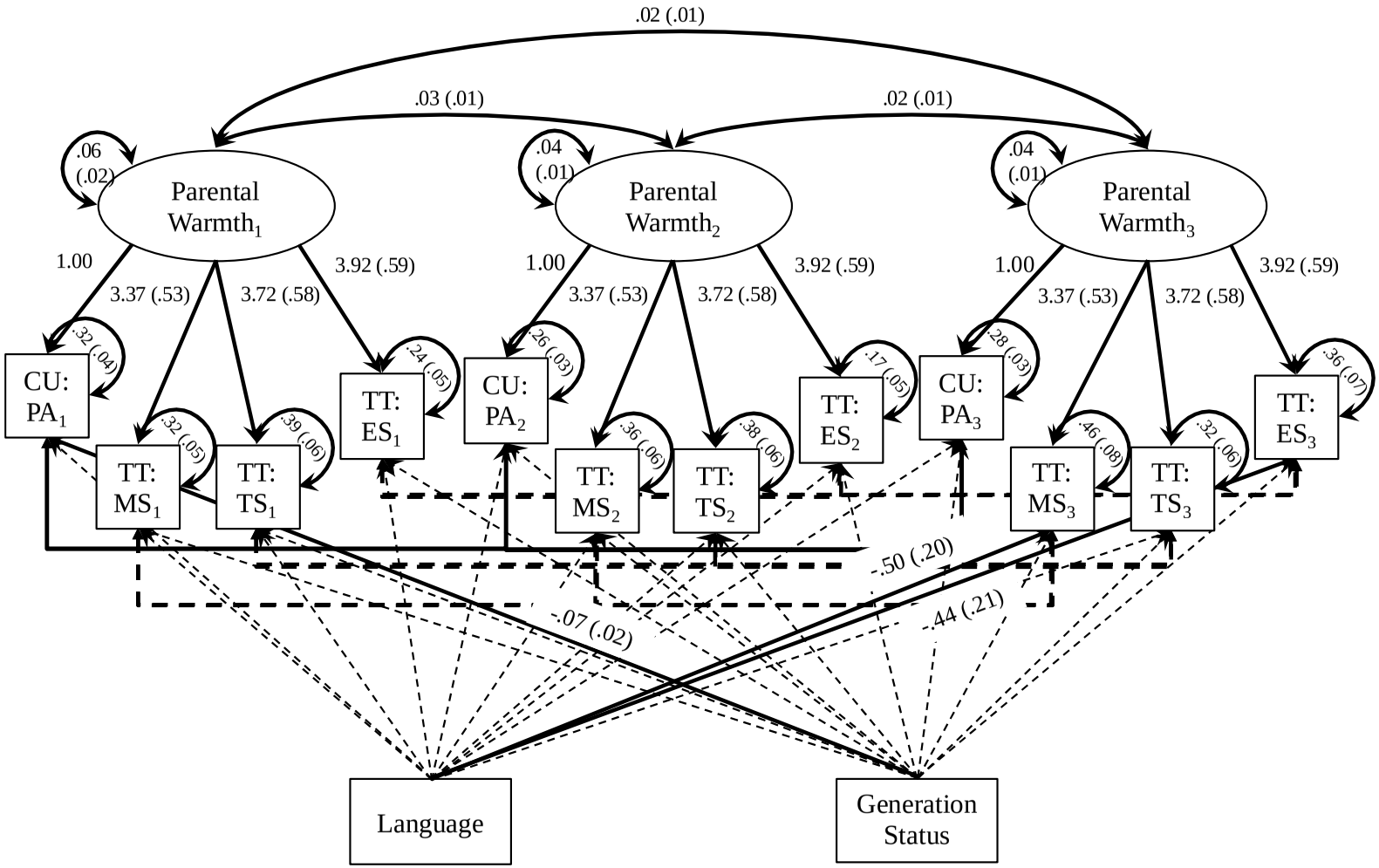

Figure 10. Final confirmatory factor analysis for parental warmth. 1 = W4 36-months. 2 = W5 48-months. 3 = W6 60-months. CU = clean-up. TT = teaching task. PA = positive affect. MS = motivational support. TS = technical support. ES = emotional support. Language coded 0 = English, 1 = Spanish. Generation status coded 0 = first generation, 1 = second or higher generation. Solid lines = significant estimates or constrained intercept. Dotted lines = non-significant estimate or freed intercept. Estimates are unstandardized.

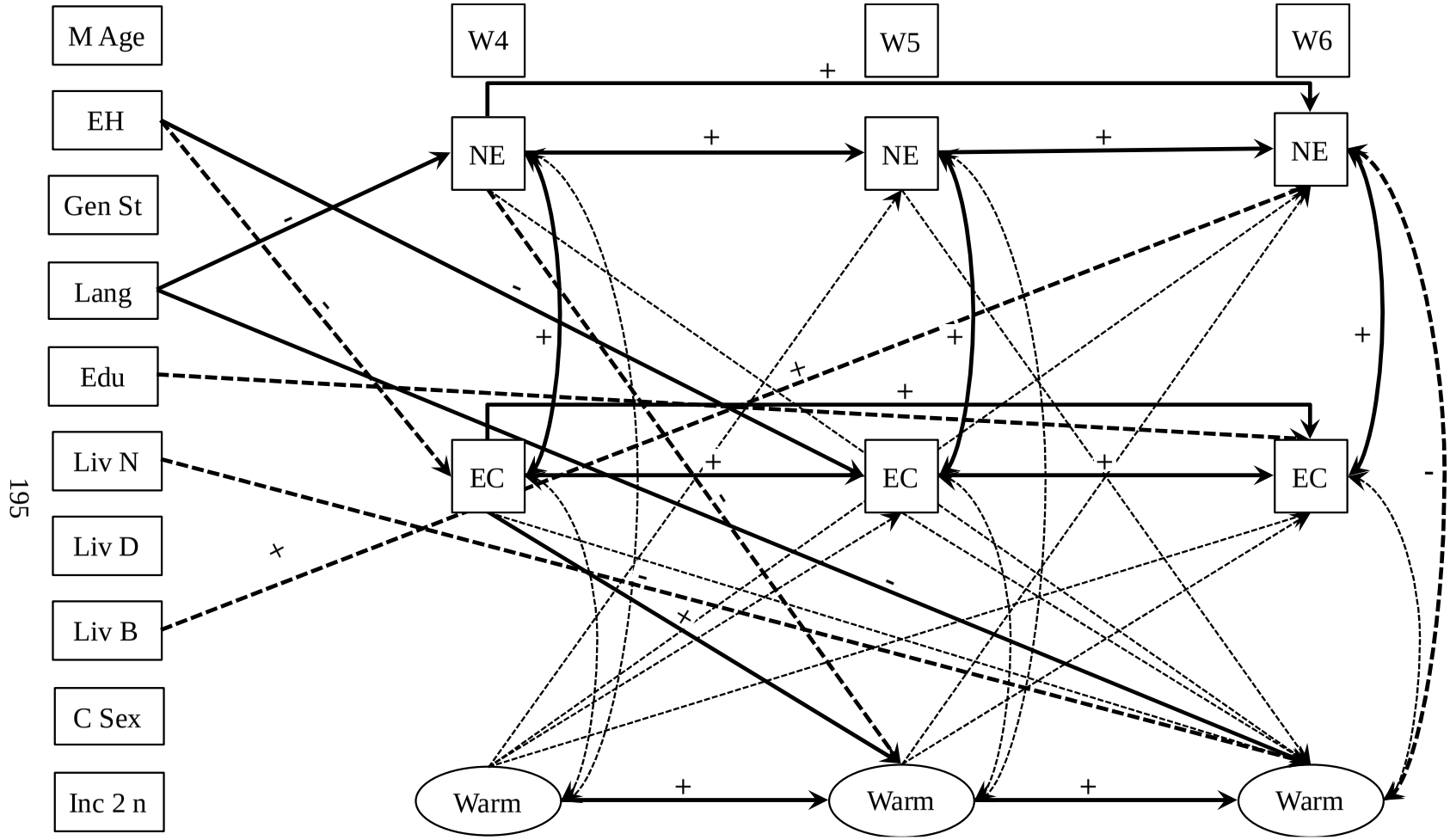

Figure 11. Final cross-lagged panel model with warmth. $\chi^2(247) = 286.90$, $p = 0.041$. RMSEA = 0.03, 90% CI [0.01, 0.05]. CFI = 0.95. SRMR = 0.06. Dark lines = significant paths ($p < .05$). Dark dotted lines = marginally significant paths ($p < .10$). Light dotted lines = non-significant paths. EC = effortful control. NE = negative emotionality. Warm = parental warmth latent variable (see Figure 5 for all variables included in the latent factor). M Age = W4 mothers' age. EH = W4 economic hardship. Gen St = Generation status (0 = 1st, 1 = 2nd or higher). Lang = Language of assessment (0 = English, 1 = Spanish). Edu = W4 mothers' education. Liv N = W4 mothers not living with grandmother or biological father. Liv D = W4 mothers living with biological father. Liv B = W4 mothers living with grandmother and biological father. C Sex = Child sex (0 = Male, 1 = Female). Inc 2 n = Income to needs ratio (calculated from mothers' reports of her household's income and her reports of who was living in the house).

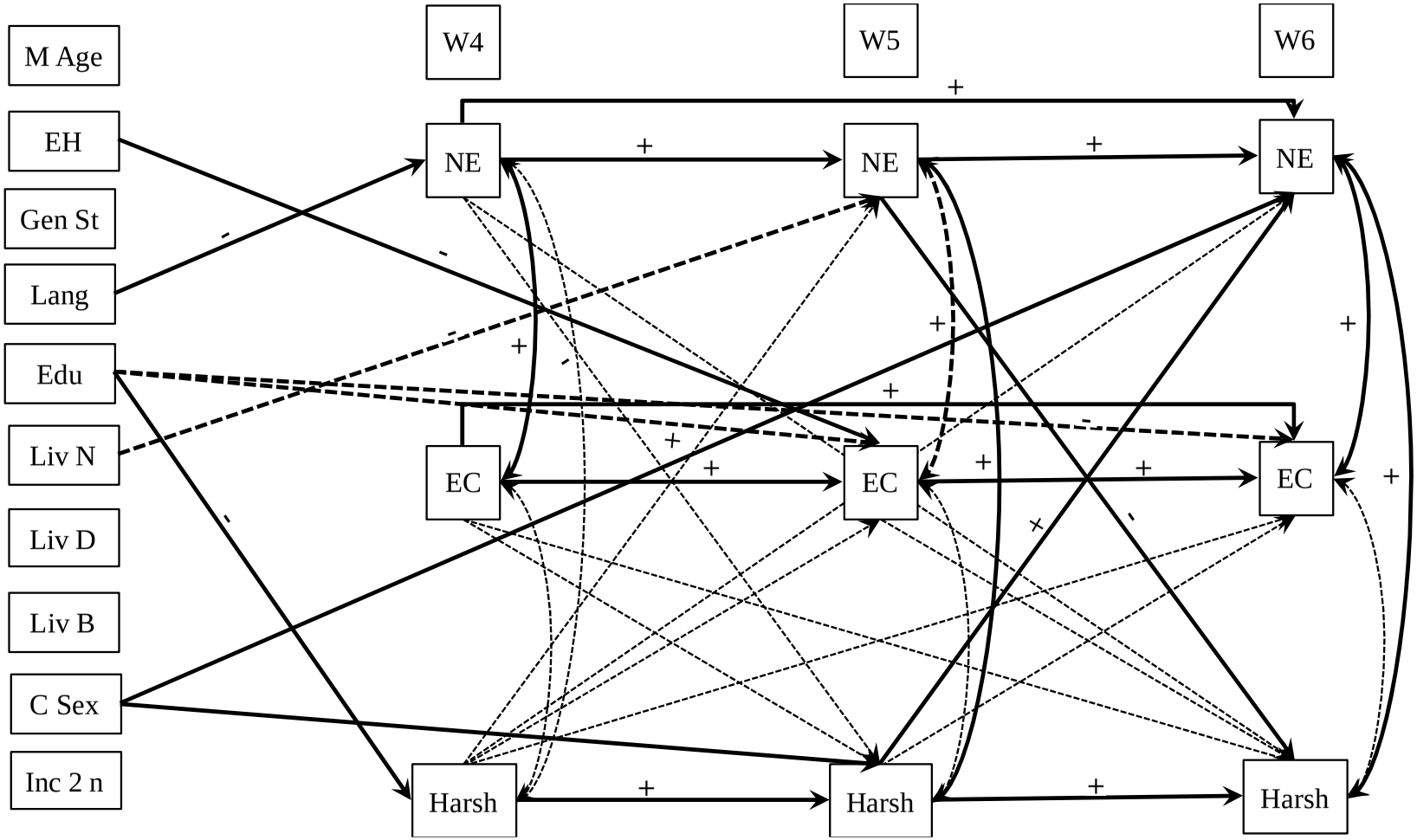

Figure 12. Final cross-lagged panel with harshness. $\chi 2$ (59) = 52.53, p = 0.711. RMSEA = 0.00, 90% CI [0.00, 0.04]. CFI = 1.00. SRMR = 0.04. Dark lines = significant paths ($p < .05$). Dark dotted lines = marginally significant paths ($p < .10$). Light dotted lines = non-significant paths. EC = effortful control. NE = negative emotionality. Harsh = mothers' negative affect during clean-up. M Age = W4 mothers' age. EH = W4 economic hardship. Gen St = Generation status (0 = 1st, 1 = 2nd or higher). Lang = Language of assessment (0 = English, 1 = Spanish). Edu = W4 mothers' education. Liv N = W4 mothers not living with grandmother or biological father. Liv D = W4 mothers living with biological father. Liv B = W4 mothers living with grandmother and biological father. C Sex = Child sex (0 = Male, 1 = Female). Inc 2 n = Income to needs ratio (calculated from mothers' reports of her household's income and her reports of who was living in the house).

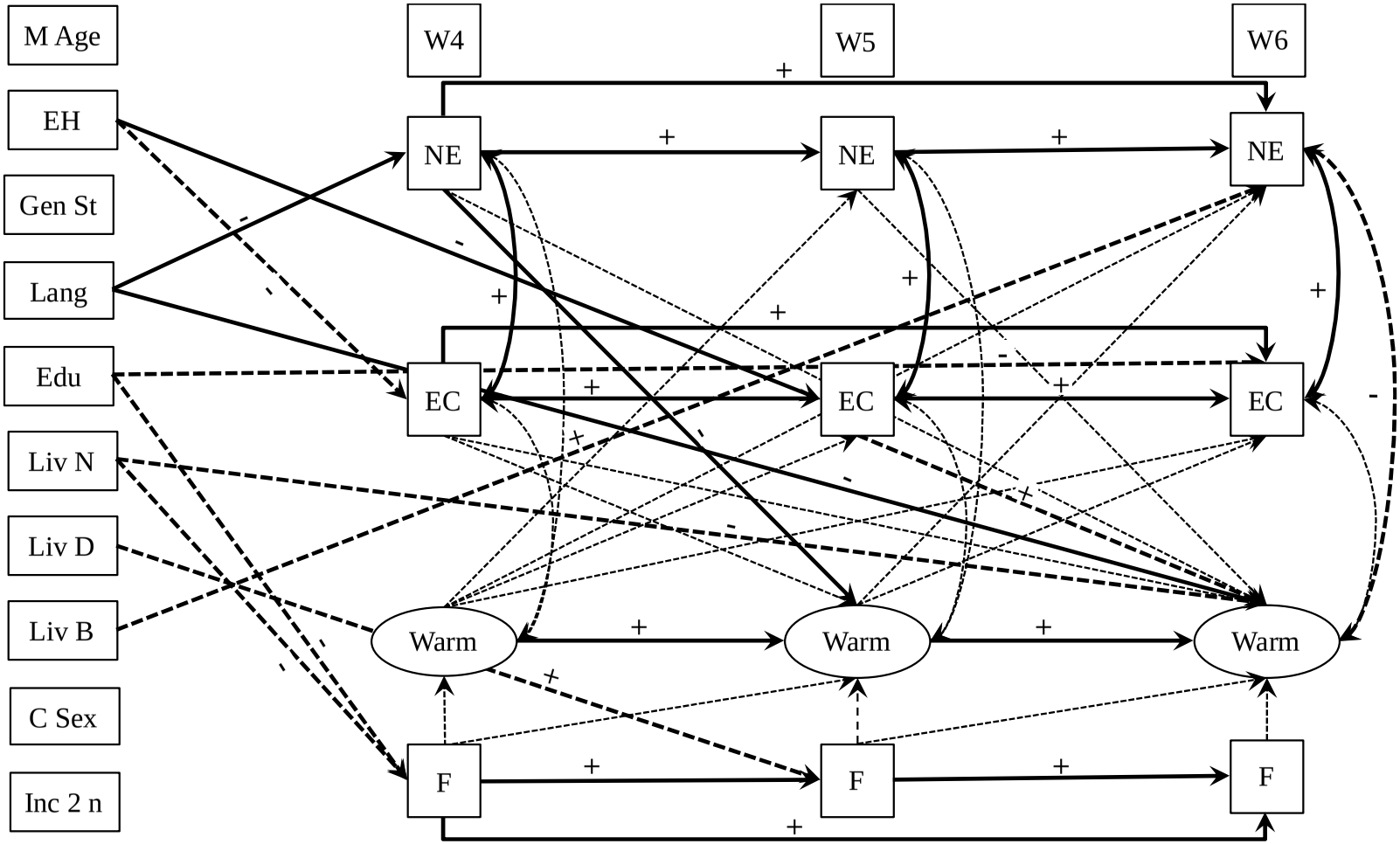

Figure 13. Final cross-lagged panel model with warmth and familism. $\chi 2$ (313) = 362.08, p = 0.029. RMSEA = 0.03, 90% CI [0.01, 0.05]. CFI = 0.95. SRMR = 0.06. Dark lines = significant paths ($p < .05$). Dark dotted lines = marginally significant paths ($p < .10$). Light dotted lines = non-significant paths. EC = effortful control. NE = negative emotionality. Warm = parental warmth latent variable (see Figure 5 for all variables included in the latent factor). F = familism. M Age = W4 mothers' age. EH = W4 economic hardship. Gen St = Generation status (0 = 1st, 1 = 2nd or higher). Lang = Language of assessment (0 = English, 1 = Spanish). Edu = W4 mothers' education. Liv N = W4 mothers not living with grandmother or biological father. Liv D = W4 mothers living with biological father. Liv B = W4 mothers living with grandmother and biological father. C Sex = Child sex (0 = Male, 1 = Female). Inc 2 n = Income to needs ratio (calculated from mothers' reports of her household's income and her reports of who was living in the house).

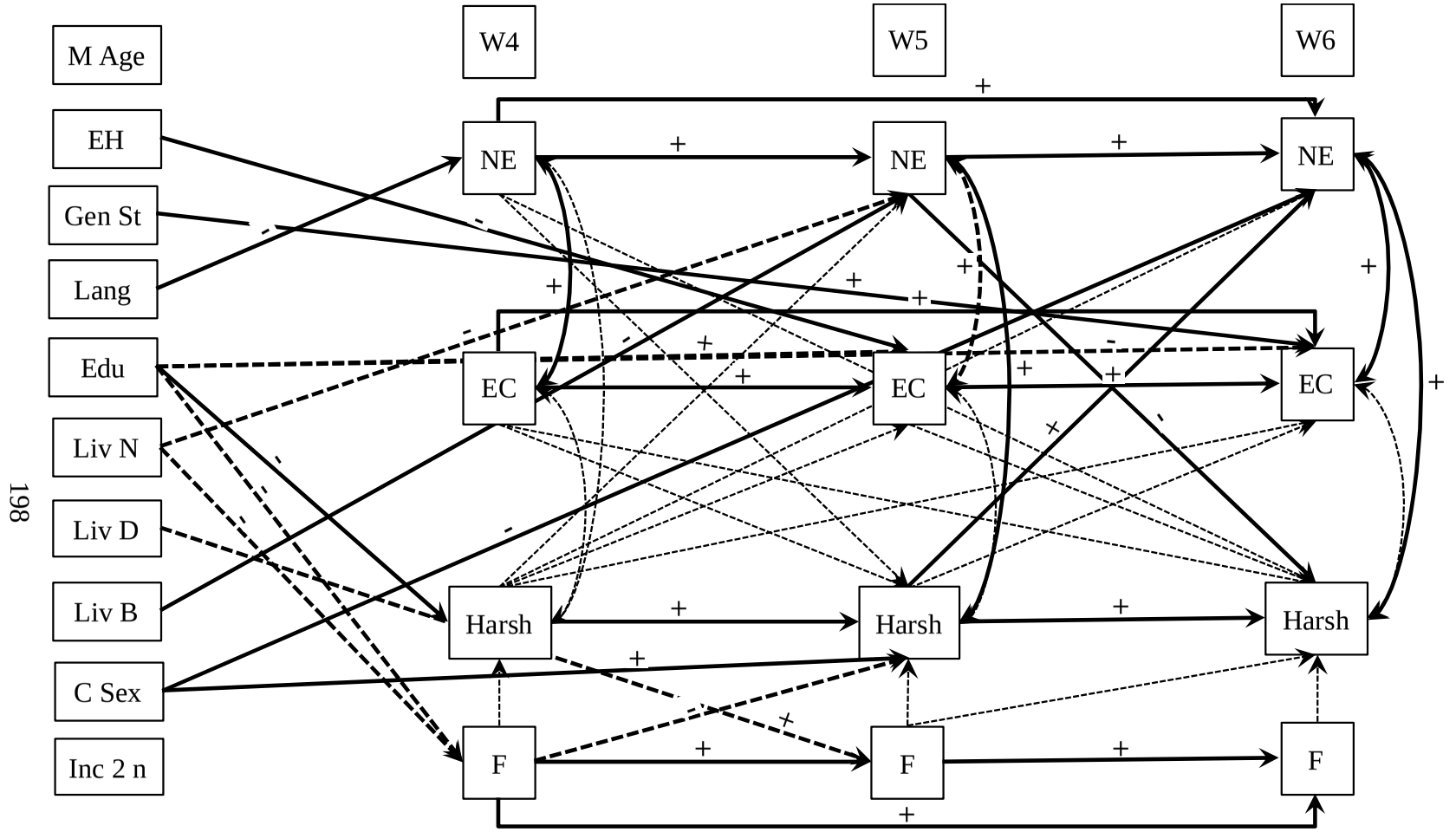

Figure 14. Final cross-lagged panel with harshness and familism. $\chi 2$ (97) = 88.68, p = 0.715. RMSEA = 0.00, 90% CI [0.00, 0.03]. CFI = 1.00. SRMR = 0.05. Dark lines = significant paths ($p < .05$). Dark dotted lines = marginally significant paths ($p < .10$). Light dotted lines = non-significant paths. EC = effortful control. NE = negative emotionality. Harsh = mothers' negative affect during clean-up. F = familism. M Age = W4 mothers' age. EH = W4 economic hardship. Gen St = Generation status (0 = 1st, 1 = 2nd or higher). Lang = Language of assessment (0 = English, 1 = Spanish). Edu = W4 mothers' education. Liv N = W4 mothers not living with grandmother or biological father. Liv D = W4 mothers living with biological father. Liv B = W4 mothers living with grandmother and biological father. C Sex = Child sex (0 = Male, 1 = Female). Inc 2 n = Income to needs ratio (calculated from mothers' reports of her household's income and her reports of who was living in the house).

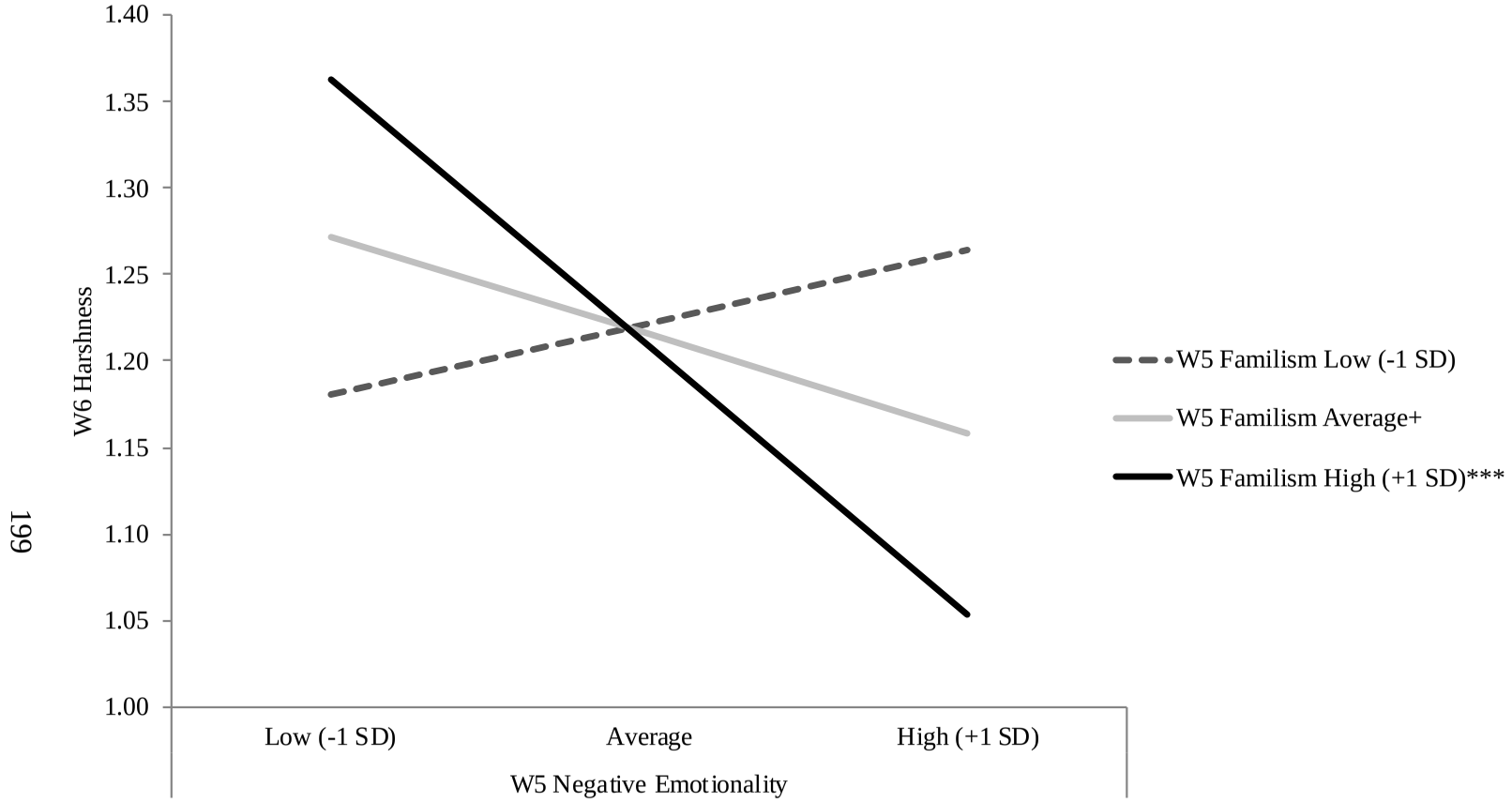

Figure 15. The moderating role of familism between negative emotionality and harshness. Low familism: b = .05, SE = .06, p = .419. Average familism: b = -.07, SE = .04, p = .087. High familism: b = -.18, SE = .05, $p < .001$.

APPENDIX

C CORRELATIONS BETWEEN EC AND NE IN THE SUPPORTING MEXICAN-ORIGIN ADOLESCENT MOTHERS AND THEIR INFANTS DATA

Results

Zero-order correlations between other measures of EC and NE in the Supporting Mexican-origin Adolescent Mothers and their Infants (MAMI) project were examined to clarify the positive association between mother reported CBQ EC and NE found in the present study. In MAMI, the researchers asked grandmothers to report on children's EC and NE using the CBQ, conducted assessments of children's EC using delay tasks, and coded children's NE during clean up. Five sets of correlations are presented in the tables below: (a) correlations between grandmother reported CBQ EC and NE, (b) correlations between observed EC and NE, (c) correlations between mother reported CBQ EC and NE items, (d) correlations between mother reported CBQ EC and NE by language of assessment, and (e) correlations between mother reported CBQ EC and NE items by language of assessment.

Grandmothers' reports of EC and NE were either marginally or significantly positively correlated or not correlated within and across time (see Table 1). Observed EC and NE were mostly marginally or significantly negatively correlated within and across time (see Table 2). Although there were very few negative correlations between EC and NE items at all waves, there were more negative correlations at W6 (5 significant, 1 marginal) than W5 (2 significant, 2 marginal) and W5 than W4 (3 marginal; see Table 3).

When mothers reported on their children's EC and NE on English CBQs, there was a significant positive correlation between EC and NE, but only at W4. When mothers reported on their children's EC and NE on Spanish CBQs, there was a significant and positive correlation between EC And NE at W4 and W5. Also, the correlation coefficient

for Spanish CBQs was larger than for English CBQs at W5 and W6 (see Table 4). Also, there were more marginal and significant negative correlations between EC and NE items when mothers reported on English CBQs (8 significant, 3 marginal) than Spanish CBQs (4 significant, 1 marginal; see Table 5).

Table 1

Correlations between Grandmother Reported CBQ EC and NE

		NE		
		W4	W5	W6
EC	W4	.18^{+}	.10	.16
	W5	.18^{+}	.15	.21*
	W6	-.09	.00	.16^{+}

Note. NE = negative emotionality. EC = effortful control. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $< .10$.

Table 2

Correlations between Observed EC and NE

		NE		
		W4	W5	W6
EC	W4	-.14	-.01	-.17^{+}
	W5	-.25**	-.15^{+}	-.22*
	W6	-.22*	-.21*	-.23**

Note. NE = negative emotionality. EC = effortful control. *** $p < .001$. ** $p < .01$. * $p < .05$. $^{+}$ $< .10$.

Table 3

Correlations between Mother Reported EC and NE Items

		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W4	NE1	.20**	.20*	.00	.14+	.07	-.03	-.03	.14+	.20**	.06	.17*
	NE2	.09	.25**	.14+	.07	.04	.02	-.01	.09	.24**	.01	.09
	NE3	.23**	.24**	.25**	.28***	.24**	.08	.15+	.29***	.23**	.22**	.30***
	NE4	.16*	.11	.12	.23**	.04	.10	.15+	.12	.24**	.15+	.21*
	NE5	.10	.02	*-.15+*	.11	.12	-.08	*-.14+*	.09	.21**	.06	-.04
	NE6	.20*	.12	.03	.23**	.14+	.03	-.01	.19*	.26***	.18*	.13
	NE7	.04	.09	-.12	.06	.09	*-.14+*	-.02	.03	.12	-.04	-.06
	NE8	.24**	.12	-.05	.15+	.12	-.03	-.01	.26***	.22**	.17*	.11
	NE9	.16+	.18*	.29***	.13	.14+	.06	.10	.20*	.29***	.12	.41***
		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W5	NE1	.05	.09	.05	.13	.11	*-.17**	-.04	.10	.11	.16*	.12
	NE2	.11	.11	.01	.15+	.00	.19*	.09	.07	.14+	.04	.04
	NE3	.17*	.22**	.20*	.21**	.09	.10	.13+	.01	.19*	.16*	.15+
	NE4	-.05	.00	-.01	.00	-.07	.14+	.11	.01	.02	.17*	*-.14+*
	NE5	*-.17**	-.06	-.04	.02	.04	-.09	-.10	.02	.00	.05	-.03
	NE6	.01	.12	.04	.07	.15+	.05	-.09	.06	.28***	.23**	.01
	NE7	-.12	-.04	-.02	.02	-.10	-.12	.00	-.01	-.03	.09	-.06
	NE8	*-.14+*	.12	.01	.08	-.08	-.12	-.09	.06	.17*	.26***	.12
	NE9	.03	.19*	.13	.10	-.02	.21**	-.01	.06	.19*	.15+	.18*
		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W6	NE1	.14+	-.02	-.03	.02	-.01	*-.31****	*-.16**	-.07	-.11	.02	.07
	NE2	.00	.01	.06	.10	.12	.04	-.02	.05	.12	.09	-.10
	NE3	.07	.28***	.22**	.16*	.05	.13	.00	.18*	.06	.14+	.21**
	NE4	.02	.04	.11	.45***	.03	.10	.18*	.10	.01	.18*	.14+
	NE5	-.02	-.05	.02	.05	.13+	-.03	.02	-.05	.03	.10	-.07
	NE6	.14+	.19*	.21*	.04	-.05	.07	.07	-.04	.09	.17*	-.03
	NE7	-.01	-.12	-.10	.07	.08	-.09	-.06	-.04	.16*	.03	.06
	NE8	.07	.07	-.11	.04	.03	*-.28****	-.09	-.04	.07	.15*	.02
	NE9	*-.14+*	.05	-.09	.21**	-.01	*-.23***	*-.19**	.00	.14+	.02	.18*

Note. EC = effortful control. NE = negative emotionality. EC and NE items are listed in Table 6. Marginal and significant negative correlations are italicized and highlighted in grey. *** $p < .001$. ** $p < .01$. * $p < .05$. + < .10.

Table 4

Correlations between Mother Reported EC and NE by Language

		NE		
		W4	W5	W6
EC	W4	.31***/.34*	.18+/.18	-.02/.11
	W5	.00/.09	.10/.32*	-.05/.23
	W6	-.06/.22	.01/.08	.10/.20

Note. English correlations are before the slash and Spanish correlations are after the slash. NE = negative emotionality. EC = effortful control. *** $p < .001$. ** $p < .01$. * $p < .05$. + < .10.

Table 5

Correlations between Mother Reported CBQ EC and NE Items by Language

		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W4	NE1	.19*/.20	.13 /.22	-.06 /.09	.15 /.06	.14 /-.05	-.09 /-.06	-.10 /.21	.08 /.07	.29**/.01	.06 /.21	.11 /.12
	NE2	.11 /.02	.24*/.16	.16+/.06	.06 /-.01	.12 /-.14	-.04 /.02	-.01 /.15	.05 /.00	.17+/.32*	.00 /.20	.06 /-.02
	NE3	.19+/.30*	.23*/.23	.17+/.46**	.35***/.09	.28**/.16	.06 /.10	.13 /.26+	.32**/.26+	.30**/.07	.22*/.25	.36***/.15
	NE4	.23*/.02	.12 /.08	.15 /.03	.30**/.07	.07 /-.02	.13 /.04	.15 /.16	.10 /.16	.31**/.13	.24*/-.11	.25*/.14
	NE5	.05 /.18	.02 /.00	-.22*/-.01	.03 /.28+	.21*/-.07	-.14 /-.01	-.21*/.06	.06 /.10	.20*/.20	.10 /.01	-.09 /.01
	NE6	.14 /.32*	.09 /.16	-.01 /.13	.17+/.37*	.14 /.13	-.07 /.19	-.03 /.14	.15 /.20	.27**/.18	.20*/.17	.15 /.00
	NE7	-.01 /.19	.06 /.23	-.15 /-.03	.00 /.24+	.13 /.01	-.16+/-.07	-.06 /.08	.06 /-.04	.22*/-.09	.00 /-.20	-.06 /-.03
	NE8	.26**/.19	.05 /.31*	-.08 /.03	.12 /.22	.15 /.04	-.10 /.12	-.10 /.29*	.25**/.23	.27**/.10	.19*/.16	.04 /.25+
	NE9	.06 /.33*	.11 /.29+	.25**/.40**	.10 /.13	.11 /.20	-.03 /.14	.11 /.21	-.04 /.45***	.28**/.25+	.14 /.26+	.36***/.40**
		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W5	NE1	.06 /.05	.08 /.07	.07 /.01	.08 /.15	.13 /.06	-.29**/-.02	-.02 /.04	.08 /.08	.06 /.11	.05 /.43***	.06 /.17
	NE2	.09 /.14	.11 /.12	.00 /.04	.16+/.12	.01 /-.01	.11 /.33*	.05 /.25+	.05 /.09	.05 /.34*	.00 /.16	.07 /-.06
	NE3	.21*/.08	.25**/.12	.16 /.29*	.23*/.15	.08 /.11	.01 /.32*	.14 /.16	.02 /-.05	.12 /.31*	.05 /.48***	.19*/.02
	NE4	-.12 /.11	-.05 /.15	.01 /-.08	-.02 /.03	-.05 /-.13	.14 /.15	.09 /.23	-.02 /.06	-.01 /.09	.12 /.32*	-.20*/.01
	NE5	-.09 /-.34*	-.02 /-.15	-.04 /-.05	.07 /-.04	.18+/-.28*	-.20*/.19	-.15 /-.06	.07 /-.03	-.06 /.18	-.08 /.39**	-.06 /.13
	NE6	-.01 /.06	.19*/-.09	.01 /.12	.07 /.05	.11 /.23	-.01 /.16	-.05 /-.16	.12 /-.11	.18+/.44***	.10 /.58***	-.06 /.14
	NE7	-.08 /-.19	-.05 /.03	-.05 /.06	.05 /-.02	-.08 /-.14	-.20*/.06	-.07 /.13	-.02 /.05	.06 /-.15	.03 /.23+	-.09 /.06
	NE8	-.07 /-.27*	.10 /.16	.00 /.03	.05 /.11	-.02 /-.24+	-.14 /-.09	-.05 /-.16	.05 /.06	.19*/.08	.17+/.53***	.03 /.31*
	NE9	.04 /.04	.19*/.17	.04 /.29*	.03 /.15	-.04 /-.03	.28**/.06	.02 /.03	.11 /-.10	.12 /.23+	.07 /.37**	.09 /.27+
		EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11
W6	NE1	.13 /.24+	-.05 /-.02	.01 /-.08	-.07 /.21	-.15 /.15	-.42***/-.18	-.15 /-.09	-.14 /-.10	-.13 /-.19	.03 /.14	-.09 /.20
	NE2	.01 /-.02	.01 /-.01	.09 /.03	.05 /.22	.11 /.12	.03 /.03	.00 /-.05	.02 /.07	.11 /.12	.20*/-.18	-.11 /-.12
	NE3	.06 /.10	.24*/.38*	.16 /.39**	.13 /.24+	.14 /-.18	.07 /.30*	-.03 /.09	.17+/.19	.05 /.09	.08 /.34*	.07 /.55***
	NE4	.07 /-.12	.10 /-.12	.16 /-.02	.50***/.32*	.00 /.08	.20*/-.16	.18+/.19	.20*/-.09	.02 /-.01	.26**/-.03	.25*/-.10
	NE5	-.10 /.17	-.04 /-.07	.03 /.00	.08 /-.02	.04 /.32*	-.06 /.06	.01 /.04	-.09 /.03	-.01 /.12	.09 /.13	-.08 /-.06
	NE6	.09 /.32*	.16+/.26+	.19+/.25+	.07 /-.04	.00 /-.16	.05 /.12	.07 /.07	-.04 /-.03	.18+/-.14	.19*/.13	-.10 /.15
	NE7	.00 /-.06	-.09 /-.19	-.13 /-.04	.04 /.16	.13 /.06	-.05 /-.15	-.05 /-.19	-.01 /-.02	.23*/.04	.04 /-.10	.15 /-.04
	NE8	.06 /.10	.12 /-.09	-.12 /-.09	.03 /.10	.02 /.03	-.32***/-.18	-.12 /.02	-.10 /.09	.11 /-.07	.19*/.08	-.05 /.19
	NE9	-.14 /-.13	.02 /.08	-.19+/.21	.21*/.24+	-.05 /-.02	-.24*/-.30*	-.18+/-.15	-.06 /-.04	.08 /.21	.04 /.09	.10 /.21

Note. English correlations are before the slash and Spanish correlations are after the slash. Marginal and significant negative correlations are highlighted in grey. EC and NE items are listed in Table 6. EC = effortful control. NE = negative emotionality. *** $p < .001$. ** $p < .01$. * $p < .05$. + $p < .10$.

Table 6

EC and NE Items

	Item
EC1	When drawing or coloring in a book, shows strong concentration.
EC2	Prepares for trips and outings by planning things s/he will need.
EC3	Likes being sung to.
EC4	Notices it when parents are wearing new clothing.
EC5	When building or putting something together, becomes very involved in what s/he is doing, and works for long periods.
EC6	Is good at following instructions.
EC7	Likes the sound of words, such as nursery rhymes.
EC8	Is quickly aware of some new item in the living room.
EC9	Sometimes becomes absorbed in a picture book and looks at it for a long time.
EC10	Enjoys gentle rhythmic activities such as rocking or swaying.
EC11	Comments when a parent has changed his/her appearance.
NE1	Gets quite frustrated when prevented from doing something s/he wants to do.
NE2	Is quite upset by a little cut or bruise.
NE3	Tends to become sad if the family's plans don't work out.
NE4	Is afraid of burglars or the "boogie man".
NE5	When angry about something, s/he tends to stay upset for ten minutes or longer.
NE6	Seems to feel depressed when unable to accomplish some task.
NE7	Is very difficult to soothe when s/he has become upset.
NE8	Gets angry when s/he can't find something s/he wants to play with.
NE9	Becomes upset when loved relatives or friends are getting ready to leave following a visit.